TECTONIC MEMOIRS:
THE EPISTEMOLOGICAL PARAMETERS OF TECTONIC THEORIES OF ARCHITECTURE

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Anthony P. Rizzuto

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Approved by:

Dr. Ron Lewcock Advisor
College of Architecture
Georgia Institute of Technology

Dr. Donald Phillip Verene
Department of Philosophy
Emory University

Dr. Elizabeth Dowling
College of Architecture
Georgia Institute of Technology

Dr. Karsten Harries
Graduate School of Arts and Sciences,
Yale University

Professor Harris Dimitropoulos
College of Architecture
Georgia Institute of Technology

Date Approved:

DEDICATION

To my parents

Carol and Tony Rizzuto

for all their love, support and patience.

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SUMMARY

The purpose of architectural theory is to provide a paradigm, or episteme, from which one can address contemporary design issues within the broader cultural context. It comprises any written system of architecture and may be either partial or comprehensive, but it must encompass a framework of cognitive categories that inevitably provide criteria for judgment. If not explicitly stated, it nevertheless implies an epistemology, a substructure for architectural knowledge.

Previous studies of tectonics have tended to treat it as an autonomous architectural discourse, focusing on an individual writer and theory, or on a thematic concern such as the relationship between ontology and representation. This study approaches tectonics differently, relating it to the broader shifts within the discourses of architecture and philosophy, thereby sanctioning a more synergistic, as opposed to autonomous, examination. In exploring the epistemological parameters of tectonics theories in the West it isolates three major periods in its development: Classical Tectonics- derived from ancient philosophy, Rational Tectonics- emerging from the epistemology of science and Poetic Tectonics- developed out of concerns raised by the German Counter-Enlightenment and the Romantic Movement. At each stage in its development tectonics has served to provide key principles that collectively constitute its ground.

The study reveals that Poetic Tectonics was a reaction against the duality of mind and abstract rationalism- so central to Cartesian thought and the epistemology of science- and its impact on architectural thought. In response Poetic Tectonics while accepting the key principles of Rational Tectonics sought to redirect it along the philosophical lines of the

German Enlightenment and Romanticism while also re-presencing the ethical substructure of Classical Tectonics.

This study recognizes that through the course of time, the epistemology upon which cultures are formed have and will continue to change and as they do new tectonic theories will need to be negotiated; rendering tectonics in a continual state of ‘becoming’. If there is to be a conclusion it lies in the fact that in its historical persistence and continuity tectonics represents a tradition within Western architecture on par with the likes of the Vitruvian, Organic and Functionalist.

Part I

Prolegomena

Chapter 1: Prolegomena to a Tectonic Discourse

> ". . . upon closer inspection, the fundament of tectonics reveals a turbulent substructure. This layer is the excess of the rational tectonic project, tectonics as discourse."
>
> Mitchell Schwarzer
> 'Tectonics Unbound', *Any 14*[i]

Tectonics has been an important part of architectural discourse for the last two hundred and fifty years. Yet research into tectonic theory has been limited and fragmentary, with the vast majority of texts on the subject coming in the form of brief essays and articles. A cursory survey of the terms use over time reveals that even its definition has been a problem in its scholarship. Its' first architectural use appeared in Karl Otfried Muller's *Handbuch der Archaologie der Kunst* (Handbook of the Archeology of Art) of 1830, where he defined *tektonische* as applying to a series of art forms including such objects as pottery, utensils and buildings. These he claimed form and develop ". . . on the one hand due to their application and on the other due to their conformity to sentiments and notions of art."[ii] The German theorists of the 19th century used it to refer to the relationship between constructional details and ornamentation. In the 20th century it has been used as a support for arguments surrounding the production and engagement of craft detailing. More recent deconstructions of the tectonic discourse have concerned themselves with 'its insinuation of a logic of continuity and integration'.[iii] The result has been a plurality of definitions and the subsequent application of the term to

a diverse group of issues with little clarification of its core principles. This study is intended to provide such clarification by examining the epistemological parameters of tectonic theories of architecture that serve as the foundation of the contemporary discourse.

Assessing the Scope of the Contemporary Discourse

Contemporary commentators on tectonics generally accept that tectonics is a 'form-making strategy' where, as Thomas Fischer claimed, ' . . . the form emerges out of the nature of their materials and the methods of their construction or fabrication'.[iv] As a form- making strategy, tectonics is seen as distinct from mere structural expressionism. Eduard Sekler made that clear when he defined tectonics as an expressivity arising from the statical resistance of constructional form where the expressivity could not be accounted for in terms of the structure or construction alone.[v] More recently, Kenneth Frampton has referred to this expressivity as "the poetic manifestation" of construction.[vi] For these theorists, it is through this 'poetic manifestation of construction' that meaning and significance in architecture are to be found.

It is this interest in making, and its cognitive and symbolic implications, that have connected such diverse practitioners as Carlo Scarpa, Louis Kahn, Tado Ando, Morphosis, Frank Isreal, Steven Holl, Hertzog and DeMeuron and Mario Botta. For many, the significance of tectonics lies in the belief that it is through the process of making that meaning emerges. This position is not without its philosophical grounding.

Philosophers from Vico to Cassirer have argued the importance of artistic production as a foundation of both cognition and meaning.

The registered concern with meaning in contemporary tectonics has coincided with a growing concern with the influence of corporate modernism, consumer capitalism and Post-modern historicism. For many of architects and theorists, tectonics and the 'significant detail' are seen as vehicles for both resistance and cultural critique. As a 'form- making strategy' tectonics posed as a counter- hegemonic position from which to produce an 'authentic' architecture, one in opposition to the reigning fads and isms of style and theory. In a postmodern, post-industrial world, of consumer capitalism and cultural consumption, tectonics is held out as the savior of a dying art.

While there have recently been many writers entering into this discourse, the texts of four prominent writers, Vittorio Greggotti, Marco Frascari, Juhani Pallasmaa and Kenneth Frampton, have had significant impact in establishing the contemporary tectonic debate.

For Greggotti, all things that are made are given form and it is through this form that they are endowed with the capacity to communicate. Architectural form is not a single monolithic image, but rather a composite made up of components or details. It is the detail that reveals architectural language and meaning. Greggotti states "Obviously detailing does not necessarily depend on an overall guiding concept; even if it has inherent relations with such a concept, it is not simply a declination of general decisions; but gives them form, rendering them recognizable and articulated in their various parts."[vii] The emergence of meaning within the language of architecture, for Greggotti at least, occurs through the process of making, encoded within the construction process at

the location of the detail. The concept itself is dependent upon the articulate statements made by the details, and not the other way around. The detail and detailing present 'a system of articulation in architectural language' that is the source of its eloquence. For Greggotti this eloquence can never be achieved successfully via the application of historical quotation or abstract concepts applied to architectural form.

Frascari also locates the significance of architectural meaning in the detail, put places an even greater emphasis upon it. "Details are much more than subordinate elements; they can be regarded as the minimal units of signification in the architectural production of meanings."[viii] Like Greggotti, Frascari believes that the detail imposes order upon the whole. The detail is the location, or *locus*, of meaning in man- made objects, as such it is that point at which knowledge, finds its own *logos*. With Frascari's writings, tectonics is firmly tied to theories of both cognition and ontology, or being in the world. As such, the detail replaces the plan as architectural generator.

Accordingly, the architectural detail becomes the location of both constructing and construing, what Frascari refers to as the '*techne of logos'* (i.e., the production of discourse or construing) and the '*logos of techne'* (i.e., the production of man- made objects or constructing). He finds historical precedence in this definition of the detail as the meeting of mental construing and actual construction in the theory of Leon Battista Alberti. It was Alberti who identified architecture as 'the art of the selection of appropriate details whose result was beauty', or rather *'concinnitas'*. Frascari interprets Alberti not as applying this to the actual built object as a whole, but rather the mental construct. He reads the facade of the Palazzo Rucellai as an incomplete object, but one whose details, nevertheless produce a unified whole that produces *concinnitas* within the

mind. The details become the juncture between the actual and the imagined. As a result, tectonics becomes the ground within which the two realms of the theoretical and empirical merge. It is "the understanding and execution of details [that] constitute the basic process by which the architectural practice and theories should be developed."[ix]

According to Frascari, the detail is not solely a construction joint, but also potentially a formal joint; between interior and exterior, between building and ground or sky, etc. What in one instance is seen as an edifice; a round Ionic temple, can also be a detail if used as a lantern upon a dome. Consequently the dictionary definition of 'detail' is meaningless to architecture. "Details are the result of the multifold reality of functions in architecture. They are the mediate or immediate expressions of the structure and the use of buildings."[x] Frascari identifies 'functions' with repeated usage and custom and thereby grounds the detail in tradition, culture, and the *sensus communis*.

For Pallasmaa, tectonics becomes the seat of a larger intellectual critique of modern epistemology, one that began in the Renaissance and continues until the present day. In his book *The Eyes of the Skin*, Pallasmaa argued that modern thought began to place an ever growing emphasis on the visual interpretation of the world at the expense of bodily interpretation.[xi] He traces this emphasis to Descartes and his now famous *cogito ergo sum*, which formally divorced the mind from the body. The resulting duality within the epistemology of science then led to the ever increasing rejection of the sensual in the realm of knowledge, having a significant impact on the arts and their relationship to it.

The most prominent theorist of the tectonics has been Kenneth Frampton. His concern with capitalist economies and global cultures lead him to first propose an architecture of 'Critical Regionalism'[xii], and then in 'Rappel L' Order'[xiii] to launch an

attack on the predominance of Scenographic architecture. In the latter he claimed, the success of Robert Venturi's theory of the decorated shed had lead to a condition in which shelter was packaged like a giant commodity.

He then insisted that 'architecture must of necessity be embodied in structural and constructional form'. It was made clear that what he was referring to was not a 'mechanical revelation of construction' but rather the 'poetic manifestation of structure'. Frampton challenged modernism’s concerns with functional necessity, structural expressionism, and its emphasis on an architecture of space. He claimed that the act of making, specifically the act of making an architectural construction, comes first rather than the discourse of surface, volume and plan.

‘Rappel L' Order’ established a taxonomy of architecture breaking it into three classifications; the 'Technological object', the 'Tectonic object' and the 'Scenographic object'. According to Frampton, the 'Technological object' was one that "arises directly out of meeting an instrumental need", as opposed to the 'Scenographic object' that "may be used equally to allude to an absent or hidden element". The former dominated by utility, necessity and function, the latter by symbolism, and representation. Frampton's allusion, though not clearly stated, is that the 'Tectonic object' lies suspended between these two poles.

This taxonomy was complicated when Frampton went on to argue that the "Tectonic object" appears in two modes; the ontological and representational, which he likened to Semper's distinction between the structural- technical and the structural- symbolic. According to him, the doctrines of Modernism (not necessarily the architects or the works themselves, as his selection of architects in *Studies in Tectonic Culture* indicates) placed

too great an emphasis on the representational mode at the expense of the ontological. For Frampton, this was what eventually led to the rise and influence of representational theories of architecture such as Venturi's 'Decorated Shed'. As a means to counteract this influence, ‘Rappel L' Order’ called for a revised account of the history of modern architecture, interpreted through the lens of *techne*.

In his seminal book *Studies in Tectonic Culture: The Poetics of Construction in Nineteenth and Twentieth Century Architecture*, Frampton concentrated on exploring the representational mode of 20th century tectonics in an attempt to redirect it toward the ontological. In the end, it proposed an alternative view of modern architecture as called for in 'Rappel L' Order'. Today it remains the only large scale attempt to produce a framework for tectonic theory.

While illuminating and an essential first step in the articulation of tectonics *Studies in Tectonic Culture* was far from definitive. The conceptual framework of the book placed too great a concentration on representation (which Frampton defined as the intellectual problem), neglecting key avenues through which tectonics might engage and open up architectural discourse, including those that Frampton himself identified, such as the corporeal metaphor, ethnicity and topography.

If *Studies in Tectonic Culture* was to be a revised account of architectural history interpreted though the lens of *techne* as espoused in ‘Rappel L' Order’, it failed to provide a definition of *techne* or to answer the question of how a tectonic *techne* might differ from other forms of *techne*, and thus what the curvature of its’ 'lens' might be. This was a significant shortcoming particularly in light of the assertion that making and ontology are central issues of theoretical concern in tectonics.

The greatest defalcation of the book came in the failure to provide a cultural context for tectonic theory as promised in the title. The book began with a survey of the term ‘tectonics’ and its use in Architectural history in an attempt to establish the scope of the project. This survey also included an etymological examination of the roots of the term in the word *tekton*. The intention was to establish the origin of tectonics in the work of the carpenter and wood construction, notably the frame, which Frampton associated with the modern tradition and contemporary construction practices. Frampton then provided some case studies that would help to explain his understanding of the concept.

There is a significant problem with Frampton’s etymological study. It only traced the word *tekton* to the Hellenistic age, but its true origin dated from the Homeric age of Ancient Greece where its usage was substantially different. This is complicated by the fact that the linguistic distinction between the *tekton* and the architect occurred earlier in the Classical age. Thus, the study failed to accurately identify cultural context that constituted the origins of the *tekton* and how such a ‘tectonic culture’ might have shaped the earliest conception of architecture, a condition that permeated the entire book.

As Tim Culvahouse has noted; the book "assumes the existence of a tectonic culture, rather than articulating the manifold interactions of institutions, theories, practices, and influences that make up that culture. . . . This tension carries certain undeclared assumptions about the boundaries of tectonic culture and how such a culture develops, maintains, and disseminates knowledge."[xiv] As he pointed out, there are many junctures between architecture and other cultural institutions that would have to be explored in order to properly define a 'culture' of tectonics.

To be fair, the third chapter of *Studies in Tectonic Culture*, entitled the entitled 'The Rise of the Tectonic: Core Form and Art Form in the German Enlightenment, 1750-1870' did provide a glimpse of the role tectonics might play in the broader role of cultural inquiry. In it Frampton explored the interrelationship between the philosophy of the German Enlightenment, its impact on aesthetics and its eventual translation into both architectural theory and practice. Nevertheless, while indicating the distinction between two antithetical impulses (what Frampton refers to as the 'rationalist' and the 'expressivist'), this highly informative chapter failed to interrogate the epistemological framework of the German Enlightenment.[xv] A period that was fraught with contradiction.

Studies in Tectonic Culture made no attempt to outline the epistemological ground of tectonic theory, nor did it attempt to outline the cognitive assumptions that Frampton himself often alluded to in his writings. The lack of a real epistemological investigation was curious given that while maintaining tectonics as a counter hegemonic strategy, Frampton recognized it as a condition of knowledge.

As Mitchell Schwarzer claimed; "Tectonics is a product of ideas as much as a construction of products".[xvi] What Marco Frascari referred to as 'the construing of constructions and the construction of construing'. It is an epistemological construction that defines the boundaries of constructional knowledge, as well as the framework for its development, maintenance and dissemination.

The current body or research on tectonics leaves several important questions largely unanswered. Among them are the following; '*What is the distinction between the 'mechanical revelation' and the 'poetic manifestation' of construction and structure?*', '*What are the ramifications of such distinctions?*', '*How do differing definitions of techne*

affect the discourse of tectonics?', '*Why is the question of ontology important?*', '*What is the basis of the claim that meaning emerges in the process of making?*' And lastly, '*How is tectonics a vehicle for both resistance and cultural critique?*' Such questions reveal the fundamental necessity to interrogate the cultural context of tectonic theory and the need to explore the epistemological parameters and cognitive assumptions upon which it is based.

In hopes of providing answers to some of the above listed questions, the parts of this work that follow are intended as investigations into the cultural context of tectonic theory. Taking a cue from Frampton's *Studies in Tectonic Culture*, they are organized around three distinct periods in the development of 'tectonic culture'; Classical, Rational and Poetic. The first, the Classical, returns to the idea of origins in an attempt to excavate a more authentic ground from which to base a 'tectonic culture'. The Rational and Poetic are derived from the two antithetical impulses Frampton identified in the architectural debates of the nineteenth century; the rationalist and the expressivist.

Part 1I: The Origins of "Tectonic Culture"

Part II, 'The Origins of Tectonic Culture' raises the issue of origins reexamining the etymology of the term *tekton* in an attempt to develop a more comprehensive understanding of the cultural context of tectonics in the Classical age and how that helped to determine the conceptualization of architecture in the work of the Roman architect Vitruvius.

It argues the origins of ‘tectonic culture’ can be found in the Tectonic Myths of the Homeric age- the myths surrounding the *tekton* and the gods who governed their actions, Prometheus, Hephaestos and Athena. Those myths established a series of relationships between tectonics, ethics, and production that provided the framework of a broader ‘tectonic culture’. That framework conceived of tectonics as a series of interrelationship between the concepts of creation, making, poetry and ethics. The Tectonic Myths provided a foundation for a culture of tectonics that also served as a basis for the later development of philosophy and eventually the discourse of architecture.

This work asserts that the distinction created between tectonics and architecture, *tectonike* and *archi- tectonike*, was not one of kind, but of degree. Both *tectonike* and *archi-tectonike* where part of a cultural framework that concerned itself with the interrelationship of doing: understood through the idea of making (*techne*) and acting: understood through the idea of *praxis* (*phronesis*), and their relationship to wisdom. The addition of the prefix *arche* did not disturb the original cultural context, but rather sought to provide a more theoretical framework that allowed for the incorporation of the discourse into the emerging philosophical context of classical Greece.

Part II concludes that the classical period developed an epistemological structure that set operable parameters for tectonics in the form of a dialectic between *techne* and *phronesis*. It was within that dialectic that a definitional stance on cognition was elaborated, as well as a means of grounding production in the concrete reality of lived experience while resisting the potential instrumentalization inherent in *techne*.

Part III Architecture and the Epistemology of Science:
The Formulation of a Rational Tectonics

Most social critics and analysts have identified a major shift in the worldview of the West that began in the Renaissance and continued into the early 1800's. That period saw the concretization of a new epistemological structure; the epistemology of science and its metaphysics. Part III investigates the impact of the new epistemology on the intellectual culture of France. It explores how art and architecture began to embody not only its new causality, but its definitions of reality, nature and the human mind. The most obvious effect of this shift was the gradual dissolution of the classical notion of mimesis and the Vitruvian tradition.

By the mid sixteen hundreds, new definitions of beauty derived from the epistemology of science emerged. The Cartesian duality of mind and body developed into 'Subjective' and 'Objective' aesthetics, which transformed the framework for aesthetic and architectural judgment. One result was the development of a theory of imitation where architecture sought to embody the universal ideals of an idealized model. The best known of these was Laugier's 'Primitive Hut', but the Greco-Gothic Ideal and Neo-Classicism also embody this tendency. In the process architectural theory and practice were brought in line with the goals of science. The result was the development of what I have termed Rational Tectonics.

By the end of the 1700's the new system of ordering proffered by the epistemology of science was increasingly marked the domination of a technological intentionality- something Heidegger, Mumford and Ellul have identified as the most distinguishing feature of the modern era.[xvii] Part III concludes that this new intentionality brought about

an increased focus on means in the means/ ends equation that resulted in a completely new approach to evaluating architecture and conceiving of the design process. Such that by the end of the century architecture was increasingly seen as an autonomous language, dominated by what I have termed the Mechanism of Structure; the representation of statical forces, and the Mechanism of Disposition; the representation of spatial organization and use, effectively transforming architectural practice from a form of *techne* into a form of *technique*. This transformation was best exemplified by the writings of Jean- Nicolas- Louis Durand, and the design pedagogy of the Ecole Polytechnique.

Part IV- Architecture and Idealism: The Emergence of Poetic Tectonics

The epistemology of science, while widely accepted and growing in dominance, was not without its' critics. In the writings of Giambattista Vico in Italy and Johann Georg Hamann, Johann Gottfried von Herder and the Idealist philosophers in Germany, a new epistemology context emerged. Its' underlying propositions and definitions of Nature, reality, truth and the human mind proved to be radically different from those of the epistemology of science. Its' proponents argued poetry was the *novum organum* and a means of resisting abstract reason and overcoming the Cartesian duality.[xviii]

Part IV investigates this alternate epistemological context beginning with Vico's impact on Lodoli and Piranesi in Italy. It then traces the impact of the German writers, particularly Hegel, Goethe and Schiller, on the theory of mind, definitions of nature and aesthetic theory. It argues that it was out of this new epistemology that Poetic Tectonics developed in the work of Gilly, Schinkel, Hubsch, and Botticher. It concludes that the proponents of Poetic Tectonics did not reject Rational Tectonics. They were still

committed to notions of function, structure and representation, but they challenged the idea that architecture was a practical science in the service of utility. Rejecting the theory of imitation, they saw the design process as a manifestation of human ideals; a means of creating a uniquely human world. For them, architecture was an advanced civil institution, whose history revealed a truth of human socialization, cognition and 'being' where the detail became the *locus* of signification and meaning; a microcosm of human intelligibility.

Through the course of history we have come to confuse the epistemological context that brought about Poetic Tectonics with a Romantic 'state of mind'; one often associated with emotionalism, subjectivity and a disengagement from the world.[xix] This has tended not only to negate the existence of any real challenge to the epistemology of science, but also the veracity of the questions posed. The result has been a lack of clarity of the real issues that have shaped tectonics over the last 250 years.

Collectively, these three cultural investigations identify the often contradictory, and in some cases incommensurate, epistemological parameters and cognitive assumptions that underlie the contemporary tectonic discourse and are the source of its turbulent substructure.

ENDNOTES

[i] Schwarzer, Mitchell, Tectonics Unbound, *Any 14*, Anyone Corporation, New York, NY, 1996, pp 14.13-14.15.
[ii]trans. Leitch, London 1847, pg. 7. reprinted in *Studies in Tectonic Culture*, pg. 4.
[iii]Schwarzer, 'Tectonics Unbound', in *Any 14 Tectonics Unbound*, pg. 14.
[iv]Fisher, 'The Tectonic Aesthetic', *Progressive Architecture*, January, 1995, pg. 37.
[v]Sekler's definition from the 1973 essay 'Structure, Construction and Tectonics', printed in *Structure in Art and Science*, Gyorgy Kepes, Braziller, New York, pg. 89-95.
[vi]Frampton, 'Rappel L' Order, The Case for the Tectonic', in *Theorizing a New Agenda for Architecture, An Anthology of Architectural Theory 1965-1995*, edit. Kate Nesbitt, New York, Princeton Architectural Press, 1996.
[vii]Greggotti, 'The Exercise of Detailing', printed in *Theorizing a New Agenda for Architecture; an Anthology of Architectural Theory 1965- 1995*, edited Kate Nesbitt, Princeton Architectural Press, 1996, pg. 496.
[viii]Frascari, 'The Tell the Tale Detail', printed in *Theorizing an New Agenda for Architecture; an Anthology of Architectural Theory 1965- 1995*, edited Kate Nesbitt, Princeton Architectural Press, 1996, pg. 500.
[ix]Ibid., pg. 501.
[x]Ibid., pg. 501.
[xi] Pallasmaa, *The Eyes of the Skin: Architecture and the Senses*, London, Academy Editions, 1996.
[xii] Frampton, "Towards a Critical Regionalism: Six Points for an Architecture of Resistance", *The Anti-Aesthetic: Essays on Post-Modern Culture*, edit. Hal Foster, Port Townsend , WA: Bay Press, 1983, pp. 16-30, republished *in Kenneth Frampton Labour, Work and Architecture; Collected Essays on Architecture and Design*, Phaidon Press Limited, London & New York, 2002, pp 77-89.
[xiii] Frampton, "Rappel L' Order", *Architectural Design*, vol. 60, no.3/4, 1990, pp.19-25, republished in *Kenneth Frampton Labour, Work and Architecture; Collected Essays on Architecture and Design*, Phaidon Press Limited, London & New York, 2002, pp 91-103.
[xiv]Culvahouse. Book review 'Studies in Tectonic Culture: The Poetics of Construction in Nineteenth and Twentieth Century Architecture'. *Any 14 'Tectonics Unbound'*. guest editor Mitchell Schwarzer. p.10.
[xv] Frampton, *Studies in Tectonic Culture: The Poetics of Construction in Nineteenth and Twentieth Century Architecture* , The MIT Press, Cambridge, 1996, pp. 61-91.
[xvi] Schwarzer, *Any 14 'Tectonics Unbound'*, edit. Mitchell Schwarzer. pg. 14.
[xvii] In their writings Heidegger, Mumfrod and Ellul ague that the restructuring of knowledge brought on by the epistemology of science resulted in the a redefinition of the means of production from the earlier techne to a new form they respectively call 'technique', 'technics' and 'technological society'. They arguments center on how this new system of ordering alters the means end equation in such a way as to hinder the participation of ethics in the means of production. See Martin Heidegger, 'The Question Concerning Technology', lecture presented at the Technische Hochschule in Munich, Nov. 18, 1955 reprinted in *The Question Concerning Technology and Other Essays*, trans Lovitt, Harper & Row, New York 1977; Louis Mumford, *Art and Technics*, Columbia University Press, New York, 1952 and *Technics and Civilization*, Harcourt Brace and Company, 1934 ; Jacques Ellul, *The Technological Society*, trans. Wilkinson, Vintage books New York, 1964. For more on the effects of instrumentalization on production and society see Pierre Francastle, *Art and Technology in the Nineteenth and Twentieth Centuries*, trans. Cherry, Zone Books, 2000, George Simmel, 'The Metropolis and Mental Life' trans Shils, 1903, reprinted *in On Individuality and Social Forms* edit D.N.Levine 1971 University of Chicago Routledge and Kegan and Walter Benjamin, 'The Work of Art in the Age of mechanical Reproduction' 1936, trans Zohn, reprinted in *Walter Benjamin Illuminations*, edit Hannah Arrendt, Schocken Books, New York 1969.
[xviii] Isaiah Berlin has argued that around 1780 there emerged a clear contrast between the rationalist definition of man and that of the Romantic Movement. That distinction he saw as one between the tendency to view the human condition as one of adaptation to conditions and the tendency to view the human condition as one of commitment to ideals. As he asserted". . . this is the great break between what might be called the rationalist or the enlightened tradition, or the tradition that there is a nature of things which must be learnt, which must be understood, which must be known, and to which people must adjust themselves at the cost of either destroying or making fools of themselves- between that tradition and the tradition where, on the contrary, man commits himself to the values to which he commits himself, and if need be, perishes

in their defense heroically. In other words the notion of martyrdom, heroism as a quality to be worshipped for its own sake . . ." Berlin, Isaiah, *The Roots of Romanticism*, edit. Harvey, Princeton University Press, Princeton, NJ, 1999, pg. 84.

[xix] What has been meant by the term Romanticism? Herbert Read and Kenneth Clark have argued that Romanticism is a certain state of mind which can be found anywhere. The Baron Seilliere has written on the subject and quotes Plato, Plotinus and Heliodorus as exemplars. More commonly, Romanticism has been used to refer to a highly subjective, emotion, or inwardly focused ideology. Isaiah Berlin has challenged this reading of 'Romanticism', arguing that a radical transformation in thought occurred that, while not fully transforming the worldview, posed serious challenges to its acceptance. He claimed: "My thesis is that the Romantic Movement was just such a gigantic and radical transformation, after which nothing was ever the same."[xix] Following Berlin, I do not accept the notion of 'Romanticism' as a 'state of mind'. While I do not completely subscribe to Berlin's thesis, I agree that during the 18th century a new intellectual emerged, one that posed a thoughtful challenge to the epistemology of science.

Part II

The Origins of “Tectonic Culture”

Chapter 2: Studies in Tectonic Mythologies

". . . the lover of myth is in a sense a lover of Wisdom, for the myth is composed of wonders."
Aristotle
Metaphysics Bk. I Chap. 2 18- 19

Discontinuity and Continuity: Tectonic Genesis and Ritual

Karvouni makes the following insightful observation about the tectonic crafts: "Unlike the continuity of molding, tectonics is defined by discontinuity, by cutting first . . . then joining. . . . This kind of seemingly antithetical dual activity (division and reconstitution) is what defines the core of tectonics. This 'tectonic' pair seems to be the same with the primordial pair that operates in any creation- genesis."[i] Virtually all the creation myths including the Pelasgian Creation Myth, the Olympian Creation Myth and Hesiod's *Theogony*, begin with an act of cleaving.[ii] The division of *Chaos* was then followed by the emergence of the primordial beings that unite to form the *kosmoi* or ordering principles of the world.[iii] It is the act of division and reconstitution that brings the world into being.

In his book *The Lost Meaning of Classical Architecture*, George Hersey pointed out that the central tenet of Greek ritual was just this concept of division and reconstitution. Following Burkert, he noted that once the animal was sacrificed it was carved up. Its heart placed on the altar and the liver interpreted. Then certain parts were roasted and eaten, the rest preserved and placed back on the altar. The bones and skull were then laid out on the altar in the configuration of the sacrifice's original form and draped in the skin. He states that the 'Greek sacrifice thus involved deconstruction and reconstruction of the

victim's body.'[iv] For his part, Burkert noted that the act of sacrifice, dismemberment and reconstruction was a communal act of defiance of life over death.[v] This action was always accompanied by the presence of fire, a central ingredient both mythically and physically, in the transformation of the world.

The origins of the Greek sacrificial rituals can be found in the Bronze Age religions of the Minoan and Mycenaean civilizations.[vi] Ever recurrent in the archaeological sites was the Double Axe, known as a *diplous pelekys*. [vii] Symbolizing the power of life over death, it was the most common element associated with the sacrifice.[viii] "That the axe was used for the sacrifice of oxen is beyond doubt; in the shape of the double axe practical efficacy is joined to an impressive ornamental form which doubtless assumed a symbolic function at a very early date."[ix] It was clearly an object formed and developed 'on the one hand due to [its] application and on the other due to [its] conformity to sentiments and notions of art' to use Muller's words.[x]

The sacred ritual was encapsulated in the image of the ceremonial *pelekys*, the Double Axe, which stood not only as a necessary instrument in the sacrifice, but as a conscious reminder of the artistic work of the *tekton*. [xi] Tectonic re-genesis found its representation in two strong and powerful images both from the point of view of mythical symbolism and historical production; the image of fire and the Double Axe, the ceremonial *pelekys*. Both of these images are powerfully associated with what I would term the ‘Tectonic Myths’, the myths concerned with Hephaestus the god of fire and craft, and his assistant Prometheus.

"There is one race of men, one race of gods; both have breath of life from a single mother. But sundered power holds us divided, so that one side is nothing, while on the other the brazen sky is established a sure citadel forever."

Pindar,
Nemean Ode VI

Prometheus and the Three Transgressions

The ritual form of dismemberment and reconstitution found its most prophetic form in the Greek myth of the first sacrifice. According to which, in a dispute at Sicyon[xii] as to what was to be done with the carcass of the sacrificed ox, the Titan Prometheus was called in as arbiter. He took the sacrificed carcass and divided it into two portions, one to be offered to the gods, Zeus in particular, and the other to be eaten by man. In one bag, made from the skin of the animal, he placed the flesh, which he covered with the stomach, the most unappealing part of the animal. The second, he filled with the bones covered in a layer of fat. Zeus chose the latter.[xiii]

The myth of the first sacrifice was actually part of a trilogy of three Promethean transgressions. [xiv] Collectively, they reveal a theme in ancient Greek culture concerning man's acquisition of *techne* and its application. That theme is central to our attempt to reconstruct the foundations of tectonic culture. What follows is a recounting of the key components of the trilogy necessary for understanding how Homeric Greece came to terms with the application of *techne*.

Prometheus' first transgression actually occurred before the sacrifice when he was ordered by Zeus to create man.[xv] According to the myth, Zeus was unhappy implying that he saw in man a flaw in need of correction. Blinded by love for his own creation,

Prometheus failed to see this. Having no fear of Zeus, he refused and released humanity into the world. Prometheus' name means forethought, Donald Phillip Verene translates it as "he who knows in advance, who provides", this was the proper domain of his power.[xvi] His defiance was owing to his knowledge that just as the gods before, so too might Zeus fall.[xvii] Prometheus' *hybris* led him to mistake his power of forethought for fate, he was incapable of conceiving of a realm beyond his own.

The second transgression, the unequal division of the sacrifice at Sicyon, was even more of an affront. According to Hesiod, Zeus was aware of this transgression. Prometheus' cunning and power were no match for that of Zeus who stated "Son of Iapetos, distinguished of all gods, sir, how unjustly you divided the portions."[xviii] Zeus cunningly played to Prometheus' arrogance and conceit, while discretely reminding him of *Moira*, the regulating principle that governs all things in nature.[xix] Prometheus so consumed in proving his own power and deceiving Zeus, failed to realize this. For the dishonor Zeus did nothing, it was the domain of *Moira* (the law of the whole, the interconnectedness of all things) to set right the balance. For man's actions in this affair retribution must occur and did in the withholding of fire. When relating this story, Hesiod referred to it as the moment when gods and mortal men parted.[xx] The myth symbolizes the primordial moment of discontinuity between the divine and the human, the natural and the manmade.

The second transgression also reveals a quantitative distinction between the power of the Olympian Zeus, god of all things, and that of the Titan Prometheus, god of forethought. Both use cunning and trickery in their interplay back and forth. The Archaic Greek term used was *techne*. In its Homeric usage up to the classical period, including

the writings of both Plato and Aristotle, *techne* was conceived of in relationship to the concept of cunning, implying a form of subterfuge or deception. In Hesiod's version of the myth the Olympian's *techne* is far more discrete and in the end more powerful than that of the Titan. This subtle and often overlooked aspect of the myth implies that *techne* was not seen by the ancient Greeks as a fixed ability. Instead, it was viewed as qualitatively different in relationship to how and by whom it was used and with what ends in mind, a point that I shall return to later on.

Prometheus' third transgression took place after Zeus decided to withhold fire from man in retaliation for the deception of the sacrifice. In defiance, Prometheus stole fire and gave it to man. This transgression proved too much for Zeus who then ordered Hephaestos to chain Prometheus to the Caucasus, where he would have his liver eaten each day by an eagle, and then re-grown each night for ten thousand years. For our role in the third transgression humanity received the evils of Pandora's box.

In the play *Prometheus Bound,* Aeschylus revealed the true impact the theft of fire had upon the community of gods. In the play Hephaestos claims "For thou, a god not fearing wrath of gods, in thy transgression gav'st their power to men." and Strength asks "Why dost not hate a god to gods a foe, who gave thy choicest prize to mortal men?"[xxi] Fire was the choicest prize not only for its ability to create, but also for its symbolic power to restore. While Prometheus acknowledges stealing fire and giving it to man, he can only view the theft solely from the point of view of his cherished benefactor. He cannot conceive why Honors are not bestowed upon him for his philanthropy.

Aeschylus reveals the darker side of forethought, its obsessive desire for Honor and its ignorance of *Moira*. As soon as the Titan is left alone on the Caucasus he calls out to

the Chorus of Ocean Nymphs. "For I, poor I, through giving great gifts to mortal men, am prisoner made in these fast fetters; yea, in fennel stalk I snatched the hidden spring of stolen fire, which is to men a teacher of all arts, their chief resource. And now this penalty of that offense I pay, fast riveted in chains beneath the open firmament." [xxii] And again slightly later on in the play "And I, who in my pity thought of men more than myself, have not been worthy deemed to gain like favor, but all ruthlessly I thus am chained, foul shame this sight to Zeus."[xxiii] Prometheus learned nothing from the previous battles of the gods.[xxiv] It was his forethought that generated his arrogance and his undoing. He became a heroic, yet tragic figure, consumed, like Achilles[xxv], in a desire for honor that repeatedly forced him to transgress all divine laws[xxvi], and the laws of community. And like Achilles, he was forced to stand- alone. Prometheus must make himself anew, such was the advice of the Titan Okeanos to him "I see, Prometheus, and I wish to give thee my best advice, all subtle though thou be. Know thou thyself, and fit thy soul to moods to thee full new."[xxvii]

The power of Prometheus' forethought was knowledge of the future conceived as progress this was its limit. It did not possess its opposite hindsight, the knowledge of the past. His actions were not conditioned by lessons learned, only futures seen. This was made all too obvious in Greek mythology. Prometheus has a twin Epimetheus, whose name means hindsight. The two stumbled through their existence for lack of ability to combine their respective powers.

The theft of fire had an equally impressive impact on the community of man. Prometheus' gift was the ability to recreate the world. The gift of titanian *techne* enabled humanity to evolve from beast to man, and to challenge nature and the gods.[xxviii] But there

was a hidden gift within the trilogy, one whose impact on the community of man was equally as great. The imperfection that Zeus perceived in man, was the replication of the Titan flaws of arrogance and conceit. These Promethean gifts lead to *Hybris*, a blindness of *Moira*. Verene reminds us that while forethought is related to the traditional concepts of *Providentia*, *Prudentia,* and *Phronesis,* what the ancient world saw as the basis of civil or practical wisdom, these virtues are precisely what the Titan Prometheus does not possess.[xxix] His power of *techne* lacks the sense of improvisation and intellectual agility learned from experience. It is the power of making, absent from the power of memory and wisdom.

The sacrificial act of division and joining stood as a reenactment of origins, the moment of discontinuity between the divine and the human, the natural and the manmade. It was within the discontinuity of tectonic genesis, in the cunning and deception of Titanic *techne,* that the *tekton* was born. The gift of Forethought was both noble and vile, and must be controlled, bound by a force and strength other and greater than itself, a lesson that too often goes unlearned. And so we too must heed the advice of the Titan Okeanos, 'know thou thyself'. Like Prometheus the *tekton* must seek restitution and re-create himself full new. How does the *tekton* achieve restitution: tectonic continuity? As the Promethean trilogy implied, the answer lies in re-creating the Titan's *techne* through the recognition of *Moira.* He must re-learn *techne* in its Olympian form governed by *phronesis* or practical knowledge.

> "Sing, dear- voiced Muse, of Hephaestos famed for inventions. With bright-eyed Athena he taught men glorious crafts throughout the world, -- men who before used to dwell in caves in the mountains like wild beasts. But now that they have learned crafts through Hephaestos the famed worker, easily they live a peaceful life in their own houses the whole year round."
>
> *Homeric Hymn*

The Wisdom of Hephaestos: The Shield of Achilles

The Promethean myths introduce a central thematic of tectonic culture; what I will refer to as the dialectic of *techne* and *phronesis*. To understand how Greek culture understood the necessary relationship between these two forms of knowledge we have to turn to the myths of the Hephaestos, the provider of Olympian *techne*.[xxx] It was in him that the two important symbolic images, Fire and the Double Axe, were united. The god of fire who brandishes the ceremonial *Pelekys*, he was the archetypal image of the *tekton*. By examining the myths surrounding him we can begin to excavate the foundations of tectonics and the framework of tectonic culture.

In the *Iliad*, Homer describes one of Hephaestos' greatest works, the Shield of Achilles.[xxxi] Often considered the symbol of him as artificer, it marries practical necessity with an unsurpassed stylized beauty. On it the architect of Olympus[xxxii], depicted the earth, the heavens with their constellations, and around the outer rim, the Ocean River; the barrier between life and death, the known and the unknown.

Wrought in intricate detail across the face are several pastoral scenes. A fallow field of rich plowland, its farmers offered cups of honeyed mellow wine. An estate with laborers reaping the ripe grain, amongst the people who are setting out the harvest feast

stands their king. Innocent children plucking grapes in a thriving vineyard, to the sounds of a young boy playing his lyre. A meadow deep in a shaded glen with shepherds tending their flocks. A dancing circle, "broad as the circle Daedalus once laid out on Knossos' spacious fields", filled with boys and girls. Along side this is a scene of ramping lions seizing a bull from the herd of longhorn cattle, and tearing it to shreds before a shepherd can save it.

Paired with these are the finely wrought images of two cities. In one a wedding feast takes place with song and dance. Two men quarrel in the street outside over a murdered kinsman. Their dispute is settled in a court of law by a judge. Circling the second city armies engaged in battle, the image detailed and bloody. A regiment in battle gear is about to lay siege to the citadel. Off in the fields two scouts slit the throats of innocent shepherds and steal their flocks.

Bernard Knox interpreted the shield as an image of human life. "These two poles of the human condition, war and peace, with their corresponding aspects of human nature, the destructive and creative, are implicit in every situation and statement of the poem, and they are put before us, in something approaching abstract form, on the shield of which the god Hephaestos has made for Achilles. Its emblem is an image of human life as a whole."[xxxiii] Homer's epic poem is about the battle within the human soul between destructive and creative powers, about unbridled passions and their consequences. Homer uses Troy, and its hero Hector, as the physical embodiment of civil order, law and honor in the service of the social good. His is a world governed by justice, what the Greeks referred to as *Dike*. The Acheans on the other hand are depicted as men who lack a full control of their emotions, who often resort to violence as a means of solving their

disputes. Theirs is a world dominated by *hybris*. Achilles embodies this trait to a flaw. His arrogance leads to uncontrollable rage that ends in the death of Hector and his refusal to allow burial of the body. Allegorically, his actions represent the destructive forces ability to thwart all that man has accomplished and holds dear. In the end Achilles, like Prometheus, must remake himself in a new image, one closer to that of Hector, in order to die with true honor.

The gift is ironic, the aesthetic device that gives material form to the theme of the poem- the necessity of man to control his passions for the greater good of humanity- is carried and at the same time used as protection by the very protagonist whose way of life is called into question. In the end Achilles must understand this irony. There can be no honor for men outside of community. The shield is an aesthetic commentary on the lot of mortal man. It was a fitting gift from Hephaestos, who knows first hand the creative and destructive possibilities of his own power.

Man's knowledge of *techne* has given him the power of life over death. It was through the technical crafts that man learned to plow the fields, harvest the grain, to drink of the wine of the thriving vineyard, to raise flocks and herds of cattle. It was because of this that man could celebrate feasts and dance, rejoice and live a civilized life free from the fear of death at the hands of nature. But *techne* also brought man knowledge of war and destruction. The images the god gave us are those of man's barbarities, of slaughter and ruin. The knowledge of *techne* brought with it the power to reduce man to ‘a ramping lion’, to a beast.

The imbalance of the images gives us, not only a framework within which to understand the rage of Achilles and the brutal death of Hector, but also a vision of the

whole, this was the true gift of the Olympian artificer, the revelation of man's lot in the world. The Shield, as an image, presented for the first time the human civil cosmos as a spectacle, a *theoria*. It gave birth to, or let appear, the order of human existence. It was what both Homer and Hesiod would define as a *thauma idesthai,* a wonder to behold. One that inspires those who gaze upon it to philosophize about what it means to be in the world.[xxxiv] Hephaestos' gift was not the physical armor, but the ability to wonder.[xxxv] It was a vision of civility, created when *techne* is bound by practical knowledge, it was the gift of *phronesis*. The myths of Hephaestos reveal the Homeric concern with the unrestricted application of *techne*. Such power was seen as having a direct impact on the nature of the civil world and on humanity as a whole. This concern proved to be a central tenet of Greek culture.

> "But between us and Goodness the gods have placed the sweat of our brows: long and steep is the path that leads to her, and it is rough at the first; but when a man has reached the top, then is she easy to reach, though before that she was hard."
>
> Hesiod
> *Erga*

Hesiod's Erga: The Twin Pillars of Justice and Work

The gift of Hephaestos, presented as a poetic image on the Shield of Achilles, found its explanation in Hesiod's *Erga.*[xxxvi] Stating his intention to sing of the divine justice of Zeus and the Olympians, Hesiod advocates a new morality, one based according to Versenyi, on 'the twin pillars of justice and work'.[xxxvii]

The *Erga* began with a discourse on strife that was not one but two goddesses. One led men toward evil, war and battle, while the other encouraged him to work. "She stirs

up even the shiftless to toil; for a man grows eager to work when he considers his neighbor, a rich man who hastens to plough and plant and put his house in good order; and neighbor vies with neighbor as he hurries after wealth. This strife is wholesome for men."[xxxviii] Hesiod relates this discourse back to the original sacrifice and the third transgression of Prometheus. It is for the theft of fire that "the gods keep hidden from man the means of life", and its price "an evil thing in which they may all be glad of heart while they embrace their own destruction."[xxxix]

Once again we are presented with two visions of man's lot in the world,[xl] one that fosters *Hybris* and one that follows *Dike*. The rule of *Hybris* leads to a world blind to *Moira*, where men want more than their fair share. They sack each other's cities, murder, and steal. This is a world were might makes right and corruption is the rule of government. This was the way of the Titans, of the Acheans of the *Iliad* and the battle sieged city on the Shield of Achilles.

Opposed to this Hesiod gave us a vision of the world of *Dike*, in which the city was at peace. A world where "Neither famine nor disaster ever haunt men who do true justice; but lightheartedly they tend the fields which are all their care. The earth bears them victual in plenty . . . They flourish continually with good things, and do not travel on ships, for the grain -giving earth bears them fruit."[xli] This was the same image as the pastoral scenes on Achilles' Shield that show men living a bounteous life off the land. In the world ordered by *Dike* disputes were settled by courts of law, where men "give straight judgments to strangers and to the men of the land, and go not aside from what is just, their city flourishes, and the people prosper in it." Disputes were settled, like the city of peace on Achilles' Shield, with justice.

Hesiod claimed that the allotment or portion given to man, his *Moira*, was justice. "For the son of Kronos has ordained this law for men, that fishes and beasts and winged fowls should devour one another, for right [justice] is not in them; but to mankind he gave right [justice] which proves far the best."[xlii] Versenyi interpreted this as an opposition between the beastial and the divine natures of man. "Bia, violence, is the opposite of Dike, and man, having been given justice as his share, debases himself if he resorts to violence, the law of the beasts. What might be right for animals is brutish in man, for god gave man justice."[xliii]

Hesiod's message was that of the Shield of Achilles. The application of *techne* may be used in the service of evil or good. Man's only means of overcoming the evil of his bestial nature, the retribution for the theft of fire, was through an act of restitution. That restitution was the conscious recognition of justice achieved through productive work. Paying honors to justice provides man's restitution to Zeus. Hephaestos' gift, presented in the form of the Shield of Achilles, was the gift of Olympian *techne*. Guided by practical knowledge, it allowed for restitution and escape from the Tartarian landscape of Titan *techne* with its reign of *Hybris.*

The Birth of Athena: Construing Civil Constructions

The myths of Prometheus, the shield of Hesphaestos, the shield of Achilles and the *Erga* of Hesiod teach that in the world of man Titanian *techne* must be transformed into Olympian *techne* through the guidance of a higher knowledge. But what is the nature of that relationship? How is *techne* related to a higher knowledge in such a way that the

transformation from Titan to Olympian *techne* can occur? For that we must look at yet another Hephaestian myth.

In Greek mythology there was no stronger association than that between Hephaestos and Athena- in fact they shared many festivals, and rituals.[xliv] He ranked high among the male gods and she among the female. Both were fire gods and both were gods of craft credited with bringing civilization to the Athenians. Collectively they were the patron gods of the artisan class.[xlv]

The best known myth involving them is that of the birth of Athena. It was Hephaestus with his *pelekys* who cleaved open the head of Zeus allowing Athena to emerge 'fully armored' into the world. The symbolic gesture of cleaving and emergence and its verisimilitude to the concept of tectonic genesis should not go unnoticed. It was the action of the artificer god wielding his *pelekys* that brought wisdom, in the form of Athena, into the world.[xlvi] Hephaestus did not carry the sublime power of the image of Athena, her esoteric wisdom took predominance in Greek culture over his practical knowledge; yet the myth implies that it was through him that she comes forth. The myth establishes a clear relationship between *phronesis*, the practical knowledge of Hephaestus and *sophia*, the theoretical wisdom of Athena. That relationship is further elaborated in yet another Hephaestian myth.

Hephaestus was said to have fallen in love with Athena who resisted his advances. The goddess was said to be chaste, her esoteric wisdom like her personage must always remain pure. According to myth, Hephaestus attempted to mate with the goddess who ran from him, but not until after some of his seed landed upon her leg. She is said to have wiped it off with a wool cloth which she then threw upon the ground. From the spot

where it landed sprang Erichtonius (the Earth Born). Upon seeing the young infant Athena in compassion for the child takes him and raises him as her own. The Athenians claimed that Erichtonius became their first King.[xlvii] The significance of the myth lies in its message. The joining of practical wisdom, *phronesis,* with esoteric wisdom, *sophia* is an impossibility, but nevertheless it is out of such attempts that the civil world of man is born.

The importance of this message to Greek culture was evidenced in the construction of the urban fabric of Athens itself. Overlooking the Agora, the physical manifestation of civility in the built world of the polis, stands the Hephaestion, the temple to Hephaestus.[xlviii] Behind it lies the district of the *tektons,* before it the agora, the center of Athenian culture. Above it, disjunct but ever in view, high atop the Acropolis sits the temple to Athena, the Parthenon, next to that sits the Erecthion, the temple to Erichtonius. I will return to this theme later, as it is central within the dialectic of *techne* and *phronesis*.

Summation

What we find in the mythology is the cultural framework of tectonics. Man's ability to transform the world and remake it in human form stems from the creative activities of the *tekton*. Such actions, the application of *techne*, can be either a blessing or a curse. It is in tectonic actions, themselves a form of *praxis*, that the character of our world takes shape as either a world of *Hybris* or a world of *Dike*. Tectonic culture finds its foundation in the ethical application of *techne*, framed in the philosophical concept of *phronesis*, the sphere of knowledge that governs *praxis*, and its relationship to *sophia*.

The Tectonic myths reveal the centrality of ethics within tectonic culture as it related to the creative act. The *tekton* recreates the world, but such re-genesis must be governed by *Moira* and *Dike* as manifestations of the universal *logos*. The ethical responsibility for resisting *hybris* and establishing a just society lies therefore, first with the creative action of the *tekton* who must apply knowledge of *Moira* and *Dike* to *techne* and *praxis*. The consistent theme of tectonic mythology was the application of a higher wisdom, to practical knowledge in the form of the dialectic of *techne* and *phronesis*.

ENDNOTES

[iii]Karvouni. "Tectonics of the Human Body and Architectural Embodiments", printed in *Constructions of Tectonics for the Postindustrial World,; Proceedings of the 1996 ACSA European Conference*, p. 79.

[ii] In the Pelasgian Creation Myth the world is created by the creatix, Eurynome, who suddenly arises naked in *Chaos*, and begins to divide the sea from the sky. She then creates Ophion the serpent and mates with him. It is from their union that she produces the Universal Egg out of which all the things of the world emerge. The Olympian Creation myth begins with this division as well when Gaia suddenly emerges out of Chaos. The best known of the Greek creation myths is Hesiod's *Theogony*. In his version the world is created by the extraction from *Chaos* of the three primordial beings Gaia (the earth and primordial mother), Tartaros (the underworld), and Eros (the creative principle of Desire). See Hesiod. *Theogony*. lines 115-122. Symbolizing physical matter, darkness and death, and desire and longing respectively, it was through their union that the things of this world came into being.

Towards the Classical period the conception of a single great god who purposefully creates the universe began to take precedent but the creation was still a matter of division and reconstitution. This was the case in Plato's *Timeaus*, where it was the *demiourgos*, who divided the whole into the unchangeable (intangible, invisible, eternal) and the changeable (tangible, visible, temporal). See Plato, *Timeaus*, 28a-31a, see also 35b. 5-8. In Ovid's *Metamorphoses* it was the demiourgos suddenly appearing in *Chaos* that began to separate the heavens and earth. Ee Ovid, *Metamorphosis*, Creation lines 31-34.

The Judeao -Christian tradition also incorporated this conception of division and reconstitution. Genesis begins with a series of divisions; of Heaven and Earth, from the god head; of Light and Dark; of the firmament and the waters, etc. This conception of division and reconstitution is present in the conception of the Trinity, in which the One or Unity is God, two is the division of the unity into God and Nature, and the Trinity is the reunification of the One and the Two in Unity. This more than likely has its roots in Pythagorean thought in which the same concepts were present.

[iii]To the Ancient Greek mind, *Chaos* did not denote disorder or confusion. It was derived from the verb *chasko* meaning an opening, a yawn or a gape it signifies a void, darkness, or infinite unformed matter. For the ancients creation began with a cleaving of this unformed matter.

[iv] Hersey's purpose was to link the details of classical architecture to specific body parts and their ritual significance. But his outline of the ritual is important to this discussion. See George Hersey, *The Lost Meaning of Classical Architecture*, chap. 2, 'Architecture and Sacrifice', The MIT Press, Cambridge, Mass. 1988.

[v] He claims: "In this the rite as a sign of the sacred is in particular the preparation, the beginning, on the one hand, and the subsequent restitution on the other: sacralization and desacralization about a central act of killing attended with weapons, blood, fire, and a shrill cry." See Burkert, *Greek Religion*, trans. Raffan, Harvard University Press, Cambridge Mass, 1985, pg. 57.

[vi] Berkert notes that an inscription on a tablet found at Knossos from the Greek Period indicates a direct correlation of the names of gods in Minoan and Greek. He uses the correlation of the names Eleuthia and Eileithyia as evidence of a continuity of religion, at least in part, from Late Minoan to Archaic Greek. See Berkhert, *Greek Religion*, chapter I 3.6, pg. 43. While it is clear that Greek religion finds its roots in the earlier Bronze Age cults, one must be careful not to assume a one to one correlation of religions here, Starr notes there is significant transformation of these cults to warrant a distinction. See Starr, Chester, *The Origins of Greek Civilization 1100-650 B.C.*, pp. 171-183.

[vii]It is most often found in the cave sanctuaries but with the exception of the peak sanctuaries it is found almost everywhere. It is often set up between the horns of a sacrificial bull, or set vertical in a stone pedestal. On occasion it is set up above a libation table as well, attesting to its symbolic importance. Its use as a symbol is ancient. First found in stone form in the fourth millenium, at Arpachiya in Upper Mesopotamia. In the third millenium it finds its way to Elam and Sumer, as well as, Troy II. It finally arrives in Crete in Early Minoan times, earlier that the horn as a sacred image.

[viii] It was perhaps the most prolific symbol in the Minoan -Mycaenean cults. Its iconographic use was great it has been found in painting, on seals, in vase painting, on jewelry, and sarcophagi.

[ix]Berkert, *Greek Religion*, pg. 38.

[x] See reference above to Muller, *Handbuch der Archaologie der Kunst.*

[xi]Both it and fire are constant reminders of the importance of the craft of the smith in Bronze Age culture Again it was the smith who was responsible for the creation of the iron weapons so essential to winning the Persian and Peleponesian wars.

[xii]The location at Sicyon is according to Homer, Hesiod in the *Theogony* refers to Mekone, whereas Aeschylus' famous play *Promethius Bound* has it set in Skythia.
[xiii]According Homer Prometheus succeeds in initially tricking Zeus, in Hesiod's version Zeus' choice is intentional, Prometheus has in fact not tricked the great god of all things.
[xiv] Prometheus is of the order of Titans, the gods before the Olympians of the Zeus world. Hesiod attributes the characteristics of *hybristes* and *atasthalie* to them. According to Kerenyi, these terms designate 'unlimited insolence' and 'boundless pride'. See Kerenyi, *Prometheus Archtypal Image of Human Existence*, pp. 23- 30. When describing individual Titans Hesiod, in the *Theogony*, is likely to use terms such as wickedness (209), or arrogance, recklessness and excessive pride (514- 516). Their reign is dominated by these personality traits. The last of the oedipal conflicts that dominate this period . the Titanomachia, will leave Zeus and the Olympians rulers of the world. Those Titans who fought against them will be consigned to Tataros, the subterranean underworld.
[xv]The myths are confused on this issue some accounts claim it was Prometheus who made man, others Hephaestos. It is probable that as his assistant Prometheus assisted Hephaestos in the actual creation of man. This might be part of the claim that he made man.
[xvi]Donald Phillip Verene, *Philosophy and the Return of Self-Knowledge*, Yale University Press, New Haven & London. Verene's Introduction recounts the history of interpretation of this myth in depth. He interprets Prometheus as a metaphor for the Cartesian system of knowledge and modern science.
[xvii]The profacy that Prometheus knows is that one of Zeus' consorts will produce a son whose power is greater than the fathers. Scholars claim that this son is likely the Olympian god Hephaestos, whose cunning and power appear to out shine all others. Hephaestos is either the son of Zeus and Hera or a pananthenaic offspring of Hera alone, the myths are confused on this. They too are rather silent on the conflicts, which exist between the two. But Prometheus may or may not have the full prophecy correct, it may not be the son but the power of the son, which out does the father.
[xviii]Hesiod, *Theogony*, 543-544.
[xix] In the Archaic Greek myths of Homer and Hesiod the realms of human and divine are subject to a third force, greater in fact then both; that of Fate. Often identified by several names; *moira, aisa, moros, pepromene, daimon or nemisis*, they all share a common meaning that of allotment, portion or share. According to Versenyi *Moira*, as Fate is commonly referred to, "contains an idea of an as-yet-unarticulated, regulative principle governing all things. It stands for the way of things, the order inherent in all, the law, persistence, and necessity of the whole of that growth and flow which the later Greeks called *physis*." See Versenyi, Laszlo, *Man's Measure, a Study of the Greek Image of Man from Homer to Sophocles*, pg. 26. To go against moira is to go against nature. In mythic thought moira, is obeyed by the tributes and honors paid to those who deserve them. The gods are honored because it is their right as gods. The first transgression is one of moira. Zeus' prerogative is to approve all of the gods creations, this is his allotment, to do so is to honor moira. In his refusal to submit man for approval to Zeus, and in withholding the finest, Phainon, Prometheus' has refused to show honor to Zeus. It is a transgression not only against Zeus' prerogative but, and more seriously, one against moira. His first transgression reveals a fatal character flaw, one that will cost both him and man.
[xx]Hesiod, *Theogony*, par. 535. It is the moment of man's fall, when he is cast out of the company of the gods. Greek religion refers to the time prior to this moment as the golden age. It bears a strong relationship to the biblical story of the fall of Adam and Eve.
[xxi]Aeschylus, *Prometheus Bound*, trans in *Nine Greek Dramas*, edit. Charles W. Eliot, LL.D. New York, P.F. Collier & Son Corporation, 1961, pg. 167. Aeschylus wrote *Prometheus Bound* as part of a trilogy. Of the first part we have no knowledge most scholars believe it would have dealt with the early relationship between Zeus and Prometheus. The last Play Prometheus Unbound exists only in small fragments such that a full reconstruction is not possible. Many scholars believe that it dealt with the reconciliation of Zeus and Prometheus and his eventual release by Herackles. The loss of the latter play is unfortunate because in would have given insight as to how the Greek mind resolved the problem of human *techne* in the face of the divine.
[xxii]Ibid., pg. 170.
[xxiii]Ibid., pg. 175.
[xxiv] The reference here is to the Titanomachia in which the Titans were overthrown by the Olympians, and imprisoned in Tartaros. According to Greek religion it was this battle that resulted in the reign of *Dike* or justice in the world.

[xxv]In the Iliad Achilles chooses a short life full of honor over a long life with no honor. Because of this decision he no longer fears death. This lack of fear endows him with a form of courage, which is heroic. In his quest for fame and honor on the battlefield Achilles transgresses all the laws of humanity. His unrestrained passion is bestial. What he losses is his sense of pity and concern for others. Eventually he is trapped and alone in his own world as he further isolates himself from the community of men. His image, of the courageous warrior, is balanced by that of Hector whose concern is always for the welfare of the city and its people. The moral lesson is that it is the fear of death, which unites individuals into a civilized society. This is achieved through an awareness of *phronesis*, or *prudentia*.

[xxvi]Several interpretations see the myth of Prometheus as a story of rebellion against power and the old social structure. It is clear that one of the story lines is certainly that of power relations between the two gods. To begin to relate the myth solely as a story of power though is to tie it too closely to political and social unrest of the Late Archaic or Early Classical age. The myth historically deals more with the Early Greek concern for overcoming the forces of nature, which they saw as life threatening. It is thus more about power relations between men and gods than political or social power struggles. Another common interpretation, and one that I shall refer to is to view the conflict as Oedipal. This interpretation is I feel a stronger one in that it sets up a framework for understanding the role of techne in Greek thought.

[xxvii]Aeschylus, *Prometheus Bound*, trans in *Nine Greek Dramas*, edit. Charles W. Eliot, LL.D. New York, P.F. Collier & Son Corporation, 1961, pg. 177.

[xxviii]One should also remember that to the Greek mind wars were the result of conflicts between the gods and goddesses, who used men as pawns in their games. During the Persian and Peleponesian wars the technical ability of the Athenians in the production of instruments of war played a significant and decisive role.

Techne, as the power of Hephaestos, allowed the Athenians to take charge of their own destiny. This theme is even played out mythically. When Hephaestos' Golden throne traps Hera, it is Ares, god of war who decries that he will save her by bring Hephaestos back to Olympus by force. He is rebuffed by Hephaestos' fire brands and Ares must return to Olympus in shame. Techne therefore, is a power strong enough to overcome the forces of war.

[xxix] Donald Phillip Verene, *Philosophy and the Return of Self-Knowledge*, Yale University Press, New Haven & London, pg. 8.

[xxx] Fire is the power of Hephaestos, the god of craft. Called the father of man, and the artisan of Olympus, he is the great Artificer. He is in fact, present in other cultures, as Vulcan in the Roman pantheon, and significantly as Pthah in Egyptian religion. Pthah is the creator or universal life in action. Jamblicus called him the demiourgos, or artisan of the world. See Alexander S. Murray, *Who's Who in Mythology A Classic Guide to the Ancient World*, pp. 79- 83 & pg. 343. He is associated with Athena, Prometheus, Aphrodite, and the Aglaia, the youngest of the Three Graces. Hephaestos is recognized as culture god, his aspect as god of craft secondary. He is credited with producing all the accouterments of the gods including their armor, jewelry, clothing, and thrones, as well as, the prized possessions of the Heroes of Mythology. Like the mythical inventor genius Daedalus, Hephaestos is said to have created automatons like the three legged tables in his workshop, that could think and move independentlyHe was, it would seem, the Olympian architect as well. His cult is believed to have been ancient perhaps originating in Eturia. Fire was significant in the Iron and Bronze Ages, at that time the craft of the smith shows close involvement with political and religious organizations, it is perhaps during this time that his cult first emerged. The Greeks, particularly in Athens, placed small statuettes of him in their homes, often on the hearth. Athens, was one of the three centers of his cult. We know that it was an extremely important one, from the oldest stratum of Attic religion. His cult saw a major revival of sorts following the Classical Age owing in part no doubt to the significance of armor and weaponry during the Pelleponesian and Persian Wars. The patron of all smiths, artisans, mechanics, forgers, weavers, goldsmiths, jewelers, blacksmiths, masons and carpenters he is the patron god of the *tekton* and the 'tectonic' crafts.

[xxxi]Homer, *Iliad*, book 18, The Shield of Achilles.

[xxxii] Interestingly Hephaestos also built the palaces on Mount Olympus.

[xxxiii]Knox, Introduction, *Iliad*, Penguin Edition, 1990, pg. 62.

[xxxiv]Aristotle makes the claim that the origins of philosophy are in man's wonder about himself and the universe. *Metaphysics*, Book I, Chapter 2, 982b 11-22, 983a 15.

[xxxv]This is emphasized in its Hesiodic double *The Shield of Herakles*. In the text of the same name Hesiod describes the Shield of Herackles, another gift crafted by Hephaestos, containing two images one of a

prosperous city at peace another of a city at war. In both instances the work is given to the mortal sons of gods, Thetis, and Zeus respectively, who must learn how to live 'godlike' in the human realm. Unlike their divine parents they must learn to prosper in the face of suffering.

[xxxvi]The English translation of this classic is *Works and Days.* I refer to the original Greek title here because it reveals the true subject of Hesiod's text. *Erga* literally means productive work. It was erga, according to the Homeric Hymn, that Hephaestos taught man.

[xxxvii]Versenyi, *Man's Measure*, chapter 2 The *Erga*, pp. 43- 69.

[xxxviii]Hesiod, *Erga* (*Works and Days*), lines 20-24.

[xxxix]Ibid, lines 41-42 & 58-59. Most commentators rush to claim that it was Pandora, a woman, who was the evil thing. This reading is, besides being misoginistic more then likely incorrect. Pandora, whose name means all gifts, was not a gift to man but to Epimetheus, Prometheus' twin. It was not she that was the evil but those things the gods place in her jar. She was merely the vehicle through which strife and hardship entered the world. The version in the *Theogony* leads to a greater condemnation of women. He is quick to note that not all women are Pandora, only those who sit at home and do not work. It is lazyness that is the source of evil to men, for a man may have a good marriage where good and evil are balanced.

[xl] See lines 212- 247.

[xli]Ibid, lines 230-237.

[xlii]Ibid, lines 276-279.

[xliii]Versenyi, *Man's Measure*, pg. 49.

[xliv] Graves points out that the name Hephaestos may be hemero-phaistos, which means 'he who shines by day'. This would identify him with the sun. Athena is the goddess of the moon, or 'she who shines by night'. He argues that in pre-Hellenic religion the sun always yields precedence to the moon owing to the fact that the moons light is constant and does to grow dimmer as the year recedes. Robert Graves. *The Greek Myths*, complete edition. pg. 87

[xlv] In ancient Greece the collective artisan class was referred to as the *Banausoi.* This classification would have included all the artisans and craftsman including but not solely the *tektons*. Both Hephaestos and Athena therefore were the patron gods of the *tektons* but their patronage was extended to the non tectonic crafts as well.

[xlvi]It should be noted that Athena is not just the goddess of Wisdom but also of War, once again the connection between techne and the Persian and Peleponesian wars is enforced.

[xlvii]Depending on who tells the story he is either born solely by Hephaestos with no mother, or else Gaia, the earth goddess, is considered his mother. Again according to which source he is either the 1st king of Athens after Cycrops (the monster) or the grandfather of him. If he is considered the grandfather the name of the King is Erectheos. It is because of this myth that the Athenians consider themselves to be a direct descendant of Hephaestos. For this reason Athens was one of the centers of his worship. He was second only to Athena in festivals and importance. In the majority of the cities' festivities the god and goddess were worshipped together. Even in the celebrations of Athena, Hephaestos was always present.

[xlviii] In Athens all the crafts of which he was the patron were located together in a single precinct next to his temple, the Hephaestion, appropriately located off of the Agora. The location of the temple outside the Acropolis should not be seen as an indication of his lesser importance. In the history of Greek Architecture the temple is second in amount of detailing and number of refinements only to the Parthenon. Concerns over the destructive nature of fire prohibited the inclusion of the god's temples in sacred precincts. One might speculate that the link between the Greek fire festivals and the Peak sanctuaries of the Minoan-Mycenaean culture, also remotely located, may account for this as well.

Chapter 3: Studies in Tectonic Etymology

> "Therefore, because of the discovery of fire, there arose at the beginning, concourse among men, deliberation and a life in common . . . "
>
> Vitruvius
> *De architectura libri decem*, bk. II, chap. I.1

The creation myths and the myths of Prometheus and Hephaestos center on the themes of creation, *techne* and ethics. These themes have established linguistic parallels in the etymological associations of *tectonics* and *techne* that indicate that the socio-cultural framework present in the mythology was not limited to Greek religion, but had broader ramifications within the Greek world. It is their verisimilitude that provides insight into the origins and definition of what we might term a "tectonic culture".

Previous attempts to examine the etymological roots of tectonics have to date traced it to the Hellenistic period. The word *tekton* at that time referred to someone who worked in wood, predominantly a roof-worker.[i] This has in turn lead modern scholars to associate tectonics with wood or frame construction. This interpretation finds its modern roots in Gottfried Semper's *The Four Elements of Architecture* (1860-1863) where he used the term tectonics to refer to wood frame construction.[ii] This identification was again reinforced by Spiro Kostof in his book *The Architect.* In it he wrote: " . . .the Greek term architekton meant, at least initially, nothing more than master-carpenter; it was in this sense, rather than master-designer, that it was used to refer to shipwrights and temple builders alike."[iii] In his seminal work *Studies in Tectonic Culture,* Kenneth Frampton again reiterated this image; "Greek in origin, the term tectonic derives from the word *tekton,* signifying carpenter or builder. This in turn is related to Sanskrit *taksan,* referring

to the craft of carpentry and to the use of the axe. Remnants of a similar term can be found in Vedic poetry, where it again refers to carpentry."[iv]

But this trajectory proves problematic. The Hellenistic definition of *tekton*, as a roof carpenter, does not trace the word back far enough. The introduction of the compound word *architekton* predates the Hellenistic age. If we are searching for the origins of 'tectonic culture' as a means of understanding how it might have shaped the conceptualization of architecture as discourse then we must trace the etymology at least as far back as that period in which such etymological distinctions first occurred.

The exact literary origin of the word 'architecture' is unknown. What is known is that the prefix *arche* first appeared in the late 6th century B.C. writings of Anaximander, so it must be assumed that the compound word *archi-tekton* appeared later. The word architect was commonly used in historical and philosophical texts by the 5th century B.C. In the *Symposium*, the Greek philosopher Xenophon (460- 355BC.) referred to both carpenter and architect indicating that as early as the late 4th century B.C. they were viewed as distinct professions.[v] The etymological distinction between the *tekton* and *archi-tekton* therefore occurred sometime between 560 B.C. (when Anaximander was writing), and 450 B.C. when the term *architekton* entered the common lexicon.[vi] The etymological origins of architecture, we must infer, lie in the dawn of the classical age of Greek culture. This time frame implies that the conceptualization of the term *archi- tectonike* (the formal discourse of architecture and practice) was subject to the same influences that gave birth to classical epistemology and culture.[vii] Likewise, its tectonic roots lay in the Homeric culture that preceded it. Any attempt to define the origins of tectonic culture must therefore address the role of the *tekton* in Homeric culture, while the attempt to

understand its role in the conceptualization of architecture must address the relationship between that culture and the episteme of classical thought. More specifically any attempt to address the distinction between tectonics and architecture as a formal discourse must address the addition of the prefix *arche* to what was the then tradition of tectonics in the Homeric age.

As I intend to show, in its Homeric and Classic form it carried with it connotations that went far beyond the denotation of craft and construction associated with it today. If we trace the etymology to its Homeric usage we find that the *tekton* was not a carpenter but rather a classification of craftsmen united by the tools they used. It exposes linguistic associations with the concepts of *poesis* and *techne* that begin to direct the discourse toward a broader socio-cultural context. Such associations establish a linguistic foundation from which we can reconstruct the origins of 'tectonic culture' and the conceptualization of architecture as discourse.

The Tectonics of the Tekton

Tectonike, the act of building, or construction, finds its Indo- European root in two word- forms that predate it, *Tek* and *Dem*.[viii] It was the verb form of *Tek*, *tectaino*, that was the root of such words as *tekton*, *architekton* (architect), and *architektonike* (architecture). *Tectaino* referred to someone who, ax in hand, fashioned or transformed one thing into something new. In Ancient Greek the word for this tool, was *pelekys*.

Tekton (the noun form of *Tek*) was rarely found in composite form, and when it did it often indicated the material worked in but not the final product. Thus we find the words,

siderotekton (iron-tekton), *chrysotekton* (gold- tekton), *lithotekton* (stone- tekton), *xylontekton* (wood-tekton) etc.[ix] Distinctions were made between workers in different materials, but they were all referred to as *tektons*. The actual definition includes all those workers who work in hard materials with the use of the *Pelekys;* the inclusion of metal workers implies the use of fire as well. Literary examples of the time would seem to support the inclusion of horn, and bronze also.[x] The Homeric *tekton* was not a single craftsman, but rather a collection of craftsman, who were united by the tools they used and the action taken with them. This is an important point because it begins to dispel the notion that the *tekton* was a carpenter and that tectonics should be framed within the rubric of wooden or frame construction techniques.[xi] As I intend to show, such conceptualizations limit our ability to understand the true origins of tectonics and its relationship to architecture.

In its Homeric usage *Tectaino* referred to both the art of construction, and the art of devising. Thus the *tekton* was one who both devised in the mind and constructed in material form. Like the primordial Creator who devised the idea of the cosmos and then physically brought it into 'Being', the *tekton* was one who brought about being from non-being. Both thinking and making were embodied in this one act which was at once both noetic and performative (i.e. cognitive and corporeal respectively). It is this duality that is the key to understanding how tectonics was conceptualized in the ancient world.

How did Homeric Greece conceptualize the relationship between thinking and making? In Homer the concept of making was related to the emergence of the *kosmoi,* as orders or arrangements. The relationship was reciprocal in that it was the *kosmoi* that make for the 'appearing' of an object, and it was through the act of making that the

kosmoi, 'appear'. This conception was not seen as limited to the physical manifestation of the cosmos or to material objects. In Homer and his successors the *kosmoi* were also a right ordering, linked to political and moral order. Thus, the civil world in its making and remaking was also an 'appearing' of *kosmoi*. The term used for this 'appearing' of *kosmoi* was *techne*, which in its Homeric usage did not refer to production processes, but to the manifestation of order and arrangement necessary in any creative act.[xii]

While Homer used *tectaino* to refer to the devising of strategies, he used the term *techne* to refer to the cunning and wiles used in their application.[xiii] Hesiod too, used the term *techne* in this way, as did Sophocles.[xiv] The linguistic reciprocity of the term's *tectaino* and *techne* should be of no surprise given that the etymological root of both words was *tek*. The pre- philosophic usage of the word *techne* as a form of cunning or trickery of strategy implies a sense of improvisation and intellectual agility that in the ancient Greek world was seen as a divine gift that protected against *tuche* or chance. In a world without *techne* man was at the mercy of the forces of nature, thus it became a form of insurance, a protection, in the control of life over death. M. Detienne and J.-P Vernant have pointed out that this cunning intelligence falls under the rubric of *metis* the talent for winning against the odds, so much praised by the Greeks. They saw this as evidence of forethought and experience gained over the years "[that could be] applied to situations which are transient, shifting, disconcerting and ambiguous, situations which do not lend themselves to precise measurement, exact calculation or rigorous logic."[xv] Here *techne* has no performative presence; it is fully noetic, a form of adaptable cognition that is gained through experience. [xvi]

The term's *tectaino* and *techne* establish a relationship between thinking and making in the Homeric age. *Tectaino* was a cognitive process, informed by prior experience that generated adaptable strategies, known as *techne*. Together they constituted the ingenuity necessary in the creation of order whether it is civic, moral or productive. Their usage implies a cognitive feedback loop in which experience and reason conspire to generate orders, *kosmoi*, from which physical realities become manifest. Such a cognitive definition provides a conceptualization of tectonics as a bridge between the noetic and performative aspects of the *tektons* activity. The physical by- product of the cognitive process is given very little emphasis except as an experiential tool from which to refine the process. The point here lies in the fact that thinking and making are not conceptualized as independent processes, but rather as a continuum. A more accurate understanding might be that the *tekton* thinks in the processes of making, which itself serves as both source and goal of such thinking.

This carried with it a broader notion of the creative act, most specifically that of an artificer, who possesses a cunning intelligence that allows him to devise strategies for the creation of order in any given situation. It was this that eventually lead Aristophanes in the 5th century B.C. to associate the *tekton* with machination and the production of false things. By the early 6th century in the poetry of Sappho the *tekton* assumed the role of the poet, extending the use to the arts in general. For the Greeks, *poesis* meant to make, or to construct, in the sense of 'to fabricate', 'creation', or 'production'. *Poesis* comes from the root word *teucho* meaning 'to make', or 'to do'. In Plato's *Charmides* (163b) the term was used to denote 'to make' or 'produce the first of something', such as a material of manufacture or a work of art. In *Memorabila* (4.3.14), Xenophon used it to denote 'to

bring about', or 'causes of things', as did Isocrates in the *Epistulae* (7.54). In these examples *teucho* does not simply imply making or doing, but carries with it a reinforcement of the idea of genesis wherein the final product is something which has been brought into being for the first time. *Teucho* was also used in the sense of 'to do something to another' implying the sense of how one will act. This is how it was used by Herodotus' in *Historicus* (3.75) and latter by Isocrates in *Espistulae* (16.50) and Xenophon in *Memorabilia* (2.3.8). In addition Herodotus used the term to denote 'to make account of', and 'to communicate' (*Homeri Opera*, 7.156 & 6.4, 8.134). This explains Aristotle's *Nichomachean Ethics* (1140a 2) where *poesis* was also used to indicate an action.

In this way the idea of human interaction, the communication of causes and the teaching of Ethics, long thought of as the primary role of the poet, were brought into play with the activities of the *tekton*. The etymological relationship between *tectaino* and *poesis* serves to point to yet another key point to be noted, the reinforcement of an established relationship between creation, production and the communication of ethics.

A study of the etymology of the term '*tektonike'* indicates that the term as used in Homeric and Classical Greek carried with it connotations that went far beyond its denotation of craft and construction. The etymology reveals that the term *tekton* was used to refer to a group of craftsmen united by the tools they used, fire and the axe, and the basic action involved in their crafts, cutting and joining. It provides us with an image of the *tekton* as one that devises cunning strategies in the form of orders or arrangements, what the Greeks called *kosmoi*, that were then implemented as a right action, in the creation or fabrication of things.

In the end we are left with an image of the *tekton* and *tectonics* that focuses less on the actual craft or material and more on the cognitive ability and its ethical application in the creation of an ordered world or society that protected one from chance and nature. The study reveals a broader conceptualization of tectonics then previously held; one that was situated within a socio- cultural context that encompassed such concepts as creation, ontology, cognition and ethics.

The Tectonics of the Archi-tekton

It is often assumed that the '*arche'* of *architekton* refers to a chief or leader.[xvii] This is not necessarily an incorrect assumption, the meaning of the root word *arkh* in the English 'architect' means chief.[xviii] But this is limiting, perhaps even misleading, when attempting to understand the relationship of tectonics to architecture, particularly when trying to understand this relationship in its classical formulation. Failing to take the etymology back far enough it gives the impression that the architect was a master carpenter or master mason. An impression that is increasing seen as problematic given that the re-introduction of the term architect in the early Renaissance by writers like Leon Battista Alberti and Philibert DeLorme specifically sought to establish a distinction between the profession of architecture and the task of the master mason and master carpenter. Further study reveals a broader and more comprehensive meaning, one that embodied ontological, epistemological and ethical aspects necessary in defining what might be termed the origins of a "tectonic culture".

As noted above, *Tectaino,* the verb form of *tekton,* was rarely found in composite form. When it was, it often indicated the material worked in, but not the final product. This would mean that *archi-tekton,* referred to a *tekton* that worked in the material of the *arche*. But what is this material? In Pre-Socratic philosophy '*arche'* was generally used to refer to the origin of the phenomenal world, conceived of as the very structure of the physical cosmos. As the source of creation/ genesis and the ordering of the world it had an ontological presence. The first use of the word was attributed to Anaximander of Miletus (611 -547 B.C.), by Simplicius in his *Aristotle's Physica Commentaria*.[xix] The text contains a fragment, known as B1, of Anaximander's description of the creation of the world.[xx] Simplicius' surrounding text tells us about the Ancient world's understanding of Anaximander's cosmology, more importantly it tells us the original meaning of *arche*. According to Anaximander the *arche* was the "boundless nature, from which all the heavens arise and the *kosmoi* within them". [xxi] Reminiscent of *Chaos* in Hesiod's *Theogony,* the *arche* was the boundless other (*to aperion physis),* out of which order (*kosmoi*) emerged.[xxii] Indra Kagis McEwen has done an elaborate etymological study of this fragment.[xxiii] She states: "It is these 'orders', generated by a boundless source which, as is elsewhere attested, is all-encompassing and divine, that regulate and guide the ebb and flow of elements experienced as things coming to be and passing away. This other, boundless *physis* is the generation for the orders of *onta*."[xxiv] The *arche* served as the infinite source of genesis. It was from the orders (*kosmoi*) emerging from the *arche* that *onta*, things in themselves were generated. Generation and destruction, we are told, takes place, according to what needs be (*kata to chreon).*[xxv] This places the generation and destruction of things within the realm of both *chronos* (time), and *physis* (empirical

nature). There is an obvious implication that this 'realm' is one of historical time and human experience. The *kosmoi*, are the standards by which the judgment of orderliness or disorderliness, of things in and of themselves (*onta*), are measured. The *arche* was the source of such standards of judgement.

In classical philosophy the *arche* took on the guise of episteme. For Heraclitus it was the origin of the intelligibility of all things. In the writings of Plato and Aristotle it denoted 'first principle' or 'element' in philosophical argumentation. We find it used in Plato's *Republic* as original argument, signifying to begin with or at first. This was also true of Aristotle who in the *Metaphysics* used the term to denote the first principles of knowledge. In this sense *arche* were first thoughts, the origin of reason. Plato also associated it with the principle of practical human conduct. In the *Timeaus* it denoted a source of action (*praxis*). In the *Charmides*, he claimed that philosophy had its origins, or *arche*, in human nature, while at the same time being an inquiry into those very origins.

From an epistemological standpoint, the *arche* served as both the beginning and the end of wisdom, the substratum from which the order and harmony, of the physical world, of the world of human knowing, and of experience and *praxis*, emerged. Philosophically it was necessary to rationally understand and explain those origins so that the lessons learned might be successfully applied to lived experience.

If the *archi- tekton* is one who works in the material of the *arche*, then we are left with a conceptualization of the architect, not so much as a master mason or carpenter, but as one who theorizes on the first principles of knowledge concerning creation and judgement. He/she was one engaged in a rational pursuit of the generation of the *kosmoi* and their applications.[xxvi] Architecture was conceptualized as a rational discourse whose

subject was the ontology of creativity. One must assume that any such ontological discourse would also take into consideration human nature, cognition and conduct.

The Tectonics of the Archon

The root *arche* was also applied to individuals. This is perhaps the source of the aforementioned connotation with chief or leader. In ancient Greek cities, the title *Archon* was given to an individual who held the highest office and had wide judicial and executive powers, but they were not heads of state or chiefs as we might think of these positions today. The title carried with it greater epistemological weight. The *Archons* were founders of the civic order. They were seen as the source and genesis of the *kosmoi* that brought the civilized world into being in the first place. It was from them that the civic world, the world of human social experience emerged and they also served to maintain its being. Hence we find the leader of the cults of the Acropolis attained the title *Archon*, as did the judge in the law court of Athens. In Plato's *Euthyphro*, it was to the *Archon* that Euthyphro and Socrates presented their cases. The *Archon* served as the source and maintenance of order in the civil world. In the *Metaphysics,* Aristotle remarked: “the magistracies in cities and oligarchies and monarchies and tyrannies, are called *archai* and so are the arts, and of these especially the architectonic arts.”[xxvii] The emergence of the title *Archon* at this time implies the possibility that the actions of the *archi-tektons* were seen as playing a part in the establishment of social and civic order as well. The epistemological link with *poesis* and the notion of teaching ethics was here reinforced.

Summation

From the study of their respective etymologies we can begin to understand how tectonics and architecture were conceptualized, as well as what kind of framework may have existed for a "tectonic culture". The etymology indicates that tectonic culture in Homeric times focused on the *tekton* and his relationship to concepts such as creation, *poesis, techne* and ethics. These relationships were not limited to the performative actions of the *tekton,* but stressed the noetic component of his actions equally. By the Classical age a greater interest in rational explanation lead to the increased focus on explaining the cognitive aspects of the *tektons* actions. Understanding the human mind and its ability to create became the paradigm for understanding the world. Increasingly the creation of order in the world of human making was identified as possessing a verisimilitude with the creation of order in the cosmos. It was no coincidence that the conceptualization of architecture emerged during the same period as that of philosophy. Both were attempts to rationally define discourses of knowledge and provide an ordered explanation of the world, in both its natural and man- made guises.

The introduction of the prefix *arche* to *tekton* did not substantially alter the Homeric culture from which tectonics emerged but rather served only to reinforce the ontological, epistemological and ethical aspects already latent in its broader linguistic context that included the concepts of creation, *techne*, *poesis* and ethics. In its pre classical usage by Anaximander, *arche* as the origins of *kosmoi* reinforced the idea of creation inherent in both the noetic and performative aspects of *techne*. The prefix *arche* served only to strengthen the ontological component latent in *tectaino*, grounding it in cosmology and the idea of creation/genesis. Its later classical usage as first thoughts and the origin of

reason served to strengthen the epistemological aspects of *tectaino* and the *tekton* by calling for a rational explanation for the creation of order and arrangement. It was now necessary for the *tekton* to explore the intellectual process of creativity and making and to rationally explain the origins of such strategies.

The addition of the prefix *arche* to *tekton* indicates the seriousness with which the ancient Greeks viewed the actions of the *tektons* and their ramifications on the social well being of society. The etymology reveals that tectonics was originally less focused on the performative process of making and more on the noetic aspects of the craftsman and the ethical implication of their actions in establishing the civil order of the man-made environment.

ENDNOTES

[i] There is a notable exception to this tendency. Maria Karvouni has traced the term *tectonike* to its Homeric usage. Her work proves a more fruitful direction for further exploration and I have here endeavored to add to it. See Maria Karvouni. "Tectonics of the Human Body and Architectural Embodiments", printed in *Constructions of Tectonics for the Postindustrial World, Proceedings of the 1996 ACSA European Conference*.

[ii] Semper identified four primary functions in architecture. They were; 1) the hearth: the location of the sacred fire, 2) the wall: or enclosure designed to protect 3) the hearth; the roof; seen as a means of protection as well, but from rain as opposed to keeping out animals as such, and 4) the platform or terrace; which served as a means of demarcation of a given precinct. He then began to look at the four elements and related them to four technological means of production: ceramic production (the hearth), textile production (the wall), tectonic production (the frame or structure of the hut itself), and stereotonomy, or masonry construction (the terrace). Semper envisioned the origins of architecture as the combination of four basic art forms and a combination of their respective technologies. Thus with Semper the term tectonic, as a means of production, becomes linked with carpentry or wood construction techniques. Semper never made the claim that architecture was carpentry but rather that it was based upon two primordial forms of dwelling; the earthwork and the framework. It was through his transformational morphology that these then developed into a collection of crafts and their different technological means of production.

[iii]Kostof, Spiro. *The Architect*, Oxford University Press, New York, 1977, pp. 11-12. Interestingly only two sentences latter Kostof claims 'the central agent of the art of architecture was the stone-mason', he gives no explanation for this contradiction within his own text.

[iv] Frampton, *Studies in Tectonic Culture*, The MIT Press, Cambridge, Mass., p. 3.

[v] See Xenophon, *Symposium* 4.4, “What is there remarkable about that?’ asked Calais. ‘Do you not see plenty of carpenters, also and architects that build houses for many another person but cannot do it for themselves, but live in rented houses?” While both professions are associated with the construction of buildings it is clear that Xenophon does not view them as identical. The sentence would be redundant it that were the case.

[vi] J.J. Coulton remarks that Plato, Herodotus and Aristotle all used the term *architekton*. See J.J. Coulton *Ancient Greek Architects at Work Problems of Structure and Design*, Cornell University Press, Ithica NY, 1977.

[vii] This would indicate that the origin of ‘architecture’ is commensurate with that of the discourse of philosophy, a point that I will elaborate on later.

[viii] The verb form of *Dem* was *demo*, which served as the root of such words as *domos* (house), *doma* (room or terrace), *dome* (structure), *oikodome* (build a house or simply build), *oikodomike* (the art of building-architecture). *Demo*, was always formed in a composite structure inseparable from the final object made (as in words like *oikodomos* [house builder], *teikhodomos* [wall- builder], or *naodomos* [temple- builder]). For a more detailed explanation see Maria Karvouni. "Tectonics of the Human Body and Architectural Embodiments", printed in *Constructions of Tectonics for the Postindustrial World, Proceedings of the 1996 ACSA European Conference*, p. 79.

[ix] Interestingly, the first modern architectural use of the word tectonics occurs in 1830 in Karl Otfried Mullers *Handbuch der Archaologie der Kunst* (Handbook of the archeology of Art) where he defined *tektonische* as applying to a series of art forms including such objects as pottery, utensils and buildings. These he claimed form and develop “on the one hand due to their application and on the other due to their conformity to sentiments and notions of art.” Frampton points out that in the third edition Muller added remarks on ‘dry’ jointing making the claim: “I did not fail to notice that the ancient term tekton, in *specialized usage*, refers to people in construction or cabinet makers, not however, to clay and metal workers; therefore, at the same time, it takes into account the general meaning, which lies in the etymology of the word.” [my italics] It was the unfortunate miss- reading of *tektones-xylo*n (*tekton* working in wood) for *tekton* that should be seen as the source of the image of the *tekton* as carpenter. See Muller, *Ancient Art and its Remains, or a Manual of the Archeology of Art*, trans. J. Leitch, London, 1847. See also Frampton Studies in Tectonic Culture, pg. 4.

[x] Throughout the Homeric epics are several descriptions of structures fashioned by the *tekton*. They range from palaces on Mount Olympus, built by the God Hephaestos, to armor and tools. What is striking is the diversity of materials they are made from including wood, stone and bronze. In Book VI of the *Iliad*, Homer describes Priam's palace as "that magnificent structure built wide with porches and colonnades of

polished stone. And deep within its walls were fifty sleeping chambers masoned in smooth, lustrous ashlar, . . . The twelve sleeping chambers of Priam's daughters, masoned and roofed in lustrous ashlar, . . ." (289-296) In Book 22 we are told that the citadel of Troy has "rock- built ramparts" (232). In Book 18 we are given a description of the house of the god Hephaestos, which we are told is "indestructible, bright as stars, shining among the gods, built of bronze by the crippled Smith with his own hands." (432). In the *Odyssey* we find in Book 7 a description of Alcinous' bright palace, whose threshold is wrought in bronze. "That high-roofed palace was a realm of light, of brightness as of the sun or moon; the sides, in from the threshold to the halls, were lined by a resplendent frieze in azurite; within the robust house had doors of gold. . . .", in Book 10 "Within a forest glen, they found the home of Circe: it was built of polished stone and lay within a clearing." and again latter on "we found a sheltered house with smooth stone walls." Such descriptions of the work of the *Tekton* should serve to dismiss the idea that the *tekton* was a carpenter, held by both Frampton and Kostof.

[xi] Both Frampton and Kostof have asserted that the *tekton* was someone that worked in wood frame construction.

[xii] Heidegger made this point when he noted that to the ancient Greeks *techne* meant neither art nor handicraft but a 'letting appear'. Heidegger, *The Question of Technology*, trans. Hosftadter, Harper & Row Publishers, New York, 1971, pg. 159- 60. See also Indra Kagis McEwen, *Socrates' Ancestor an Essay on Architectural Beginnings*, The MIT Press, London, 1993, pg. 125. It was in the sense of a 'letting appear of order' that the Greeks were able to apply the term *techne* to politics.

[xiii] "Once there, He wrapped those chains around the bed -legs; overhead, down from the roof, he hung that same strong mesh, as fine as spiders' webs - made with such *craft and subtlety* [*techne*] that it could not be seen, not even by the gods themselves." Homer, *Odyssey*, bk. VIII, 327, 332.

[xiv] "Swiftly then the strength and noble limbs of the future lord grew; at the end of the year, tricked by the clever advice of Gaia, great crafty Kronos threw up his children, defeated by the *craft and force* [*techne*] of his own son." Hesiod, *Theogony*, lines 491- 496. The term techne is often translated as craft because of its associations with the arts and crafts, but as it was used in the works attributed to Homer and Hesiod it is better understood as crafty. The heroic master of this ability was of course Odysseus, who uses his craftiness and wiles to out wit the gods. In Sophocles' tragedy *Ajax*, *techne* is an ability of the god's: "I know that a god's contriving [*techne*] may do anything."

[xv] Dertaine & Vernant, *Cunning Intelligence in Greek Culture and Society*, trans. J. Lloyd Sussex, Harvester Press, 1974, originally published as *Les Ruses d'intelligence: la Metis des grecs*, Paris, 1974. pp. 3-4.

[xvi] This is the opposite the modern conception of *techne* which often emphasizes the productive processes of making at the expense of addressing its cognitive aspects.

[xvii] Kenneth Frampton in 'Rappel L'Order' referred to this, as did Coulton, Kostof, and Carpenter, among others. Coulton claimed that the early architects were individuals who oversaw the production of buildings and payments, acting more as business managers. *Archi* was here interpreted as chief or leader. See Coulton J.J., *Ancient Greek Architects at Work*, pg. 23. Kostof taking a different position than Coulton, claimed that the architect was a master- carpenter, archi here is interpreted as master of a craft. See Kostof, Spiro, *The Architect*, pg. 11-12. Carpenter translates *architekton* to mean literally builder- in -chief, thus he too defines *arche* as chief or leader, see Carpenter, *The Architects of the Parthenon*,

[xviii] The first use of the word architect in English was in 1563, in a reference to John Shute, as painter and Architect. It next appeared in Milton's *Paradise Lost* (I. 732) "the work some praise, and some the architect." In English, it comes from two root forms, *tekh*, which means to weave or to build, and *arkh*, which means to begin, or to take the lead. The root *arkh* produced two sets of words. The first related to beginnings i.e., archaic, archetype, archeology. In 1541 Paracelus used the term *archeus* to name the vital force that produced all animal and vegetable growth and behavior. The second referred to a chief or leader. This it must be assumed was the source of the idea that *arche* meant chief or master. As I will show the term *archon* in ancient Greek also referred to a civic leader but it carried greater epistemological and ontological weight.

[xix] Whilst Anaximander's work exists only in fragments, enough is there that scholars can attribute to him the first complete Greek cosmology. For this reason he is often considered the first philosopher. He also founded colonies and built fortresses. Perhaps most interesting, he also built a model of his conception of the universe, which included a celestial sphere, a map of the world and a *gnomon* (an hour indicator or sun-dial the precursor to the clock). He has the distinction of being the first to construct such a device.

[xx]Questions abound as to whether the fragment contains 17 or 56 original words. The Anaximander scholar Charles Kahn asserts the latter. Kahn, Charles H., *Anaximander and the Origins of Greek Cosmology*.
[xxi]Simplicius' entire quote is as follows "Anaximander . . . declared the boundless [to *apeiron*] to be the principle [arche] and element of existing things, having been the first to introduce this very term of 'principle' [arche]. He says that 'it is neither water nor any other of the so-called elements, but some different, boundless nature, from which all the heavens arise and the *kosmoi* within them; out of those things whence is the generation of existing things, into these again does their destruction take place, according to what needs must be; for they make amends and give reparation to one another for their offense, according to the ordinance of time," speaking of them thus in rather poetical terms. It is clear that having observed the change of the four elements into one another he did not think it fit to make any one of these the material substratum, but something else besides these." The opening line of the quote is in fact not attributed to Anaximander but rather to Simplicius. Anaximander's words begin with 'it is neither'. Simplicius' statement is an attempt to define the 'it' of Anaximander's words, what Simplicius refers to as 'the material substratum' in the last line above. We must assume that the original text used the term *arche,* and Simplicius was here attempting to define the term. See Simplicius. *Aristotle's Physica Commentaria*. trans. Kahn Charles H. in *Anaximander and the Origins of Greek Cosmography*. New York. 1960 p. 166. It is important to note that the term 'principle' used by Simplicus is a reflection of his Aristotelian background. In the *Metaphysics* (995b 8) Aristotle used *arche* to refer to first principles, specifically principles of knowledge. We must therefore, attribute this denotation to the classical period, with its Platonic /Aristotelian epistemology. Simplicius' opening statement also links *arche* to *apeiron,* the boundless. This too is an Aristotelian concept, which implies a hierarchical structure, replete with a teleological impulse. We must be careful not to attribute these latter philosophical concepts to this early text. While relevant to a later discussion of the architect and tectonics in the classical Greek and Roman world, they are not part of the early first usage of the term.
[xxii] In Miletus c. 560 BC. (the time of Anaximander's life), the words *physis* (nature, or the lived world) and *genesis* (generation, emergence, being born) were interchangeable. The *aperion physis* was the infinite genesis from which the orders of *onta* (things in and of themselves) come forth.
[xxiii]McEwen, Indra Kagis. *Socrates Ancestor*. pp. 9- 17.
[xxiv]Ibid. p. 14.
[xxv] Anaximander's phrase here was *Kata to chreon* it was a polysemic phrase that denoted need, necessity, custom and usage.
[xxvi] In fact Aristotle distinguished between the architect from the *tekton* precisely because he knew the causes of things see Aristotle, *Metaphysics*, bk. 1 chap. 1 981a31-32.
[xxvii] Aristotle, *Metaphysics*, bk. V, chap. 1 1013a 11-14. Aristotle is here concerned with the definition of 'Beginning' as a philosophical term. It is the search for origins of essence in the nature of things that is his primary interest and so he claims: 'hypothesis are the beginnings of demonstrations', 'all causes are beginnings' and 'the nature of a thing is a beginning'. The statement quoted is in reference to those whose will or action brings about movement or change and who are therefore the source or beginning of such movement or change. The implication is that political leadership is the origin or source of a body politic and the architectonic arts are the source or beginning building.

Chapter 4: Studies in Tectonic Philosophy

> "Socrates was the first to bring philosophy down from heaven; he took it to men's cities, and introduced it to their homes; he forced it to inquire about life, and morals, about good and evil."
>
> Cicero
> *Tusc*. 5, 4, 10

Sophrosyne and the Ethos of the Good

Okeanos' advice to 'Know thou thyself', was a call to resist the titanic forces of *hybris*. Such resistance depended upon knowledge of *moira*, the eternal balance of nature, its fundamental law. The Greek term for such knowledge was *sophrosyne*.[i] It was the very thing that Titans like Prometheus, and Acheans like Achilles, notoriously lacked. By examining this concept I intend to show how the dialectic of *phronesis* and *techne* formed not only the basis of tectonic culture in Homeric Greece, but classical philosophy and architecture, as well.

Heraclitus was the first philosopher to address knowledge of *moira* as *sophrosyne* when he claimed *sophrosyne* to be the wisdom that acted in accordance with nature.[ii] What he did was to identify it as knowledge of the universal *Logos* in essence making it identical with *theoria* or theoretical wisdom. In its purest sense, theory was limited to the accounts of things that are necessary and eternal. By its very definition theory exists outside the particularities of space and time, encompassing only mathematical entities, heavenly bodies and the divine. In this sense it could have no practical import, making it both non- utilitarian and non- humanistic.

It was this that led Socrates to claim that *sophrosyne* was the highest form of wisdom. While theory was unpractical, it did have a place in life. A devotion to the contemplative life of theory was seen as beneficial, transforming the character of the soul to conform to the ethical structure of the 'Good'.[iii] For Socrates, *sophrosyne* became synonymous with virtue whose end or function was an '*Ethos* of the Good.' [iv] Once identified with the ethics of the good and the betterment of the soul, the practical application of *sophrosyne* to lived experience became a central concern.

Following Socrates' belief that virtue was the orderly arrangement of the soul, Plato increasingly associated *sophrosyne* with the harmony and order necessary for the manifestation of the 'Good' and the unity of the whole.[v] According to him, *sophrosyne* allowed for good judgment and orderly rule, the two conditions necessary for a healthy state and the contemplative life. *Sophrosyne* became recognized as knowledge of right action associated with a moral or ethical outcome that formed a 'standard' of living, existing on a social, as opposed to personal, plane. As a guide for action (*praxis)* both individual and public, it was applicable in all areas of the civil world, from politics and medicine to carpentry and the arts.

The contemplation of *sophrosyne* was believed to be necessary for a life of full human flourishing, or *eudaimonia.* In its perfection Aristotle called this the *teleia eudaimonia.* The concern for lived experience, with the world of human affairs and politics, Aristotle saw as a secondary form of *eudaimonia,* that he called *deuteros eudaimonia*. It was this that he defined in his ethical writings as the subject of *phronesis*. Properly understood *phronesis* is the practical application of *sophrosyne* to lived experience, it is *sophrosyne* in *praxis*. The central tenet of the tectonic myths: re-genesis

and the resistance of *hybris* through the dialectic of *phronesis* and *techne*, now became the foundation of Greek Ethics.

> "Proportion is a correspondence among the measures of the members off an entire work; and the whole to a certain part selected as standard. From this result the principles of symmetry. Without symmetry and proportion there can be no principles in the design of any temple."
>
> Vitruvius
> *De architectura libri decem*, bk. III, chap. 1.1

Sophrosyne as Harmonic Ontology

In the *Gorgias,* Plato used the term *kosmoi* (order) to define the virtue of *sophrosyne* in the soul, making it a concern for the establishment of measure and harmony. [vi] Once identified with the principle of order and a harmony of parts, *sophrosyne* took on an ontological guise. In the creation myths the emergence of *kosmoi* out of the division of *chaos*, was accompanied by their reconstitution in the forms of *phusis*, the physical world of nature. Such reconstitution occurred according to the principles of *kosmoi* (order), *taxis* (arrangement), *symphonia* (agreement), *harmonia* (harmony) and *systasis* (compromise).

In the *Timaeus,* Plato concerned himself with two problems, the manner in which the cosmos was produced out of chaos and the relationship between the immortal (reason) and mortal (necessity) aspects of the soul. For Plato, *kosmoi* could be brought out of chaos only through a compromise between Reason and Necessity. It was the lack of proportion between them that led to evil and *hybris* in the world, hence the necessity of order and harmony. This allowed Plato to make the connection between the macrocosm

and the microcosm: just as *phusis* must be orderly and properly arranged so that *harmonia* presides, so too must the individual soul and the *polis*.[vii] The order of the universe and the virtuous order of the soul presupposed the notion that both were the creation of a pattern, an orderly arrangement of parts, constituting a right proportion or harmony. Both Beauty, the object of the soul's desire in the *Symposium,* and the 'Good', the goal of Reason in the *Republic,* were now understood as harmonic proportion.

Plato's originality lay in the conclusion that the underlying rule or law that was found in both nature and man was the harmonious arrangement of the *kosmoi,* and that this too was the harmony sought in the realm of the divine, manifested as the notion of divine justice or *Dike*.[viii] *Sophrosyne* and justice became allied to the principle of order found in the cosmos, identifying them as necessary components of any creative act.[ix] Plato transformed *sophrosyne* from an ethical and epistemological standard to an ontological concept, one that increasingly took on aesthetic connotations.

> " . . . we can have nothing but respect for those who, in constructing temples to the immortal gods, so ordered the parts that by means of proportion and symmetry the arrangement of both the separate parts and the whole should be harmonious."
>
> Vitruvius
> *De architectura libri decem*, bk. III, chap. II.9

Beauty and the Sophron Eros

The ontological concepts of *kosmoi* (order) *taxis* (arrangement), *symphonia* (agreement), *harmonia* (harmony) and *systasis* (compromise) collectively constituted a theory of right proportion or *symmetria*.[x] This implied a link between the *demiourgos'*

and the *tekton:* both used orderly arrangement to achieve *arete* (excellence) in the production of things. The inherent implication was that the *tekton* in his excellence manifests the universal *logos* in the world of human making. Creation, the soul and the work of the *tekton* were now interconnected since excellence in each was defined as a harmony of parts. [xi] The result was that tectonics proved to be rational and aimed at the good of the whole. And likewise the search for the Good presupposed both tectonics and a *tekton* (*technikos, demiourgos*).

Tectonics and Ethics were now linked in that both could be understood as practical applications of *sophrosyne,* one in making and the other in actions, meaning that both were discourses on *phronesis*. The subtlety of this is often lost in contemporary discussions of classical aesthetics. The idea that the work of the *technitai* imitated nature derives from the concept that it embodied and taught *sophrosyne.* This was a necessary first step in the establishment of a just and good society, which in turn must be present if Man is to live the full life of the *deuteros eudaimonia.* Tectonics was not a copy of nature, but the embodiment of *sophrosyne* in the creative activity of the *tekton*. This was the message of Plato's *Republic,* if the *tekton* only copies nature then he has no place in society. The imitation of the physical aspects of nature was not the *tekton's* role, the revelation of the higher truth of the universal *logos* was. Tectonics served to manifest *sophrosyne* and an *ethos* of the Good; this was what made the *tekton* a valuable member of society.[xii] Tectonics and its aspect of *arete* (excellence) now became a vital player in classical thought.

> "Knowledge is the child of practice and theory. Practice is the continuous and regular exercise of employment where manual work is done with any necessary material according to the design of a drawing. Theory, on the other hand, is the ability to demonstrate and explain the productions of dexterity on the principles of proportion."
>
> Vitruvius
> *De architectura libri decem*, bk. I, chap. 1.1

Does the craftsman who practices techne possess sophrosyne?

Plato's ontology had generated an aesthetic with an obvious correlation between creation and the actions of the *tekton.* In the *Republic,* he pointed out the real role of the *tekton* in society: the application of *sophrosyne* as a form of productive knowledge. In its excellence, the creative activity of the *tekton* should manifest *moira* in *poesis.* This raised a likely series of questions: 'Is the *tekton* conscious of such a role?' 'Was the *tekton* truly virtuous in his actions?' The *Republic* called for an answer to these questions as a justification for the *tekton* in society. In the *Charmides,* Plato posed the question outright when he asked: 'does the craftsman who practices *techne* possess *sophrosyne*?'[xiii] In essence he begged the question; 'Was the *tekton sophronein*?'

But what does it mean to be truly *sophronein*? According to Socrates, *sophrosyne* had three facets: the *sophron eros* (creative desire), *self- knowledge,* and *enkrateia/ antarkeia* (self- control or self- sufficiency and independence) each a form of episteme.[xiv] To be truly *sophronein* the *tekton* would have to possess all three.

The first: the *sophron eros:* was an awareness of the heavenly *eros,* the creative force that brought about order in the world. In the *Symposium,* Plato made a distinction

between heavenly and earthly *Eros.* When the Heavenly *Eros*, creative desire, prevails, the physical elements in the universe are brought into harmony, so that a *sophron krasis* (orderly mixture) results, with consequent fertility and health for mankind and animals. This was the form of *eros* that brought about the *kosmoi* found in the creation myths. It was the *sophron eros* that formed the basis of platonic ontology. The *sophron eros* was knowledge of *moira,* the universal *logos* applied to *poesis,* or making. To the contrary when Earthly *Eros,* destructive desire, prevailed the result was *hybris*.

There is an obvious correlation here between the creative and destructive forms of *techne,* in its Hephaestean and Promethean guises. The *sophron eros* was the desire to manifest the 'Good' through the creative activity of Olympian *techne.* This is accomplished through an awareness and application of the concepts of harmony. The *tekton's* establishment of a right order through the applications of proportion and symmetry is the demonstration of his awareness and application of the concepts of harmony. While the application of the theory of harmonic proportion by the *tekton* demonstrates an application of the *sophron eros,* it does not insure a full awareness of *sophrosyne*.

This was Socrates' argument in the *Charmides*. According to him, wisdom is twofold, true wisdom is knowledge of both the practical application and the theoretical justification for it. His claim was that the knowledge of the *technites* (the users of *techne*) did not possess knowledge of its limits or of how to properly apply it.[xv] If it could be demonstrated that the knowledge of the *technites* was both theoretical and practical then it could be said that they possessed true wisdom, in essence they could be said to be

sophronein. The *sophron eros* and the theory of harmonic proportion served to raise the question of virtue, but did not provide the assurance of a positive answer.

The second facet, *self- knowledge* was the awareness of ones limitations in knowledge and experience. Socrates claimed it was not enough to know this in ourselves but that we must also be able to identify it in others. *Self-knowledge* was knowledge of *moira,* the universal *logos* applied to oneself.

In the area of philosophy the fundamental problem was to move the more theoretical discourse on the universal *Logos,* toward the more practical. This was what Socrates was famous for; the insistence on a practical philosophy. But in the area of art and craft the problem was the reverse, to move the very practical activity of making toward the more theoretical. This required an epistemological framework that could locate the first principles (*arche*) and causes (*aitiai)* of *techne* so that it could be identified more properly as a *theoria*. This would not only provide knowledge of its limitations, but also provide a means by which to identify who possessed it.

The third aspect was *enkrateia*/ *antarkeia* (self- control/ self- mastery and self-sufficiency/ independence). *Antarkeia,* the concept of self- sufficiency/ independence, embodies a sense of cunning in any situation it comes incredibly close to the Homeric concept of *metis*. It was wisdom never at a loss, able to adjust itself to any given reality. In this sense it is highly experiential, based on memory, but not limited by it. Perhaps most importantly, it was a truth that was not fixed and eternal, but rather fluid in its practicality, one that welcomes correction in order to bring itself closer to realization. *Enkrateia*, self- control and self- mastery, holds a close relationship to notions of moderation, compromise and the mean as they were understood in relation to politics in

the Greek world. In this sense, still highly experiential, it was based upon standards of social acceptability or ethics. *Enkrateia/ antarkeia* were knowledge of *moira*, the universal *logos* applied to *praxis*, or action. [xvi]

The master of *techne* is determined by his or her ability to demonstrate a mastery of the material and technique in any situation. In this sense it is a form *sophrosyne* as *antarkeia*. But this only plays into Socrates argument that the knowledge of the *technites* did not possess knowledge of its limits or of how to properly apply it. To overcome this it would have to be proven that the *tekton* understood the limits of *techne* in practical situations and how to apply it within the boundaries of social acceptability. As knowledge applied to *praxis, techne* had to be made to conform to the aegis of *phronesis*.

Plato's dialogues generated the necessity of establishing a *theorum* on tectonics as a means to demonstrate *self- knowledge,* as well as a *practicum* as a means to demonstrate *enkrateia*/ *antarkeia* on the part of the *tekton.* This position was a logical outcome of the ontology. When Plato asserted that creation was a compromise between Reason and Necessity it correspondingly implied that art was neither wholly theoretical nor practical.[xvii] Art (*techne)* had to be understood as both *reason* and *necessity,* the implication was that art moves in two directions simultaneously, taking concrete material and moving it closer to the transcendental while making the transcendental more concrete.[xviii] The inherent discourse becomes one of universal and particular, freely moving between *theorum* and *practicum*. Mediating between the two, Art embodied their union. The dialogues restated the central point present in the etymology: that *techne* serves as a bridge between the noetic and performative actions of the *tekton*. But they did not provide the necessary answer as to how that was possible in order to do so *techne* had

to be assimilated as *episteme* to the form of both *theoria* and *phronesis*. [xix] That task fell to Aristotle.[xx]

> "We all know that Art is not Truth, Art is a lie that makes us realize Truth, at least the truth that is given us to understand."
>
> Pablo Picasso

The Structure of Aristotle's Epistemology

How did Aristotle assimilate *techne* to both *theoria* and *phronesis*? The answer can be found in his epistemology. Aristotle conceptualized knowledge as a virtual triangle: with *theoria* at its apex and practical wisdom as its base, its left and right corners occupied by *techne* and *phronesis*. It is their relationship that reveals how he transformed the tectonic myths into philosophy and solved the riddle of the *sophron- tekton*.

The apex of wisdom was theory and throughout his writings Aristotle sought to define it. In its purest sense, it served as a discourse on 'Being', encompassing only knowledge of what was permanent and fixed, and limited to the accounts of things that were necessary and eternal.[xxi] Theory was a logical ideal of demonstrability defined by its exactness. Aristotle referred to the structure of such knowledge as episteme, determined by whether one could give an accurate account of the thing by tracing it back to its originating principles, *arche*, or its originating causes, *aitiai*. True theoretical wisdom, was the ability to apprehend these and demonstrate how other knowledge led to them. [xxii]

The notion that those objects constituting theory were permanent and fixed meant that it did not provide a knowledge content exploitable in the arena of human affairs. This was

because man lives *kata to cheron*, in a world of time and change, where nothing was self-sustaining. Our world was one of continual 'Becoming' containing so much fluctuation and variety that an accurate account could not be given- only a rough outline. Understood as such, theory proved to be non- utilitarian and non- humanistic. Whilst not practical it had a place in life, its contemplation was seen as beneficial transforming the character of the soul, because at its core was the ethical structure of *sophrosyne* which served as its subject matter.[xxiii] Its contemplation therefore, led to *eudaimonia*: a life of full human flourishing.

The base of the epistemological triangle was Practical Wisdom.[xxiv] Its subject matter was concerned with human life as lived, with the world of human affairs. For Aristotle this was a secondary form of *eudaimonia* or *deuteros eudaimoina*. Based as it was upon contingent and variable being, or things that could be otherwise, it dealt with those things that were within our power to change. [xxv] While it did not yield knowledge in the form of theory, it did yield knowledge that allowed for the possibility of making out truth (*Aletheuein*). [xxvi] It served therefore, as an alternative form of episteme.

The two were incommensurable, but for Aristotle such incommensurability did not imply disjunction. According to him, *sophrosyne* [theory] was the preserver of *phronesis* [practical wisdom].[*xxvii*] Practical wisdom secured and sustained, if only briefly, the necessary conditions for *eudaimonia*, while it took its guidance in accordance with *theoria* as the governing principle of the cosmos.[xxviii] The two existed in conjunction, but the relationship was reciprocal. *Sophrosyne* was less theoretical in the abstract sense and more practical in its relationship to *episteme*, and the contemplative life could not be sustained without practical wisdom that served as its precondition.

Aristotle asserted that practical wisdom must have its own form and set upon the task of defining its structure as episteme. To do so he made a distinction between the productive realm (i.e. *poesis*) and the realm of action (i.e. *praxis*). *Sophrosyne* had been formulated up to that time in terms of *praxis* and only tangentially associated with *poesis.*[xxix] He defined *poesis* as productive knowledge that has to do with making and fabrication designed to bring about something whose end or *telos* lay outside itself. This was different from *praxis* which had to do with the right conduct of ones life, a form of activity which for all intensive purposes left behind no real 'product' save a more just soul and *polis*. Its end or *telos* therefore lay within the action itself.

According to Aristotle these two forms of knowledge were distinct because they were derived from two forms of activity "making and acting are different . . . so that the reasoned state of capacity to act [i.e. *phronesis*] is different from the reasoned state of capacity to make [i.e. *techne*]."[xxx] Or again "*phronesis* cannot be . . . *techne* . . . because action and making are different kinds of thing."[xxxi] *Techne* was a specialized knowledge of production that incorporated an ability to understand the principles (i.e. the *logoi*, *arche* and *aitiai*) of production, whereas *phronesis* was the knowledge necessary to live well (*eu zen*) in the world.[xxxii] In the writings of Socrates and Plato *phronesis* and *techne* were both subsumed under the concept of *sophrosyne*, but to identify them as forms of episteme, Aristotle's agenda, it was necessary to identify them as distinct discourses within the sphere of practical knowledge. What he did was to render the combined Socratic *sophrosyne,* as it related to its practical application, into two dialectical components. *Phronesis* became the ethical and experiential component of practical wisdom while *techne* became its theoretical component.

These concepts had to be defined and understood independently as forms of knowledge. But it would be a mistake to conceive of these two forms of knowledge as somehow distinct- Aristotle certainly did not. They were interrelated in that they are both forms of excellence (*arete*): one in actions and deeds, and the other in fabrications. The attainment of excellence was achieved in the practical realm through doing; merely theorizing about excellence would be absurd. Thus, according to Aristotle, "excellences we get first by exercising them, as also happens in the case of the *technai* as well. For the things we have to learn before we can do, we learn by doing, e.g. men become builders by building and lyre- players by playing the lyre; so too we become just by doing just acts, temperate by doing temperate acts, brave by doing brave acts."[xxxiii] The distinction between *techne* and *phronesis* was one of knowledge, but not of excellence.

The structure of Aristotle's epistemology established a relationship between *techne* and theory by classifying it as the theoretical component of practical wisdom and established a relationship between it and *phronesis* by identifying both as forms of excellence.

In and of itself this does not tell us how *techne* served as a bridge between the *noetic* and performative actions of the *tekton,* or how it served as both *theorum* and *practicum,* a necessary move if he was to prove the possibility of the *sophron- tekton*. It is how he defined *techne* and *phronesis* within this structure that provides the answer.

> "The arts are each composed of two things, the actual work and the theory of it. One of these, the doing of the work, is proper to men trained in the individual subject, while the other, the theory, is common to all scholars."
>
> Vitruvius
> *De architectura libri decem*, bk. I, chap. 1.15

Techne as a Form of Episteme: Aristotle's 'theoretical' Definition of Techne

How does Aristotle establish *techne* as a form of *theoria*? His official definition of *techne* is as a *hexis meta logou (alethous) poietike,* [xxxiv] translated as "state of capacity to make involving a true [theoretical] course of reasoning" by Ross and "a rational (and true) quality concerned with making." by Rackham. The epistemological emphasis was on the ability to render an objective account of the process for the purpose of instruction. *Techne* revealed an expertise, in understanding the universal premises that underlie the process of production, a point echoed elsewhere in his writings.[xxxv] What distinguished the knowledge of the *technitai* was their ability to move beyond mere experience and reach universal judgments regarding their craft. "We think that knowledge and understanding belong to *techne* . . . and we suppose *technitai* to be wiser than men of experience . . . because [they] know the why and the cause."[xxxvi] His desire to create a systematic account of knowledge meant that he did not seek a clear distinction between *techne* and *theoria*.

Aristotle's 'conception of *techne* here was constructed very much like that of Plato and placed a strong emphasis on *telos* and *eidos* which the *technitai* (the users of *techne*) must keep an eye on in order to make the object in question. "From *techne* proceed the things of which the form is in the soul."[xxxvii] What identified the objects of *techne* from

those of nature was the efficient causality of the *technitai*, the objects find their *arche* not within themselves, but in their maker.

Alongside this distinction: the efficient causality of the maker lay the fact that there were other factors at play in the generation of the thing. The material (*hule*) the maker used affected the durability, solidity and plasticity of the final object. The form (*eidos*) the final object took, given that it was different from the 'natural' form of the *hule,* provided the object with a unique characteristic. Finally the end (*telos*) of the object was realized in its *eidos* or its final use as it served its practical purpose. *Techne* was the ability to reasonably control all of the causal factors that come into play in the realization of, or generation of, an object. The mastery of *techne* required the ability to find the *telos* of the productive object that set the limits within which the individual who possessed *techne* would work. Since it was the end that would determine the form it was in the knowledge of the form, that *techne* resided. Thus, *techne* was never a useful thing in and of itself, but rather the *arche* that manipulated these aspects in such a way as to produce the *arete* (excellence) in question which was useful. *Techne* was the ability of the maker to successfully produce and reproduce this as an excellence.

Aristotle was attempting to prove that the *technitai* possess knowledge. He did this by making the claim that the objects of *techne* proceeded from the forms of the soul, a necessary move given the idea that *theoria* is transcendental. The emphasis was to provide a rational account of the *logos* of the process and to trace it back to its causes (*aitiai*).[xxxviii] To do so was necessary if *techne* was to be related to *theoria*. The result was that *techne* now focused on the noetic, as opposed to the performative ontology in the

process of making. As a form of knowledge *techne* became coincident with rationality, and served as a source for purposive change in the world.[xxxix]

Techne was a form of analysis that extrapolated universals from particulars. It dealt only with universalized theories of production, implying that once one descended to the particular in any *techne*, we were no longer securely within its proper governance. A point Aristotle himself asserted in the *Rhetoric*: "None of the *technai* theorizes about individual cases."[xl] By establishing that *techne* was the locating of first principals (*arche*) and causes (*aitiai*) Aristotle was able to establish *techne* as a form of episteme. In so doing he could also make the claim that the *technitai* did in fact possess knowledge of first principals and causes, thus proving that they possessed *sophrosyne* in the form of *self- knowledge*.

> "In all matters, but particularly in architecture, there are these two points: the thing signified, and that which gives it its significance. That which is signified is the subject of which we may be speaking; and that which gives significance is a demonstration on scientific principles."
>
> Vitruvius
> *De architectura libri decem*, bk. I, chap. 1.3

Can techne respond to the subtleties of making?

While advancing the intellectual status of the *technai*, the 'theoretical' definition of *techne* was not without its problems. Understood as a contemplative discourse it provided a description of the movement from experience to knowledge, but it failed to provide the movement from knowledge to experience. From the point of view of theoretical explanation the concern was over the relationship between the original idea and the final

product. From the point of view of productive knowledge the concern is over the relationship between reason and necessity, between the idea and the material as opposing forces that must be brought into compromise, through experience. The former places far too much emphasis on the *a priori* intentionality of the *technai* before they begin to wrestle with the material and not enough on what happens during the process itself. It represents a virtual occlusion of the process of 'Becoming' in favor of 'Being'.

It also assumes *techne* as an analytic form of knowledge that takes as its subject matter production and is therefore not identical with it. Production becomes the mindless manipulation of matter. As Dunne pointed out "We do not get any sense of a making that is itself intelligent, endowed with a know-how which is learned and actualized in the very process of making. The intelligibility of making seems to be fully constituted by a thought process which is independent of the process of making."[xli] All making is in truth guided by thinking, but one misses the point if one does not recognize that making also serves as a guide for further thought. While knowledge of the principles of making and excellence in making are two different things, they are not separable in any real sense, both are essential to the success of the *technai*. In this sense, *techne* does not imply an ability to be successful in achieving appropriate outcomes.

This hinges on *techne* as an analysis of means to ends. According to Aristotle: ". . . Having set the end they [*technai*] consider how and by what means it is to be attained . . ."[xlii] But Aristotle's distinction between ends and means is problematic because it focuses on a fixed end. The *technai* stand not at the end of 'Becoming', but at its beginning as the originary source. They are daily confronted with the development of a particular model that must address the concerns of a particular situation, possessing no fixed ends, because

their ends are fluid. As Dunne pointed out “Often we are not just trying to calculate the means to our end but are, rather, trying to work out what a worthwhile and feasible end in our situation is.”[xliii] To conceive of the problem as a simple calculation of efficiency of means to ends was to significantly miss the point and the nature of the task at hand.

In the actual design process *techne* proves helpful but limiting. This begs the question: “Can *techne* respond to the subtleties of making?” As a theoretical form of knowledge, its concern is with the movement toward knowledge, its goal: to identify the fixed universals of production. But the actual processes of *poesis* are mired in the particularities of both situation and material by definition any theoretical discourse must shun them.

But does Aristotle assume *techne* to be solely theoretical? The answer is no. His conception of *techne* contained an experiential aspect that too often slips through the cracks of his conceptual framework. When Aristotle asserted that *techne* was a *hexis* and an *arete* he suggested that it had a fixed orientation toward praxis in a determinate manner. “excellences [*arete*] we get by first exercising them, as also happens in the case of the *technai* as well. For the things we have to learn before we can do, we learn by doing, e.g. men become builders by building and lyre- players by playing the lyre.”[xliv] A few lines latter he goes on to state: “Again, it is from the same causes and by the same means that every excellence is both produced and destroyed, and similarly every techne; . . . men will be good or bad builders as a result of building well or badly. For if this were not so, there would have been no need of a teacher, but all men would have been born good or bad [in their own techne].”[xlv] Aristotle’s notion of *techne* in these passages was not theoretical but experiential. From this we can assert that while *techne* has to do with a

teachable body of principles in a discourse, it does not suggest a corpus of knowledge disengaged from *praxis.* Rather it implies a teaching through engagement within a process.

In a passage from the *Eudemian Ethics,* Aristotle made a distinction between these 'theoretical' and 'experiential' aspects of *techne*. "But the end of the productive sciences is different from science and knowledge . . . Now to know anything that is noble is itself noble; but regarding excellence, at least, not to know what it is but to know out of what it arises is most precious. For we do not wish to know what bravery is but to be brave, nor what justice is but to be just, just as we wish to be in health rather than to know what being in health is." Aristotle's assertion that 'knowing out of what it arises is most precious' is an indication on his part that the more important knowledge for the *technai* was an understanding of the material. Thus the 'theoretical' definition begins to recede. It was for this reason that Aristotle scorned those who had an aversion to practice, taking refuge in theoretical abstractions.

> "Architects who have aimed at acquiring manual skill without scholarship have never been able to reach a position of authority to correspond to their pains, while those who relied only upon theories and scholarship were obviously hunting the shadow, not the substance."
>
> Vitruvius
> *De architectura libri decem*, bk. I, chap. 1.2

The Janus face of the Tekton

How does Aristotle explain these two aspects of *techne*? In the *Physics* he claimed: "The *technai*, therefore, which govern the matter and have knowledge are two, namely, the techne which uses the product and the techne which directs the production of it. That is why using techne also is in a sense directive; but it differs in that it knows the form, whereas the techne which is directive as being concerned with production knows the matter. For the helmsman knows and prescribes what sort of form a helm should have, the other from what wood it should be made and by means of what operation."[xlvi] Thus Aristotle gives us two aspects of *techne:* one directive of the form, keeping its eye on the *eidos*, and the other directive of the matter, keeping its eye on the nature of the material to be used. Both address the process, but from different perspectives: one is theoretical and analytic, the other practical and generative. His distinction can be thought of in terms of *poesis* and *noesis*, production and deliberation, or application and possession. They are in essence reciprocal phrases: *poesis* being the execution of production, in reverse order, of the steps already worked out intentionally by the *technai* in the deliberative process of *noesis*.[xlvii] By maintaining the Homeric distinction between the *noetic* and performative aspects of *techne* Aristotle was able to provide the necessary theoretical movement toward knowledge without sacrificing the more practical movement towards experience.

What distinguishes *poesis* as the generative form of *techne*? When talking about the *technites* Aristotle describes the communication of process in such a way as to insinuate the necessity of someone present in the making. Dunne claims that this indicates a use of *logos* in such a way as it is articulated primarily as an intelligibility that exists only within the actual process of *poesis*.[xlviii] His point is that in *techne* the *logos* are a discourse: potentially between teacher and student or craftsman and material. This he claims is what is meant by Aristotle when he claims matter is in the *logos*. "The logos of techne as an intellectual virtue lies not so much in general formulae as in specific accounts that are always measured to particular acts of production; and it is the ability, reliably, to produce such accounts that is the *hexis meta logou* of techne."[xlix] Thus the *logos* of *techne* lies in the action itself. The *logos* is a discriminating resourcefulness informed by *praxis*.

Herein lies the distinction: *poesis* is a form of *praxis*, it is experiential. While we might talk about an agent and a product in the analysis of production, during the actual process of *poesis* there really is no distinction. The *technai* is not acting on a 'thing' precisely because the 'thing' in question cannot be said to exist prior to its 'Being' or during its state of 'Becoming'. The state of 'Becoming' is the activity of the agent as it is acted upon the material. Thus, there is prior material and agent, but during the action the agent is synonymous with the activity which in turn is synonymous with the material being acted upon.

Waterlow implies that we should be thinking of this interaction as the formation of an organic unity.[l] He argues that such a unity is symbiotic, because it is materially constituted by both agent and product.[li] The actual experience transforms not only the material but the agent, as new knowledge is gained from the experience. This serves to

establish a firm connection between the *technai* and the material (*hule*). While the act of *poesis* is going on, the *technai* and the material are actually a concrete unit; in terms of knowledge subject matter, the *technite* brings knowledge of the universal while the material brings knowledge of the particular. The generative process is not undertaken in abstraction within the mind independent of the material. The *technai* thinks "in" his material, *poesis* emerges out of an engagement with the particulars of the material itself.[lii] It is this symbiotic transformation that is the real subject matter of *poesis*.

In all productive acts of *poesis* there is both a product and the conscious action of an agent that exerted some level of inquiry, discovery and judgment. But what must be asserted further is that the product bears within itself that action, which brought it into being. Aristotle himself stated this several times. "The act of building is in the thing that is being built . . . the actuality is in the thing that is being made . . . in general the movement is in the thing that is being moved."[liii] And again "When what is buildable . . . is in fulfillment, it is being built, and that is the building."[liv] Or "The actuality of the buildable as buildable is the process of building."[lv] The product therefore embodies the action taken in its production.

There is an intimate link between the agent and the product due to the presence of that agent in the work: "This is what happens with technitai too; every man loves his own handiwork better than he would be loved by it if it came alive; . . . The cause of this is that existence is to all men a thing to be chosen and loved and that we exist by virtue of activity (i.e. by living and acting), and that the handiwork is, in a sense, the producer in activity; he loves his handiwork, therefore, because he loves existence. And this is rooted in the nature of things; for what he is in potentiality, his handiwork manifests in

activity."[lvi] The product is not solely an object, but rather the potentiality of the maker in actuality. Thus, a building is both the action of building and the builder in action. It becomes a dual actuality that of the potentiality of *techne* as a possession of the builder and the potentiality of the builder in *praxis*.

> ". . . he should not be arrogant but rather urban, fair-minded, loyal, and what is most important, without avarice; for no work can be truly done without good faith and clean hands. Let him not be greedy nor have his mind busied with acquiring gifts; but let him with seriousness guard his dignity by keeping a good name."
>
> Vitruvius
> *De architectura libri decem*, bk. I, chap. I.7

The Assimilation of the tekton to sophrosyne as enkrateia/ antarkeia

How does Aristotle establish a *practicum* for *techne* that demonstrates *sophrosyne* in the form of *enkrateia/ anrtarkeia* of the tekton? Aristotle's identification of *poesis* as a form of *praxis* provides an important link between *techne* and virtue. The excellences ascribed to the product exist because of the actions of the maker and as such they are subject to moral virtue. For Aristotle, they must issue from a just character. "The products of the *technai* have their goodness in themselves, so that it is enough that they should have a certain character, but if the acts that are in accordance with the excellences have themselves a certain character it does not follow that they are done justly or temperately. The agent also must be in a certain condition when he does them; in the first place he must have knowledge, secondly he must choose the acts, and choose them for their own sakes, and thirdly his action must proceed from a firm and unchangeable

character. These are not reckoned as conditions of the possession of the *technai*, except the bare knowledge; but as a condition of the possession of excellences, knowledge has little or no weight, while the other conditions count not for a little but for everything."[lvii] As an excellence (*arete*) in the inquiry, discovery and judgments made in its application, *techne* moves into the sphere of ethics. In excellence it is a form of virtuous action. According to Aristotle virtuous action did not aim at theoretical knowledge, "matters concerned with conduct and questions of what is good for us have no fixity . . . the account of particular cases is yet more lacking in exactness; for they do not fall under any *techne* or set of precepts but the agents themselves must in each case consider what is appropriate to the occasion, as happens also in the techne of medicine or of navigation."[lviii] Any valid form of *techne* must address this. *Techne* is therefore never ethically neutral, nor purely theoretical. It was not enough to possess knowledge of principles, one must possess the ability to apply them in virtuous action.

What Aristotle did by identifying *techne* as both a reasoned state and an excellence was to create a dialectical relationship between *techne* and *phronesis* within *poesis,* allowing for the assimilation of *phronesis* as an excellence in the taking of actions, to *techne*. The *phronesis* of any act of *poesis* was embodied within the product, becoming part of its *techne* as well. The means of elucidating the movement from knowledge toward experience, necessary to any definition of *techne,* came through the vehicle of *phronesis* as right action. Dunne calls this '*phronetic techne'*. It takes into account the experiential and in many ways returns to a pre- Aristotlean conception of *techne* that included the concept of *metis*. He states it is: "one whose responsiveness to the situation is not fully specifiable in advance and which is experiential, charged with perceptiveness,

and rooted in the sensory and emotional life. . . . Whereas the 'official' concept tends to assimilate these *technai* to a paradigm of fabrication, in the alternative concept fabrication itself is seen to be a process where involvement and fluidity are ineliminable."[lix] The dialectic was essential. It allowed Aristotle to identify *techne* as an episteme akin to theory, while maintaining its necessary pairing with ethics from the 'tectonic myths'. More importantly the dialectic provided the means of demonstrating how the *tekton* could possess the last form of *sophrosyne; enkrateia/ antarkeia*.

Summation

The central tenet of tectonic culture; the recognition of the universal *logos* and its application to *praxis* was summed up in the traditional concept of *sophrosyne*. With the classical philosophers the concept was given epistemological weight by identifying it as theoretical wisdom and relating it to the two realms of practical wisdom: *phronesis* (Ethics) and *techne* (technical ability) and applied respectively to *praxis* and *poesis*. In the classical writings of Aristotle *sophrosyne* proved to be knowledge of how to apply *theoria* as a *practicum,* identifying it as the necessary union of theory and practice, and a compulsory component in all areas of training. The theme of Hesiod's *Erga*, the manifestation of the 'Good' based on the twin pillars of work and justice, became the very epistemological foundation of Greek philosophy, learning and aesthetics.

In Classical Greece the growing need to find rational explanations for previously held beliefs generated an intense discourse on the relationship between the craftsman and reason. Central to both the Platonic Dialogues and the writings of Aristotle was the identification of *sophrosyne* in the actions of the *tekton*. As Plato had noted in the

Charmides, the *tekton* had to be *sophronien*. What Aristotle's approach did was to set up a dialectic between the more theoretical approach to *techne* and the more experiential approach to *phronesis*. Thus there are in essence two means of conceiving of the establishment of order in the world; that of theory and practice in their common contemporary meanings. One is abstract and concerns itself with universals and the other more concrete and concerned with particulars. There is an implication that ethics and making are not mutually exclusive and that some means of addressing making in the world are more adaptable, and broader in their ethical concerns. The mechanism of establishing the correct ethical means of making in the world comes through the mediation of the two through the union of theory and practice.

Aristotle's dialectic of *techne* and *phronesis* allowed him to provide the final closure necessary to answer Plato's question 'Does the *tekton* who possesses *techne* posses *sophrosyne*?' Plato had shown through the *sophron eros* and his theory of right proportion that the *tekton* manifested an awareness of the universal logos in creation. Aristotle in his identification of *techne* as a theoretical episteme had shown how the *tekton* possessed knowledge of the *archai* and *aitiai* and therefore possessed *sophrosyne* as self- knowledge and applied the universal logos to one's self. And in his often overlooked dialectic of *techne* and *phronesis* he was able to show how the *tekton* possessed *sophrosyne* as *enkrateia/ antarkeia*, and manifested an awareness of knowledge of good and evil and applied the universal logos in *praxis*.

The dialectic of *techne* and *phronesis* is subsumed under the concept of *poesis* in what Dunne had termed *phronetic techne* which now served as the loci of the juncture between the *noetic* and the performative aspects of poesis. This move made the concept

of *sophrosyne* synonymous with the right actions of the *tekton* who in his excellences manifests it in all three Socratic forms:

1) The *sophron eros,* through the use of orderly arrangement to achieve *arête* (excellences) in the production of things. This is achieved through the application of the ontological concepts of *kosmoi* (order) *taxis* (arrangement), *symphonia* (agreement), *harmonia* (harmony) and *systasis* (compromise) which collectively constituted a theory of right proportion or *symmetria*.[lx]

2) As *self- knowledge*, by demonstrating the ability to reasonably control all of the causal factors that come into play in the realization of, or generation of, an object and by providing a rational account of the *logos* of the process of production and tracing it back to its first principles (*arche*) and causes (*aitiai)* such that the excellences produced can be repeated.

3) As *enkrateia/ antarkeia,* through the demonstration of virtuous action (*praxis*) in both one's person and in the judgments made during the act of *poesis*. This is achieved first through the manifestation of a just and ethical character on the part of the *tekton* and secondly on the judicious acts taken during the process of production that ensures the appropriate application of *techne*. It is an experiential form of situational knowledge guided by past experience and current conditions that result in the manifestation and maintenance of excellences. The latter is achieved through '*phronetic- techne'* the determination of what is appropriate in any given situation.

The structure of Aristotle's epistemology served to transform the tectonic foundations of Homeric culture into an epistemological framework providing the possibility for the *tekton* to be *sophronein*.

ENDNOTES

[i] Throughout the Ancient Greek civilization *Sophrosyne* was a central and important concept but during the 4th and 5th centuries it grew in importance due to changes in the structure of society. For the Greeks, there existed a tension between the 'heroic' and 'spirited' personality and the 'moderate' and 'gentle' one. The rash impassioned actions of the hero, necessary to establish a society, suddenly became problematic in the city-state. The desire for wealth and power brought with it great wars and destruction. The growing conclusion was that excess leads to catastrophe. The *polis* by its very nature requires its inhabitants to exhibit restraint and prudence in their actions both civilly and with each other. *Sophrosyne* was the force that tamed the individual spirit of the hero, which if unchecked runs counter to the communal spirit necessary in the *polis*. The cultivation of *sophrosyne* became essential. In it's early archaic usage in Homer and Hesiod it indicated a 'prudence' or 'shrewdness in one's own interests' and was generally conceived of as reason unencumbered by emotions and passions. By the time of the tragic playwrights, it was increasingly understood as the self- knowledge necessary to resist unjust ambition and *hybris*. In the epic poetry of Homer *sophrosyne* was predominantly intellectual, a prudence in knowing oneself and avoiding unsuitable conduct. In the *Iliad* (21. 462- 64) we can get a sense of its Homeric usage when Apollo rejects a challenge by Poseidon because it is for the sake of mortals. Apollo is prudent because there is nothing for the God to gain in such a contest. But it also reveals the latter association of the term with the concept of self- knowledge. Apollo identifies the boundary between mortals and men. It is inappropriate for gods to fight over mortal causes but also the reverse is true: men should 'think mortal thoughts'. In the writings of Hesiod the concept of *sophrosyne* is present in his notion of *arete* or measured restraint and self- control. Hesiod used the phrase *Meden agan* or 'nothing in excess'. The Tragic playwrights brought the concept to the general consciousness while systematically expanding its realm. S*ophrosyne* was defined: by Aeschylus as a respect for the limitations imposed on man by the gods, by Sophocles as the power to recognize reality and act accordingly in self- knowledge and by Euripides as a control of the emotions and appetites, as a from of self- control.

[ii] In Fragment 116 Heraclitus stated: "It is possible for all men to know themselves and *sophronein*." In Fragment 112 he openly associated *sophrosyne* with wisdom (*sophia*) when he claimed: "*Sophronein* is the greatest *arete*, and wisdom consisting in speaking the truth and acting in accordance with nature, paying heed to it."

[iii] According to Dunne: "Through an engagement in theoretical pursuits, one opens oneself to the order and harmony of the cosmos, as well as to the transcendental serenity of the divine being. A mimesis is enacted whereby the character of the theorist comes to conform to the qualities of the theoretical objects. To become a theorist is to acquire a disposition which allows the right order of the cosmos and the simplicity of the deity to work their way into one's soul and to become its prototype." See Dunne, B*ack to the Rough Ground: Phronesis and Techne in Modern Philosophy and in Aristotle,* University of Notre Dame Press, Notre Dame, London, 1993, pp. 238- 239.

[iv] Socrates often referred to *sophrosyne* as knowledge of Good and Evil. In book III of the *Memorabilia*, Xenophon claimed that for Socrates there was no distinction between *sophrosyne* and *sophia* or wisdom; both consisted in knowing what was good and fair.

[v] While Plato's association of *sophrosyne* with harmony first appears in the Republic but it is present in much of the later dialogues as well.

[vi] In Plato's *Gorgias*, Socrates makes the comparison between the *sophrosyne* found in the soul and the *kosmos*(order) or *taxis* (arrangement) in the physical universe. The association of *sophrosyne* with order was also made by the Sophists and Xenophon, Plato's originality lay in the ontological status he later gave it.

[vii] In the *Republic* Plato claimed: "Than the lover of wisdom associating with the divine order will himself become orderly and divine in the measure permitted to man." (500D) Later on he claimed it to be the manifestation in humanity of the divine. " . . . in the course of their work they [citizens] would glance frequently in either direction, at justice, beauty, sobriety and the like as they are in the nature of things, and alternatively at that which they were trying to reproduce in mankind, . . . deriving their judgment from that likeness of humanity, which Homer too called, when appeared in men, the image and likeness of God." (501B)

[viii] It should be understood that *Dike* was the force that maintained the balance that was *moira*.

[ix] This point was made by Helen North. See North, *Sophrosyne, Self- Knowledge and Self- Restraint in Greek Literature,* Cornell University Press, Ithica New York, 1966. pg. 163.

[x] To these should also be added the concept of *oeconomia* (economy or mean) itself another reference to the earlier usage of *sophrosyne* as political economy, balance and compromise.
[xi] The astute reader will note the similarity of Plato's definition of *sophrosyne* as the harmony of the parts and Alberti's definition of beauty as that reasoned harmony of parts. It is my assertion that they are one and the same. The concept of *sophrosyne* found its way into architectural theory. Using the term *Decorum,* Cicero's Latin translation of *sophrosyne,* both Vitruvius and Alberti applied it as the primary principle of architectural beauty.
[xii] Aristotle also asserted this, noting the didactic value of art as a necessary component in the education of a just society.
[xiii] In the *Charmides* Socrates related *sophrosyne* to wisdom through a comparison of the *sophron* to the craftsman. The dialogue raised the central concerns of the tectonic myths, the relationship between *techne* (and its application), and virtue, and the relationship between *techne* (and its application) and episteme.
[xiv] Socrates use of the term *sophrosyne* are recorded in Plato's early dialogues. See Plato, *Charmides.* For an explanation of these aspects see North, *Sophrosyne Self- knowledge and Self- Restraint in Greek Literature,* Cornell University Press, Ithica New York, 1966, pg. 153.
[xv] See Plato's *Charmides*.
[xvi] Picking up on the third aspect of Socratic *sophrosyne,* knowledge of ones situation and the adjustment to reality, Xenophon in the *Cyropaedia* opposed *sophrosyne* to folly.
[xvii] Theoretical knowledge or episteme was the term given to the contemplation of *Sophia* the knowledge of the permanent fixed and eternal truths of the universe. It therefore encompasses only mathematical entities, heavenly bodies and the divine. Only those methodologies that were exact were proper methodologies for it. It was a logical ideal of demonstrability. One's knowledge could only be counted as episteme if it could be traced back to certain principles (*arche*) or causes (*aitiai*). In that sense it has no practical import and is in essence non- utilitarian, since its objects are above man it can therefore also be said to be non-humanistic as well. For a more in depth explanation of Sophia in Ancient Greek philosophy see Dunne, *Back to the Rough Ground: Phronesis and Techne in Modern Philosophy and in Aristotle,* University of Notre, Dame Press, Notre Dame, London, 1993, pp. 236- 239.
[xviii] This aspect of Plato's aesthetic was eventually be brought forward by Hegel in his aesthetics. Hegel would refer to art as the concrete universal the union of universal and particular. It is an essential component of Romantic theories of art and as I hope to show of tectonic theories of architecture.
[xix] Aristotle's terminology here becomes problematic. While he is consistent in his use of *theoria* he uses the term *phronesis* in two distinct ways. Aristotle will use the term *phronesis* to refer in the broadest sense to practical knowledge as opposed to *theoria.* When discussing the shape of practical knowledge which may be divided into poesis and praxis he will use *techne* to refer to *poesis* and *phronesis,*in a narrower sense, to refer to *praxis*. Thus *phronesis* is opposed to *theoria* as distinct forms of knowledge that deal with distinct subject matter while simulaneously *phronesis* is opposed to *techne* in the realm of practical knowledge. This establishes a dialectic between *techne* and *phronesis* within practical knowledge.
[xx] In the *Republic* Plato, argued that unless it could be shown that the craftsmen were of benefit to society they should be thrown out of the *polis*. Most scholars argue that Plato, himself a poet before turning to philosophy, was using irony to point to what he believed was the true role of art. While he asked for a justification or 'apologia', for the craftsmen in the *Republic* he himself did not provide it.
[xxi] According to Dunne, theory identified by its ". . . epistemological preeminence had an ontological correlate: an object- domain which was limited to necessity and eternal being, and which therefore encompassed only mathematical entities, the heavenly bodies and the divine being or first power." Thus only those methodologies which are exact sciences are proper methodologies for theory. Mathematics would be considered such an exact science. See Dunne, *Back to the rough Ground: 'Phronesis' and 'Techne' in Modern Philosophy and in Aristotle,* University of Notre Dame Press, Notre Dame, London, 1993 pg. 238
[xxii] Dunne notes of episteme that " One's knowledge of something qualified as episteme only if one could give an account of the thing which traced it back or tied it down to certain principles (*archai*) or causes (*aitai*)" Ibid., pg. 237- 238.
[xxiii] Dunne explains the usefulness of theory in the following manner. "Through an engagement in theoretical pursuits, one opens oneself to the order and harmony of the cosmos, as well as to the transcendental serenity of the divine being. A mimesis is enacted whereby the character of the theorist comes to conform to the qualities of theoretical objects. To become a theorist is to acquire a disposition,

which allows the right order of the cosmos and the simplicity of the deity to work their way into one's soul and to become its prototype. In this classic Greek position, human being's are not the measure of all things but find their own true measure through contemplation of an eternal order beyond themselves." see Dunne *Back to the Rough Ground: 'Phronesis and 'Techne' in Modern Philosophy and in Aristotle,* University of Notre Dame Press, Notre Dame, London, 1993. pp. 239.

[xxiv] Aristotle often used the term Phronesis when he was referring to practical wisdom. Thus in its broadest terms phronesis was identical with it but he also used it more specifically as the form of cognition that governed praxis. For the purpose of clarity I have here maintained the term practical wisdom.

[xxv] What Aristotle called *ta endechomeana allos echein.*

[xxvi] For a more detailed explanation on the relationship of theory to *phronesis* and their incommensurability see Dunne *Back to the Rough Ground: 'Phronesis and 'Techne' in Modern Philosophy and in Aristotle,* University of Notre Dame Press, Notre Dame, London, 1993. pp. 238- 239 & pp. 243- 244.

[xxvii] Terminology can become confused on this point. *Sophrosyne* was knowledge of the whole the law of *moira*. According to Socrates knowledge of good and evil. But such knowledge was for Socrates a form of *Sophia,* theoretical wisdom. Its application in the world of human experience becomes what we would call ethics. Aristotle referred to this, *sophrosyne* applied as practical knowledge, as *phronesis*. Technically it is *phronesis* that is the ethical standard, but this is a distinction not of kind but of application. For Aristotle *Sophrosyne* was the effortless, because habitual harmony of desire and reason. But the implied absolute of Plato's sophrosyne that brings the three parts of the soul to acquiesce in judgement of *phronesis* is improved upon. He rejected the universal unvarying cosmic norm of Plato's *Philebus* in favor of an adjusted standard on the basis that it was impossible to achieve absolute precision in morality. According to Helen North "Aristotle's rejection of the Socratic equation of *arete* with *episteme* had given immense support to the common- sense assumption that something more than reason is needed to produce right conduct." See North, *Sophrosyne Self- knowledge and Self- Restraint in Greek Literature,* Cornell University Press, Ithica New York, 1966, pg. 213. She notes that it was this aspect of Aristotle's thought that was latter developed by Plotinus and St. Augustine.

[xxviii] Aristotle's understanding of the relationship between phronesis and theory is evidenced in the following statements. From the *Eudemian Ethics 8* "Since man is by nature composed of a ruling and s subject part, each of us should live according to the governing element within himself- but this is ambiguous, for medical science governs in one sense, health in another, the former existing for the latter. And so it is with the theoretic faculty; for god is not an imperative ruler, but is the end with a view to which phronesis issues its commands. . . . What choice, then . . . will most produce the contemplation of god, that choice . . . is the best; this is the noblest standard." E.E. 1249b 9-19 And from the *Nichomachean Ethics*: "It [*phronesis*] is not supreme over *sophia* i.e. over the superior part of us, anymore than the art of medicine is over health; for it does not use it but provides for its coming into being; it issues orders , then for its sake, but not to it. Further, to maintain its supremacy would be like saying that the techne of politics rules the gods because it issues orders about all the affairs of state." E.N. 1145a 6-11.

[xxix] In essence what Aristotle did was produce a critique of Plato removing ethics from the discourse of theory and moving into the realm of practice.

[xxx] Aristotle, *Nicomachean Ethics*, 1140a 2-5

[xxxi] Ibid, 1140a 2-5 & 1140b 1-4.

[xxxii] This distinction may also be understood through a series of commonly used oppositions: making and acting, *poesis* and *praxis*, or possession and application the terms used by Gadamer.

[xxxiii] Aristotle *Nicomachean Ethics*, 2.1.1103a 31- 1103b 2.

[xxxiv] Ibid, 6.4. 1140a 5

[xxxv] In the *Nichomachean Ethics* he wrote: ". . . it will perhaps be agreed that if a man does wish to become master of an art or science he must go to the universal, and come to know it as well as possible; for, as we have said, it is with this that the sciences are concerned."[xxxv] And in the *Metaphysics*: ". . .art [*techne*] arises when form many notions gained by experience one universal judgement about a class of objects is produced."[xxxv]

[xxxvi] Aristotle, *Metaphysics*, 1.1.981a 24-30.

[xxxvii] Ibid, 7.7.1032a 34- 1032b 1.

[xxxviii] Dunne describes the process in this way: "from this knowledge he [the *technitai*] can work out in his mind, through a process of deliberation, the steps which need to be taken in order to induce the form in the matter; and the actual process of making is the execution, usually in reverse order, of the steps outlined in

the deliberative process. His *techne* is, then, the source of the maker's mastery of his trade and of his ability therefore not only to accomplish a successful result but in doing so to give a rational account (*logos*) of this procedure- an account which is rational precisely insofar as it can trace the product back to the 'causes' (*aitiai*) to which it owes its being." Dunne, *Back to the Rough Ground: 'Phronesis' and 'Techne' in Modern Philosophy and in Aristotle*, University of Notre Dame Press, Notre Dame, London, 1993, pg. 250.

[xxxix] In the Socratic dialogues Plato routinely made use of the image of the craftsman and *techne* as an ideal paradigm from which to extrapolate the true episteme of *Sophia*. The tendency of the Socratic philosopher's to see *techne* as a comprehensive explanatory- ness, coincident with rationality itself meant that it increasingly became synonymous with reason as purposive change in the world. So much so was the association of *techne* with reason and *theoria* that the other source of purposive change in the world, the force of nature, could now only be understood via an analogy with it**.** This tendency reached its highpoint with Aristotle. Dunne claims "Not only is *techne* in itself the rational source of the order that human agency brings into the world, it is also the primary model in terms of which we can understand the intelligibility that we find already existing in the natural order." , *Back to the Rough Ground: 'Phronesis' and 'Techne' in Modern Philosophy and in Aristotle*, University of Notre Dame Press, Notre Dame, London, 1993, pg. 251.

[xl] "None of the *technai* theorizes about individual cases. Medicine, for instance, does not theorize about what will help cure Socrates or Callias, but only about what will help to cure any or all of a given class of patients: this alone is subject to *techne*- individual cases are so infinitely various that no knowledge of them is possible. In the same way the theory of rhetoric is concerned not with what seems reputable to a given individual like Socrates or Hippias, but with what seems so to men of a given type." Aristotle *Rhetoric*, 1.2.1356b 30-34.

[xli] Dunne, *Back to the Rough Ground: 'Phronesis' and 'Techne' in Modern Philosophy and in Aristotle*, University of Notre Dame Press, Notre Dame, London, 1993, pg. 285.

[xlii] "We deliberate not about ends but about what contributes to ends. . . . Having set the end they [*technai*] consider how and by what means it is to be attained; and if it seems to be produced by several means they consider by which it is most easily and best produced, while if it is achieved by one only they consider how it will be achieved by this and by what means this will be achieved, till they come to the first cause, which in the order of discovery is last . . . [but] first in the order of becoming." Aristotle, *Nicomachean Ethics*, 3.3.1112b 11-24.

[xliii] Dunne, *Back to the Rough Ground: 'Phronesis' and 'Techne' in Modern Philosophy and in Aristotle*, University of Notre Dame Press, Notre Dame, London, 1993, pg. 352.

[xliv] Aristotle, *Nicomachean Ethics*, 2.1.1103a 28- 34.

[xlv] Ibid, 2.1.1103b 6-13.

[xlvi] Aristotle, *Physics*, 2.2.194a 36-194b 7.

[xlvii] This is where for Aristotle his definition of nature as immanent becomes problematic because if as he claims art imitates nature then *noesis* or deliberation, which requires a mind thinking independently, cannot be attributed to nature. Thus as Dunne points out the theoretical definition of techne begins to recede, leaving us with a relationship between *poesis* and *noesis* that cannot be linear in the strictest sense. He suggests that they are intimately interwoven in one process in which intelligence and production occur simultaneously in both *technite* and material.

[xlviii] While in the *Metaphysics* Aristotle used *logos* in the sense of transcending the particulars of nature and therefore theoretical, he also uses it in the sense of an interlocutory context, which might give access to how *logos* might refer to something else.

[xlix] Dunne, *Back to the Rough Ground: 'Phronesis' and 'Techne' in Modern Philosophy and in Aristotle*, University of Notre Dame Press, Notre Dame, London, 1993, pg. 333.

[l] "In the change as a concrete unitary event there are not different entities to be agent and patient. The active and passive of the verb, from this point of view, are used of the change itself only derivatively, on the basis of an actual distinction, existing only *ante* and *post eventum*. We cannot even call the two beings the 'potential agent and patient', since this implies that they could be actually so. But they could be actually so only in the actual change and in the actual change they are not distinct and therefore not agent and patient." See Waterlow, *Nature, Change and Agency in Aristotle's Physics*, Oxford: Clarendon Press, 1982. pg.201

[li] "we would not be able to distinguish one being as that in which the new state happens, and the other as that which contributes to this without itself suffering the new state. For this distinction presupposes that the

concrete event has already been conceptually split into the active and passive aspects. It seems then that considered prior to analysis, this event occurs in a single subject, which only upon analysis reveals different factors, an agent and a patient." Waterlow, *Nature, Change and Agency in Aristotle's Physics*, Oxford: Clarendon Press, 1982, pg.201.

[lii] Dunne explains how the conception of the division occurs as follows: "When we get involved in an activity of *poesis*, we usually have the opportunity of thinking about it in advance and of framing an intention. Then when we enter into the making we suppose ourselves to be enacting what has already been mapped out in our intention. But in our intention we could not help thinking of ourselves as distinct from that with which we were going to interact and so we suppose that in the making too- which we take to be simply a real production of the content which has already existed intentionally in our mind- the object to be- changed is distinct from ourselves." Dunne, *Back to the Rough Ground: 'Phronesis' and 'Techne' in Modern Philosophy and in Aristotle*, University of Notre Dame Press, Notre Dame, London, 1993, pg. 342.

[liii] Aristotle, *Metaphysics*. 9.8.1049b 29- 32.

[liv] Aristotle, *Physics*, 3.1.201a 16-18.

[lv] Ibid, 3.1.201b 8-10.

[lvi] Aristotle, *Nicomachean Ethics*, 9.7.1167b 32- 1168a 9.

[lvii] Ibid, 2.4.1105a 27- 1105b 5.

[lviii] Ibid, 2.1.1104a 2-10.

[lix] Dunne, *Back to the Rough Ground: 'Phronesis' and 'Techne' in Modern Philosophy and in Aristotle*, University of Notre Dame Press, Notre Dame, London, 1993, pg. 355.

[lx] To these should also be added the concept of *oeconomia* (economy or mean) itself another reference to the earlier usage of *sophrosyne* as political economy, balance and compromise.

Chapter 5: Studies in Tectonic Architecture

> "Therefore, because of the discovery of fire, there arose at the beginning, concourse among men, deliberation and a life in common. . . . Hence after thus meeting together, they began, some to make shelters . . ."
>
> Vitruvius
> *De architectura libri decem*, bk. II, chap. I.1

There are two possible areas of exploration to consider when determining if the culture of tectonics had a direct impact on the discourse of architecture: building and text. Clearly any exploration of the concept of *sophrosyne* in building is limited, as it is only possible through analysis to examine the first of the three Socratic definitions, that of the *sophron eros*.

Therefore, if we are to search for evidence of the culture of tectonics in architecture we would have to look to texts which might discuss the methodology or principles of architecture. Here we are limited by the relative lack of substantial examples of architectural texts available. In the Ancient world writings on architecture, while existent, were usually limited to commentary on individual buildings, handbooks on the orders, rules of symmetry and on mechanics and machinery. Virtually none of these survive today. There were texts which discussed architecture as a discipline among others these included works by Cicero, Varro and Publius Septimius.[i] Only one discusses the methodology of architecture, its practice and its principles, *De architectura libri decem* by Marcus Vitruvius Pollio. [ii]

Vitruvius' *De architectura libri decem* is the only surviving treatise on Architecture from the ancient world and hence has proven to be an extremely important and influential

work in architectural history essentially shaping all of Western architectural theory from the Renaissance to the present.

Vitruvius was writing c. 30-20 B.C. after several decades of political strife that ended with the defeat of Marc Antony and Cleopatra at Actium in 31 B.C. This period is marked by the rise to power of Augustus whose reign ushered in the Imperial period after the collapse of the Republic. It was an age of renewed building and cultural development that drew from a rich Hellenistic stock of science, technology, literature, art and architecture in the formation of a new social order. The books dedication to the Emperor is significant, Augustus once claimed "I found Rome a city of Brick, and left it one of marble".

Vitruvius' stated intention is to expound a complete system of architecture.[iii] As several authors have noted, it appears as if he is attempting to construct a quasi-Aristotelian system of logic for architecture and giving it legitimacy through its establishment in primary causes (*aitiai*) as a form of demonstration.[iv] Vitruvius himself is explicit that this is his intention when he claims; "for no kinds of materials, nor bodies, nor things can arise or be subject to the intelligence without the coming together of elements, nor does nature allow them to have true explanations in the precepts of the physicists, unless the causes which are present in these things find proofs, how and why they are so, by accurate demonstrations."[v]

Book I begins with the education of the architect and then proceeds to a discussion of principles. The principles of Book I are intended to provide the *arche* of architecture. Vitruvius asserts this himself; "But in respect to the meaning of my craft and the principles which it involves, I hope and undertake to expound them with assured

authority, not only to persons engaged in building but also to the learned world."[vi] And then again; "When I wrote this comprehensive treatise on architecture, I thought in the first book to set forth with what trainings and disciplines architecture was equipped, and to determine by definitions its species and to say from what things it sprang."[vii]

This is followed in Book II chapter I with a discussion of the origin of building, which we are told has its origins in language and society. "Therefore, because of the discovery of fire, there arose at the beginning, concourse among men, deliberation and a life in common. . . . Hence after thus meeting together, they began some to make shelters . . ."[viii] Vitruvius follows this in chapter 2 with a discussion of the primordial origins of the universe before moving in chapter 3 to the materials of construction.

The discussion of origins of society, building and materials found in Book II constitute the causes of the discipline. Vitruvius states this emphatically himself when he says; "For this book [Book II] does not declare whence architecture arises, but whence the kinds of building have originated, and by what ways they have been fostered and, by degrees, advanced to their present finish. So therefore the arrangement of this book is in its order and place."[ix] As such Books I & II serve to constitute a demonstration on the order of Aristotle's 'official' concept of *techne* through their elucidation of the basic principles (*arche*) and causes (*aitiai*) of the discourse.

One should not think of Vitruvius' definition of techne solely as abstract theory in the epistemological sense. He begins his treatise with the statement that the knowledge of the architect is born of theory [*rationcinatione*] and practice [*fabrica*]. Practice he defines as "the continuous and familiar practice, which is carried out by the hands in such material as is necessary for the purpose of a design." It is the act of making or performing a given

task, the bringing forward of the idea or design found as he says in a drawing. Theory he defines as “the ability to demonstrate and explain the productions of dexterity on the principles of proportion.” This ability as he claims is common to all scholars.

Theory is not just the explanation, but the demonstration as well, and this implies an experiential component to his understanding of theory. The word used here is *demonstrare* in Latin it means to bring forth or to show a hidden truth; that is to reveal, and it is linked to the concept of *inventio* or invention. Vitruvius uses the term *inventione* to refer to “things which express the truth of the divinity, about the causes which lurk in the heavens.”

An example of this is the Aeolus, a bronze ball with a small whole filled with water that when heated reveals the exchange of energy that transforms water into steam resulting is a burst of air. It is an invention that demonstrates how wind currents are produced when heat and moisture combine. [x] So too are the numerous ‘inventions’ Vitruvius describes in the preface to Book IX including Plato’s use of geometry to determine the necessary length of the side of a square double the area of an existent one or Pythagoras’ theorem of the hypotenuse of a triangle.

In architecture the chief inventions are the columnar orders and their details that serve as the demonstrations of a theory of right proportion.[xi] Vitruvius sees them as theoretical demonstrations and presents their principles (*arche*) and origins (*aitiai*) in book IV.[xii] By relating their proportions to the human body in its various guises he is able to relate them to the discovery of *symmetria* in the human body and his discussion of ideal proportion in bk. III c.1.

The theoretical and demonstrative characteristics of techne are stated up front by Vitruvius when he states that; “both in general and especially in architecture are these two things found; that which signifies and that which is signified. That which is signified is the thing proposed about which we speak; that which signifies is the demonstration unfolded in systems of precepts.”[xiii] If we relate this directly to his idea of architectural invention, the columnar orders are the demonstrations that signify the signified harmonic ontology.

Theory, as Vitruvius uses it, is inherently demonstrative: practical, didactic and experiential. It is achieved through the application of techne in the creation of inventions. He therefore follows Aristotle when he asserts that the techne of architecture consists of a teachable body of principles that is engaged in *praxis*. Moreover, its didactic character comes through an engagement within a process of invention.

De architectura libri decem is clearly a conscious attempt to demonstrate a theory (*ratiocination*) about architecture along the lines of *self-knowledge*. But is Vitruvius attempting to demonstrate that the architect is *sophronen*? If he is we would have to find not only a rational discourse on methods and first causes, but evidence of all three forms of *sophrosyne* including the *sophron eros, self-knowledge* and *enkrateia/ antarkeia*, including the application of Aristotle’s ‘unofficial’ concept of techne and *phronetic-techne*. I would assert that Vitruvius is doing just that through the interrelationship of what he will refer to as the six principles of architecture and the rhetorical structure of *De architectura libri decem.*

Vitruvius' Principles of Architecture

In Book I Vitruvius gives us the principles of architecture and it is here that we should begin to search for evidence of a tectonic framework. Various scholars through the years have sought to develop a taxonomy of the six principles as a means to understand Vitruvius' theoretical construct.[xiv] All of these help us to understand interrelationships between the six principles and flesh out the core of the theory, but they do not help to situate it within a broader cultural context, because they do not move beyond the discourse of architecture as defined by the text itself. As I intend to show, Vitruvius' six principles are crouched in the broader cultural discourse of philosophy as it pertains to the *tekton*, the dialectic of *techne* and *phronesis* and Socrate's three facets of *sophrosyne*.

Vitruvius' six priniples consist of *ordinatio* (order, *taxis*), *dispositio* (arrangement, *diathesis*), *eurythmia* (proportion), *symmetria* (symmetry), *décor* (propriety, *decorum*), and *distributio* (economy, *oeceonomia*). He defines them as follows:[xv]

- *Ordinatio* is the balanced adjustment of the details of the work separately, and as to the whole, the arrangement of the proportion with a view to a symmetrical result. This is done through *quantitas* the selection of a unit of measure and the creation of a harmonious whole from the individual parts. Vitruvius tells us that this concept is called *taxis* in Greek and it is one of the terms that Plato used to describe the principles of *kosmoi*.

- *Dispositio* is the fit assemblage of details, arising from this assemblage, the elegant effect of the work and its dimensions, along with a certain quality or character. There are three kinds of *dispositio* (which in Greek is called *ideae*) *ichnographia*, *orthographia*, and *scaenographia*. The later three are traditionally translated as plan, elevation and perspective respectively.
- *Eurythmia* implies a graceful semblance; the suitable display of details in their context. This is displayed when the details of the work are of a height suitable to their breadth, of a breadth suitable to their length; in a word, when everything has a symmetrical correspondence.
- *Symmetria* [xvi] is the appropriate harmony arising out of the details of the work itself; the correspondence of each given detail among the separate details to the form of the design as a whole.
- *Décor* demands the faultless ensemble of a work composed, in accordance with precedent, of approved details. It obeys convention, which in Greek is called *thematismos*, of custom or nature.
- *Distributio* is the suitable disposal of supplies and the site, and the thrifty and wise control of expense in the works.

> "They began to build, not huts, but houses, on foundations, and with brick walls, or built of stone; and with roofs of wood and tiles. Then by the observations made in their studies they were led on from wandering and uncertain judgments to the assured method of symmetry."
>
> Vitruvius
> *De architectura libri decem*, bk. II, chap. I.7

Architecture and the Sophron Eros

It is in the principles of *ordinatio*, *symmetria,* and *eurythmia* that Vitruvius comes closest to Plato's theory of right proportion and the harmonic ontology. These three are differing aspects of the same aesthetic phenomena, *ordinario* being the principle, *symmetria* the result, and *eurythmia* serves as a prerequisite for both. Vitruvius uses *eurythmia* (proportion) in three ways as a relationship of parts i.e. harmony, as a relationship of parts to whole via a common module i.e. *symmetria*, and as an analogy to the human body. This last is done in relationship to the idea of perfect numbers, but should also be understood as relating the macrocosm to the microcosm. Vitruvius claims we should use proper proportioning because it is what is found in both nature and geometry, it is the natural order of things, and in essence it is the universal *logos*.

What has disturbed many commentators on Vitruvius is that he did not actually define *eurythmia*, nor did he provide an aesthetic concept in relationship to the idea. I would argue that there was no reason for him to do so. As Tatarkeiwicz has shown, in ancient times the general theory of beauty was conceptualized as proportions of parts and their arrangements.[xvii] This conception was initiated by the Pythagorians in a narrow form in reference to harmonious sounds, but quickly became analogous in the visual arts as well. Thus *harmonia* and *symmetria* became closely connected with the theory. The association

of beauty with number and proportion formed the basis of the conception of beauty throughout the ancient world. “The Pythagorians found the properties and relations of harmony in numbers . . . [and maintained that] order and proportion are beautiful and fitting, that thanks to numbers, everything looks beautiful.”[xviii] Or Plato “the maintenance of measure and proportion is always beautiful” and the absence of measure is ugly.”[xix] And Aristotle “Beauty consists in magnitude and ordered arrangement”[xx] the main forms of beauty are “order, proportion, and definiteness” For the stoics “The beauty of the body resides in the proportion of the limbs in relation to one another and to the whole.”[xxi] And Plotinus asserted that beauty consisted in proportion and arrangement of parts.[xxii]

Thus Vitruvius had no need to assert a conceptual framework. He was not in anyway being original here. It was commonly understood that all *tektons* possessed this knowledge and the ability to manipulate it. The understanding of *eurythmia*, *symmetria* and the ability to establish *ordinatio* were the basic skills necessary in any art. Vitruvius was merely restating what was understood as the basis of Plato’s harmonic ontology and the central tenet of classical beauty. The world was conceived as a finely ordered proportional whole, whose underlying rule was that of harmony, the universal *logos.* Proportion carried with it an ontological, epistemological and ethical weight that came from the authority of Greek philosophy.[xxiii] The inclusion of the principles of *symmetria, ordinatio,* and *eurythmia* only serve to reaffirm his allegiance to the prevailing epistemological framework.

What Vitruvius did achieve was to give Plato’s conception of *sophrosyne* as harmonic ontology its full aesthetic potential. He did this when he asserted that the architect, a master tekton, like the *demiourgos,* manifests *arete* in the construction of built works

through the application of harmonic proportion understood as the right ordering of members and space in an architectural construction. Such application served as a demonstration of *sophrosyne* in the form of the *sophron eros* on the part of the architect.

But what of the second and third definitions of *self-knowledge* and *enkrateia/ antarkeia*? Can we find evidence that Vitruvius is attempting to demonstrate that the architect is virtuous in judgments made in the act of *poesis* and the determination of appropriateness in a given situation? The answer here can be found in Vitruvius' understanding of architecture as a communicative art and in his principle of *décor*.

The Principle/problem of Décor

Architecture is conceptualized by Vitruvius as a system or means of communication like language or more specifically oratory, whose task it is not only to communicate but to simultaneously do so with style and eloquence.

It is commonly recognized that Vitruvius took the principle of *decor* from Rhetoric. Decorum, or propriety, was present as an idea in Aristotle's *Rhetoric,* where it was seen as the defining feature of eloquence, the fitting manner in which the speaker unites his or her speech to the audience.

In oratory, understanding what things signify and how they communicate is given emphasis through the concept of decorum or propriety. According to Quintillion; "Clearness results above all from propriety in the use of words. But propriety is capable of more than one interpretation. In its primary sense it means calling things by their right names, and is consequently sometimes to be avoided, for our language must not be

obscene, unseemly or mean."[xxiv] Thus for Vitruvius the didactic or communicative aspect of architecture becomes a problem of *decorum*, propriety or to use the Greek term *to prepon*. Decorum operates as an ethical principle, rather than any formal prescription and is above all a manner of performance that is shaped by social expectation and order.

Vitruvius modeled much of his text on the work of Cicero, particularly his texts *de Oratore, de Officiis, Rhetorica ad Herennium and De Inventione*. Firth has gone so far as to argue that he appropriated the general themes and arguments as well, including the precept that knowledge is the child of theory and practice and the general education of the architect in the liberal arts, even his origins of civilization can be traced to him.[xxv] It is also from Cicero that Vitruvius takes the concept of *décor* most closely. It is therefore necessary to understand Vitruvius' use of the term *décor* to grasp his application of it. How then does Cicero define Decorum? How is it related to the discourse of *sophrosyne*?

> "Socrates was the first to call philosophy down from the heavens and to place it in cities, and even to introduce it into homes and compel it to enquire about life and standards and good and ill."
>
> Cicero
> *Tusculanae Disputationes*

Ciceronian Decorum

Marcus Tullius Cicero was born in 106 B.C. and is widely held to be the greatest Roman orator, but he is also famous as both a politician and philosopher. He studied law in Rome, Rhodes and Athens, where he also studied Greek philosophy. In the last years of his life (46-43 B.C.) he turned to writing extensively, making Greek philosophy accessible to Roman readers. In this he made no pretense to originality, labeling himself

only a true follower of the Greeks. A true Roman he sought a practical philosophy (not unlike Socrates) seeking not primarily to know, but how to do. His central focus was therefore ethics. His most important work on the subject was *De Officiis*.

It was with Cicero that *sophrosyne* entered the philosophical discourse of the Romans. In *De Officiis,* he referred to *sophrosyne* using the Latin term *Decorum,* claiming: "If we bring a certain amount of measure and order into affairs of daily life, we shall preserve *honestas* and *decus*," (I.5.17) Cicero was here using the Platonic notion of *sophrosyne* as measure and order. North summarizes Cicero's definition of *decorum* and its relationship to *sophrosyne* in the following manner: "*Decorum generale* belongs to every action that is morally good, that, in other words, arises for and is in harmony with one of the appetites of human nature, controlled by reason. Since, however, human nature possesses many appetites and impulses, differing with the individual concerned, it is necessary to adjust and harmonize them, so as to create order and beauty, what Plato called *symphonia* in the soul. When such harmony exists, *decorum speciale* is present; and since it is the function of *sophrosyne* to produce this order and equilibrium among the appetites, *decorum speciale* is inseparable from the fourth virtue."[xxvi] *Decorum* was attained only when one obeyed the universal laws of nature, as well as those of our own, including those imposed by chance and choice. Thus Cicero continued Plato's association of *sophrosyne* with order, arrangement and harmony but also adopted the more flexible position of Aristotle as the preserver of *phronesis*. *Sophrosyne* was a product of a particular situation, a practical knowledge of just action in the real world serving to maintain a balance in the world of human action that was necessary in order to harmonize it with the 'Good'.

The aesthetic presence in Plato's conception of *sophrosyne* was also continued by Cicero who believed in a basic human desire for order, measure, beauty and harmony in deeds and words, which he viewed as a moral perfection. Restraint was here again subordinated to an aesthetic function. This was evident in his comparison of a beautiful body whose parts were harmoniously arranged and the *decorum* present when order and moderation were present in word and deed. The aesthetic pleasure present was what won approval of *decorum*. Man's possession of memory, foresight and reasoning allow him to develop wisdom but man also possesses the ability to see harmony and beauty in the visible world and this allows for the appreciation of beauty and harmony in thought and action. The Beauty of the *Sophron Eros* was therefore not limited as an aesthetic to Greek philosophy but became a central discourse in Rome during the reign of Octavian Augustus when Cicero presented it in his collected works.

Vitruvian Décor

We must understand that the term *décor* as used by Vitruvius, while it is listed as one of the six principles, is a quality distinct from the others. His use of the term is limited in the book to two major locations; the listing of the principles of architecture, where it is given three sources: status, custom and nature, and the seventh book, where he is dealing with frescos and their appropriateness- there the issue is propriety.

According to Horn-Oncken, Vitruvius only uses the term in connection to standards of "place, unity of style and 'decoration', as well as character and dignity of those persons, be it sacred or profane, to whom the buildings are dedicated." She goes on to

state that; “Vitruvius’ emphasis is on those creative impulses that relate to choice, the arrangement and the place of formal elements, not on those that can be expressed in numerical ratios.”[xxvii] Only once does Vitruvius deviate from the above definition and apply the concept of *décor* to the idea of right proportion. This occurs in the second chapter of Book VI where he claims that the architect may seek to adjust the objectively correct proportions to achieve the proper subjective effect.[xxviii] Vitruvius’ actual account is as follows; “an adjustment of the proportions to the *décor* so that the appearance of *eurythmy* maybe convincing to the observer.”[xxix] This is the only time that he links *décor* to proportions and number and to the quantitative aspects of architecture.

According to Horn-Oncken the term *décor* was extraneous to architecture, its philological background coming from poetry and rhetoric, its function serving as an ethical concept, its use in terms of the proper use of the columnar orders does not properly fit architecture.[xxx]

While the general concept of beauty in the ancient world contained an ethical component, the predominant formulation is the application of number. It is the harmony of those numbers that manifests *décor* in the arts and crafts. Its inclusion as a separate principle therefore is not expected to be there. Vitruvius had to have a reason for bringing it into architecture as an isolated principle. One conclusion is that Vitruvius had the desire to elevate the role of the architect above that of the craftsman.[xxxi] Thus, while the other principles are intended to show that the architect possessed not only the technical knowledge but also the theoretical knowledge, *Décor* is used to show that the architect possesses the same level of intellectual engagements that are to be found in the higher discourses, notably philosophy, so he “employs all the arguments which other arts,

poetry, rhetoric, music advance in their own cause."[xxxii] As Hermann has noted "Any *ars* wishing to climb up the social ladder had therefore to produce a theoretical superstructure and to demonstrate the use it made of other disciplines."[xxxiii]

Isolating *décor* as a separate principle signals Vitruvius intention to address the issue first raised by Socrates, that the possession of the *sophron eros* was not enough to prove the tekton *sophronen*. When Plato raised the question 'is the tekton *sophronen*?' he asserted that to answer the question in the affirmative one had to prove its other two forms as *self-knowledge* and *enkrateia/ antarkeia*, a task both he and Aristotle attempted. Keeping in mind the necessary structure of *sophrosyne* in its three facets, Vitruvius could not therefore achieve his goal (of equating the social role of the architect with that of the orator or philosopher) without proving the architect was a master of all three. *Décor* with its ethical component and literary background assists him in doing just that, hence it becomes a necessary *topoi* in the theory, even it if appears extraneous to it as he constructs it.[xxxiv]

The topoi *décor* serves as a demonstration of excellences. It contains an aesthetic character, but it is essentially a quality of the individual. Vitruvius needs to demonstrate how that excellence in character is translated into the design process and into the built form if he is to prove *self- knowledge* and *enkrateia/ antarkeia.* He achieves this by locating where this occurs in the building and then how it occurs in the design process.

The Triad of Excellences

Vitruvian scholarship often makes note of the triad of *Firmitatis*, *Utilitatis*, and *Venustatis*. It is important to observe that these are not considered the principles of architecture, nor does Vitruvius state that the six principles are aspects of the last *Venustatis,* as some assert.[xxxv] Vitruvius makes reference to the triad, noting that the parts of architecture, building, dialing and mechanics; "should be so carried out that account is taken of strength [*firmitatis*], utility [*utilitatis*] and grace [*venustatis*]."[xxxvi]

This kind of categorization can also be found in rhetoric in reference to the excellences (*arête*) of oratory, such that in Cicero we find the virtues of judgment, order and decorum and in Quintillion those of correctness, lucidity and elegance.[xxxvii] What Vitruvius is attempting in *De architectura libri decem* is to define the excellences of architecture using the structure of excellences and virtues found in rhetoric as a means of equating the architect with the social status of the orator.

According to Frith, Vitruvius' text teaches us to design a building in much the same way as Cicero teaches us to put together a speech through invention, arrangement, memory, delivery and style. "These are the five parts of rhetoric, and for an educated Roman, the same practices are put into action for the making of architecture. Important to both oratory and architecture is the character of the work, the decorum underlying the arrangements and ornaments, and the appropriateness of the work in the public domain."[xxxviii] The very structure of *De architectura libri decem* draws on the common understanding of the educated Roman to recognize the connection.

According to Vitruvius; “Account will be taken of strength when the foundations are carried down to the solid ground, and when from each material there is a choice of supplies without parsimony; of utility, when the sites are arranged without mistake and impediment to their use, and a fit and convenient disposition from the aspect of each kind; of grace, when the appearance of the work shall be pleasing and elegant, and the scale of the constituent parts is justly calculated for symmetry,”[xxxix] Thus *distributio* is manifested in *firmitatis*, *ordinatio*, while *dispositio*, is manifest in *utilitatis* and *eurythmia*, and *symmetria* in *venustatis*.

The triad are localities for the judgment of the virtues of good design; where its excellences are manifest. But as the text implies they are simultaneously where the *décor* of the architect is demonstrated in the proper application of his techne, understood as his ability to master and control the remaining five principles. The manifestation of excellences of *décor* in *firmitatis*, *utilitatis* and *venustatis* define the character of both the architect and work.

It is in the triad that Vitruvius asserts, as Aristotle had done, that the building is both the action of the building and the builder in action. Architecture is the dual actuality of the potentiality of *techne* as a possession of the architect and the potentiality of the architect in *praxis*. But is this dual actuality acknowledged anywhere else in *De architectura libri decem*?

According to Scranton this duality permeates Vitruvius' six principles.[xl] Scranton notes that in Latin all words ending in *tio* or *tionis* take as their primary meaning the performing of a process. Thus in the three principles of *ordinatio, dispositio,* and *distributio* we are not looking at qualities of the work, but of the action taken by the architect.

Thus *ordinatio,* which Vitruvius himself links to the Greek words *taxis* and *diathesis,* both action nouns, is not a quality of the work but the action of the architect in literally putting things together. It is the creation of order, the literal bringing about of order from chaos, symbolizing the very act of creation itself.

Distributio is the control of the budget and the economy of the work and it is the action of the architect in controlling the production of the work.

Dispositio should therefore be translated as the act or process of arrangement. It thus serves as the very core of the design process itself. Vitruvius gives us the means through which this is done in the form of a series of drawings, *ichnographia, orthographia* and *sceanograhia*. Again these are defined as actions taken and not as finished drawings and hence objects or works.

Dispositio is the intellectual process of design, the actual working out of the idea, from conception through translation into built form. In Vitruvius, *dispositio* and *inventione* must come with *qualitate* and we must therefore assume a demonstration of an excellence as well.

If we assume Scranton's analysis to be correct- and I do in terms of the three principles as action nouns- then we might formulate an taxonomy in which there are three categories the first consisting of *ordinatio, distributio,* and *dispositio,* a second consisting of *eurythmia* and *symmetria* and a third that of *décor*.[xli] The first is an expression of the design process, the second the application of the harmonic ontology and the third *décor,* a privileged other that modulates between the two.

Eurythmia and *symmetria* are aspects of the harmonic ontology. They are directive of the form as they focus on the *eidos* of harmony. They are the manifestation in architecture of that which is permanent and fixed; as such their structure is theoretical. As principles they are deliberative and analytic and represent the architects' possession of Aristotle's 'official' techne. They are the architect's *noesis*.

Ordinatio, distributio, and *dispositio* serve as action nouns referring to the actual design process and hence indicate the use of the *logos* in such a way as to be primarily articulated as an intelligibility that exists only within the actual process of design representing the architect in *praxis*. They are directive of the matter, keeping an attentive eye on the nature of the material to be used. They are the manifestation in architecture of that which is contingent; as such their structure is generative. As principles they are performative and represent the architects' application of Aristotle's 'unofficial' techne. They are the architect's *poesis*.

Vitruvius is counter-balancing the more quantitative aspects of the design process, such as proportion, to the more qualitative aspects of invention. There is a direct correlation between what is directive and what is generative here. The proportional

system of creation and its analogue in architecture are directive, that is they come from our understanding and analysis of nature.

Once again the generative process is not undertaken in abstraction within the mind independent of the material. The technai thinks “in” his material, *poesis* emerges out of an engagement with the particulars of the material itself. Here the *logos* is a discriminating resourcefulness informed by *praxis*. It is reliant on invention, which is a cognitive state of genesis.

Vitruvius provides us with an example of how this works. “The architect’s greatest care must be that his buildings should have their design determined by the proportions of a fixed unit. When therefore account has been taken of the symmetries of the design and the dimensions have been worked out by calculation, it is then the business of his skill to have regard to the nature of the site, either for use or beauty, to produce a proper balance by adjustment, adding or subtracting from the symmetry of the design, so that it may seem to be rightly planned and the elevation may lack nothing.”[xlii] The principles of *eurythmia* and *symmetria* serve as a necessary embodiment of the theoretical precept of *harmonia*. But the direct translation of theory into the practical realm of materiality is often problematic. For Vitruvius this is especially true with buildings who appearance to the eye is often distorted by its site conditions and viewing angles. The result is a false image in the eye which distorts our judgment of *eurythmia* and *symmetria* and the recognition of *harmonia*.

According to Vitruvius the architect must compensate for the reality of the building and its appearance in perspective, thus the drawings and models are used to create a feedback loop from which the architect might learn from, examine and alter the design

process in the making of the thing. What Vitruvius seeks is not the literal translation of the theory of right proportion in the building, but the revelation of it in the inventions of the architect. “When the magnitude of this is once determined, there will follow upon it the adjustment of the proportions to the décor so that the appearance of eurythmy may be convincing to the observer.”[xliii] This correction of ideal proportions had a long standing precedent going back to classical Greek architecture where optical refinements to the design were common.

Hence the design process according to Vitruvius is not wholly directive, but generative as well. It is here that Vitruvius is able to locate how the architect as tekton moves in the opposite direction from the noetic, *eurythmia* and *symmetria,* to the performative, *dispositio, ordinatio,* and *distribution,* from directive to generative. The relationship between the principles and their movement is evidenced in the localities of the triad.

Excellences are maintained within the process of ‘Becoming’ via the guidance of *décor*, derived from memory in accordance with precedent found in status, custom or nature. The principle of *décor* is an experiential form of situational knowledge guided by past experience and current conditions that together result in the manifestation and maintenance of excellences. Aristotle’s dialectic becomes embodied in Vitruvius’ principles with *décor* serving as the ethical component of *phronesis* in *praxis* necessary to demonstrate the concept of *phronetic-techne*. *Décor* becomes a key link in the demonstration of the third definition of *sophrosyne enkrateia/ antarkeia* necessary to prove the archi-tekton *sophronen* and elevate his social status to that of the orator and philosopher.

Summation

Vitruvius' *De architectura libri decem* did not significantly alter the existing culture of tectonics, rather it maintained its' ontological, epistemological and ethical aspects, including the concepts of creation, *techne, poesis* and *phronesis*. What it did achieve was to demonstrate that the knowledge of the *archi-tekton* was both theoretical and practical. That meant that they were in possession of true wisdom and could be called *sophronein*. Vitruvius accomplished this by showing how the architect was in possession of all three forms of Socratic *sophrosyne*; the *sophron eros*, *self-knowledge* and *enkrateia/ antarkeia*. More importantly he formulated tectonic culture into a coherent demonstration of the intellectual process of creativity and making as the dialectic of *techne* and *phronesis* as a practical theory of design.

Vitruvius' inclusion of *eurythmia* and *symmetria* in the principles of architecture establish his acceptance of the classical theory of beauty as the harmonic proportion of parts and their arrangement, historically seen as a possession of the object. His anthropomorphic application of them to the columnar orders that relate to ideal numbers signals that they are analogically taken as representations of the larger ontological concept of *harmonia*. Architecture is conceptualized as a language whose primary means of exchange is metaphor, as didactic inventions the columnar orders serve to signify an idea extraneous to them. Vitruvius' importance comes in his assertion that Plato's harmonic ontology was the *eidos* of architecture, the very source of the reason underlying it as a discourse.

For Plato the manifestation of that *eidos* in the natural world comes in the creation of *kosmoi*, or orders, itself a compromise between reason and necessity. Creation, in all its

forms including art, is therefore never wholly theoretical or practical. Vitruvius reiterates this concept first in his assertion that knowledge is the child of theory and practice, but more significantly in the conceptual structure of architectural invention found in the principle of *dispositio,* and the principle of *distributio*. The theoretical *eidos* of *harmonia,* evidenced in the principles of *eurythmia* and *symmetria,* are never accepted as a pure mathematical manifestation in architecture, but always subject to the practicalities of material, economics, and vision.

Excellences are maintained via memory of status, custom and nature, identified as the principle of *décor,* itself a necessity if one is to prevent the lack of proportion and harmony that would lead to *hybris* in the world. Vitruvius reasserts the ethical responsibility of the tekton in resisting *hybris* and establishing the just society. *Décor* becomes the rhetorical device that demonstrates the architect's understanding of appropriateness in all aspects. It becomes a demonstration of *phronesis* taken into *praxis,* Architecture serves once again as a signifier of that appropriateness that is both construed in the design and constructed in the building.

The cognitive structure of the design process is revealed in the interaction of the principles as the action of the architect in the process of production is guided by *decor* in the maintenance of excellences. The architect's techne maintains its pre-philosophic usage as both the devising of strategies that allow for the appearance of *kosmoi*, and the sense of improvisation and intellectual agility. It is an adaptable cognition gained through experience and memory. This implies a cognitive feedback loop in which experience and reason conspire to generate orders, *kosmoi,* from which the physical reality of architecture becomes manifest.

The dialectic of techne and *phronesis* becomes embedded in the principles of architecture as an explanation of the design process itself defined as the loci of the juncture between the *noetic* and performative. What Vitruvius is able to achieve is to establish an episteme of architecture akin to theory, while still maintaining its necessary pairing with ethics, via the principle of *décor*.

Architecture in its excellence serves as a didactic tool, a *thauma idesthai,* which reveals both the harmony of the created universe and the harmony of the social order. The architect as *Archon* serves as both source and maintenance of order in the civil world.

ENDNOTES

[i] The vast majority of such texts has not survived to the present, and is therefore lost to contemporary scholarship. The most comprehensive list of them comes to us in Vitruvius' *De architectura libri decem.* In the preface to book VII he provides us with an extensive list of those books which he is familiar with and which he claims to have used as the basis of his research and thoughts. Vitruvius *De architectura libri decem* bk VII p11-18, The Loeb Classic Library edit. Goold, Harvard University Press, Cambridge Mass. London England, 1999, pg.71-79. For commentary by Cicero see *De Officiis*, I, 151 and for Varro see F.G. Ritschl, *Terrentii Varronis Disciplinarum libris commetarius*, Bonn, 1845 as referenced by Onians in *Bearers of Meaning*, Princeton University Press, Princeton, NJ, 1988, pg. 33.

[ii] Vitruvius' text is the only text to have survived to modern times but it was certainly not the only one on architecture, several references to architectural texts can be found throughout classical literature. Scholars are at odds as to whether any of the others were actual theoretical texts though, many agree that what evidence there is points to a series of technical works only. If this were correct then Vitruvius' *de architectura libri decem* would be the only text to attempt to define architecture philosophically.

[iii] Vitruvius states this in the last line of the preface to book I following his dedication to Augustus. "Namque his voluminibus aperui omnes disciplinae rationes."

[iv] Stephen Frith asserts he is seeking "legitimation in the authority of primary causes, in the works of famous philosophers, and is arranged, as in forensic rhetoric, as a matter of 'accurate demonstration'" "A Primitive Exchange: on Rhetoric and Architectural Symbol", Arq. Vol 8 no 1 2004. See also Robert Scranton who argues that Vitruvius is attempting to "construct a complete, quasi-Aristotelian, logical system for his subject." , Vitruvius' Arts of Architecture , *Hesperia*, Vol. 43, No. 4. (Oct. –Dec., 1974), American School of Classical Studies, Athens, pg 495.

[v] Vitruvius, *De Architectura Libri Decem* , Book II c.1.9.

[vi] Ibid, Book I c.I.18

[vii] Ibid, Book II c.I.8

[viii] Ibid, Book II, c.I.2.

[ix] Ibid, Book II c.I. 8

[x] Ibid. Book I c.VI.2

[xi] In Book IV Vitruvius routinely uses the term *inventio* or some form thereof in reference to the orders. "Thus the proceeded to the invention (***inventionem***) of the columns in two manners; one, manlike in appearance, bare, unadorned; the other feminine." Bk IVc.I.7. "Now the first invention (***inventio***) of that capital is related to have happened thus." Bk IVc.I.9. "Now since the origins and discovery of the order of columns have been described above, it does not seem foreign to my purpose if I speak in the same way about their ornaments: how they came about, and from what principles and origins they were invented (***inventions***)." Bk IVc.II.1.

[xii] Vitruvius, *De Architectura Libri Decem*, Book IV c.II.1

[xiii]Ibid,, Book I , Chapter 1.3.

[xiv] Kruft divides them into three groups: 1) *symmetria*, *ordinatio*, *eurythmia* were all aspects of proportion, 2) *dispositio* was the artistic creativity and it included *cogitatio* and *inventio* as its central premises, 3) *décor* and *distributio* were concerned with appropriateness. Watzinger divides them into two groups 1) *ordinatio*, *dispositio*, and *distributio* seen as quantities that then lead to the values of 2) *eurthymia, symmetria*, and *décor*. While Scranton divided them into two categories *eurythmia, symmetria, décor*, and *ordinatio, dispositio, distributio* the first the aesthetic components of the building and the later components of the architects *techne*.

[xv] See Vitruvius' *De Architectura Libri Decem* book I chapter II.i.

[xvi] Vitruvius is here using the Roman meaning of the word symmetry in modern English the translation would be proportion.

[xvii] Tatarkeiwicz, Wladyslaw, 'The Great theory of Beauty and its Decline", The Journal of Aesthetics and Art Criticism, Vol. 31, No. 2. (Winter, 1972), pp. 165- 180.

[xviii] Aristotle, *Metaphysics*, 985b.23

[xix] Plato, *Philebus* 64E

[xx] Aristotle, *Poetica* 140.b.38 and1078.a.31

[xxi] Stobaeus, *Ecl*. II.62.15.

[xxii] Plotinus, *Enneads*, VI.7.22

[xxiii] It is Vitruvius very Greekness is that has also confounded his scholars who often complain of his confusing use of Greek terminology. But this is perhaps the very source of their confusion. While Vitruvius is certainly vague in his reference to philosophical ideas clarity cannot be found in the futile search for definitions but rather must be sought in the general concepts themselves.
[xxiv] Quintillion, *Institutio Oratoria*, trans. Butler, 1921, viii.2.1 It should be noted that Quintillion is actually writing 90 years after Vitruvius and is therefore not an influence on him but it is important to note that Vitruvius' writings are historically situated between the writings of Cicero and Quintillion and thus his understanding of rhetoric is framed by how they define it.
[xxv] See Frith, 'A Primitive Exchange: on Rhetoric and Architectural Symbol', ARQ. Vol. 8, No. 1 2004, 41.
[xxvi] *Decorum* was for Cicero divided into two aspects *decorum* general, which concerned itself with moral goodness as a whole and *decorum speciale*, which belongs to all the sub-divisions of *honestas*, it was this aspect of *decorum* to which *moderatio* (moderation) and *temperantia* (temperance) belonged. See North, *Sophrosyne Self- knowledge and Self- Restraint in Greek Literature*, Cornell University Press, Ithica New York, 1966, pg. 222.
[xxvii] Horn-Oncken, Alste, *Uber das Schickliche Studien zur Geschichte der Architekturtheorie I*, Gottingen: Vandenhoeck & Ruprecht, 1967, pg 46. The translation here produced is by Wolfgang Hermann from his review of the book in The Journal of the Society of Architectural Historians, Vol. 28, no. 2. (May, 1969) pp. 143-145.
[xxviii] Ibid. pg. 35 for her take on this.
[xxix] Vitruvius, *De Architectura Libri Decem* , Bk 6 chapter 2.5.
[xxx] For Vitruvius on the décor of the columnar orders see Book I chapter II.5.
[xxxi] both Horn-Oncken and Stephen Frith have made this point. The use of décor serves to link the architect to the orator and thus place him on the same social status. Neither has gone so far as to trace the root of décor as found in Cicero and hence neither sees it as related to the philosophical concept of sophrosyne.
[xxxii] Horn-Oncken, Alste, *Uber das Schickliche Studien zur Geschichte der Architekturtheorie I*, Gottingen: Vandenhoeck & Ruprecht, 1967, pg 122.
[xxxiii] Hermann, Wolfgang, Review, *Uber das Schickliche Studien zur Geschichte der Architekturtheorie I*, in The Journal of the Society of Architectural Historians, Vol. 28, No.2. (May, 1969) pp. 143-145.
[xxxiv] Horn-Oncken asserts that Vitruvius may not have been the first to attempt this. Vitruvius himself makes note of a now extinct book by Varro entitled *artes librerales*, a nine part treatise that included a section on architecture. Varro might have included the discourse of *décor* in the section on architecture as it was likely to be included with everything else in the treatise. This is only speculation owing to the fact that nothing of this book survives hence it is Vitruvius' terminology and usage that carries the weight of historical influence.
[xxxv] Kruft makes just such a claim but he is not alone in asserting this, more often then not we see writers incorrectly making reference to Vitruvius' three principles of Firmitatis, Utilitatis and Venustatis. See Kruft *A History of Architectural Theory from Vitruvius to the Present*, Princeton Architectural Press, New York 1994, pg.25.
[xxxvi] Vitruvius, *De Architectura Libri Decem*, Book I chapter III.2.
[xxxvii] See Frith, Steven, "A Primitive Exchange: on Rhetoric and Architectural Symbol", Arq. Vol. 8 No.1 2004, pg 41.
[xxxviii] Ibid, "A Primitive Exchange: on Rhetoric and Architectural Symbol", Arq. Vol. 8 No.1 2004, pg 41.
[xxxix] Ibid.
[xl] Scranton, Robert, 'Vitruvius' Arts of Architecture', Hesperia, Vol. 43, no. 4 (Oct. - Dec. 1974) pp. 494-499. His taxonomy of the principles divides them into two distinct grouping; the art and *techne* of the architect and the aesthetic qualities of the work. To the latter group belong *eurythmia, symmetria* and *décor*.
[xli] If I take exception to Scranton it is in the inclusion of *décor* solely in the list of aesthetic qualities of the work. Vitruvius' triad indicates that *décor* is seen as an aspect of both the architect and the work. Furthermore as noted above *décor* as it is used emphasizes the creative impulses that relate to choice not on those that can be expressed in objective numerical ratios.
[xlii] Vitruvius, Book VI chapter 2.1
[xliii] Ibid, Book VI, chapter 2.5

Chapter 6: The Epistemological Parameters of Classical Tectonics

The Epistemological Parameters of Classical Tectonics

Aristotle and Vitruvius sought to prove the *technai* possessed Socrates' three facets of *sophrosyne*, to do so they had to first demonstrate how they possessed theoretical knowledge. But they also understood that the knowledge of the *tekton* could not solely rest upon the epistemological structure of *techne.* The reason for this was that while its subject matter was production it was not identical with it. The theoretical definition of *techne* placed an emphasis on the possession of knowledge rather than its application. This posed several problems in regard to the process of making.

- First, its focus on universals; as theoretical knowledge *techne* is only concerned with general premises regarding the processes of production. But the application of such universals on the particularities of making would literally deny the contingency of matter, something that can only be done through the avoidance of reality. It is to mistake the realm of theory with the realm of practical knowledge and represents a breakdown of the understanding of the very structure of knowledge itself.
- Second its instrumentalization; *techne* focuses on the *telos* or fixed end of the process of production and therefore seeks the best means to accomplish that end. This has the tendency to conceive of the problem of production in terms of a simple calculation of efficiency.[i] But as we have seen tectonic culture in the classical age was concerned first and foremost with the ethical application

of *techne* in the creation of order in the human world, not its efficiency. This leads to the other inherent problem.

- Third its limitation in the area of ethics; theoretical *techne* allows for no value judgments outside itself. Its subject matter is the technique used and it therefore becomes a neutral form of technology.

The critique of *techne* inherent in classical tectonics reveals the limits of rationalism applied to the design process. Design concerns itself with the generation of the thing, not its explanation. The actual process of design does not in fact conform to the deliberative and analytic process and therefore its application as the only truly valid definition of *techne* is fatally flawed.[ii] In the actual design process *techne* was helpful but limiting.

The aim, or end, of architectural knowledge is building as a form of *praxis*. Like politics architectural design moves out of experience, but in the end must also return to it. Both Aristotle and Vitruvius asserted that the knowledge of the *tekton* was in fact necessarily more practical. The *tekton* needed the assistance of *metis* in order to deal with the contingencies of matter (*Hule*). In practice the *technai* required the type of knowledge known as *phronesis* which ameliorates the inherent limitations of *techne* and serves to establish the fundamental epistemological parameters of tectonics.

> ". . . because the end aimed at is not knowledge [*gnosis*] but action [*praxis*]."
>
> Aristotle
> *Nicomachean Ethics*, 1.3.1095a

Phronesis as Experiential Knowledge

At the core of Classical tectonics and architecture is the necessity for the participation in existence and the primacy of the particular in the generation of meaning and application in design. This is the first parameter of classical tectonics, the emphasis on experience and perceptiveness rather than formulated knowledge as the starting point of design.

It was through his analysis of politics that Aristotle was able to identify *phronesis* as an alternative form of knowledge, distinct from theory. According to him, in the study of politics theoretical knowledge was a vain one "because the end aimed at is not knowledge [*gnosis*] but action [*praxis*]."[iii] Its end was directed toward *praxis*, its knowledge therefore, had to come from it as well. In the case of justice there could be no real application of universal laws, because their application in all situations would lead to injustice.[iv] The rule of justice was defective, not because the law might be incorrect nor the legislator, but precisely because of its universality. In the field of politics, reason itself was unable to carry the day in regards to men's actions- if it could there would be no need for politics.

This meant that *phronesis* did not categorically serve the universal so necessary to the definition of theoretical knowledge. It was experience that was more valuable, serving as a necessary companion for pure theory, if not its replacement. Aristotle's analysis of

politics revealed the limits of theoretical reason. *Phronesis* appeared to be both natural and yet not specifically teachable in the sense of *theoria*.[v]

In the sphere of action, experience and judgment come into play with reason and necessity. Judgment (i.e. *phronesis*) becomes essential in action (i.e. *praxis*) and such ability to judge and act wisely in any situation is molded through experience.

Phronesis is formed from the stabilization of particularities in memory, which provide a universalization, while still able to maintain a reference to such particularity. [vi] This produces a more fruitful universalization that functions to deepen experience, allowing one to draw from it what was relevant to the new particularity; and apply experience only where it is appropriate.

Phronesis was a virtue that must suffuse knowledge and guide it toward the greater good. To believe that this kind of cognition could be submitted to demonstrable rules, was to succumb to what Gadamer called "[the] illusion of experience perfected and replaced by knowledge."[vii] It was he who pointed out that: "The truth of experience always contains an orientation towards new experience."[viii] Thus, for Aristotle we find that experience always remains in the background as the foundational substructure of practical knowledge.

Gadamer notes that the guiding principles of *phronesis* "have only the validity of schemata. They always have to be made concrete in the situation of the person acting."[ix] In this sense it served as a more concrete form of cognition geared toward *praxis*, deriving concreteness from its participation in the particularity of existence. *Phronesis* called for the concrete mediation between knowledge already known (the Universal) and the opportunities and limitations of the present situation (the Particular).

What we grasp from this analysis of *phronesis* is that knowledge may be grasped in experience in a manner that is independent of ratiocination.[x] It was Gadamer who pointed out that "experience [*Erfahrung*] itself can never be science [*Wissenscaft*]. It is in absolute antithesis to knowledge [*Wissen*] and that kind of instruction that follows from general theoretical or technical knowledge. The truth of experience always contains an orientation towards new experience . . . The dialectic of experience has its own fulfillment not in definitive knowledge, but in that openness to experience that is encouraged by experience itself."[xi]

The 'theoretical' definition of *techne* severs knowledge from experience leaving it a form of analysis of production and not a form of productive knowledge that informs the agent in the act of making. *Phronesis* on the other hand is a cognitive process grounded in experience and a concreteness derived from its participation in the particularity of being. Thus the concreteness of experience is formed from the stabilization of particularities in memory, which provide a universalization that is able to maintain a reference to such particularity.[xii] *Phronesis* is a type of experience that is inwardly impelled toward a more fruitful universalization, it therefore functions to deepen experience. This mental faculty is one that is continuously renewed through new experiences, and they're grounding in perceptions and applications in inventions.

The generative process is not undertaken in abstraction within the mind independent of material, but rather emerges out of the actual engagement of the material itself. Together 'theoretical' *techne* and *phronesis* form a symbiotic relationship encompassing the range of being from particular to universal. In the act of making the *tekton* establishes a firm connection between his or her *techne* and the material (*Hule*) such that they are a

concrete unit, in terms of knowledge subject matter. The *technai* bring knowledge of the universal, while the material brings knowledge of the particular, manifested in the *technai* as *phronesis*. Form is not imposed upon material in a totalitarian manner but must be negotiated with it.

It is this symbiosis during the actual process of making that the *tekton* is able to engage the particularities and contingencies of reality and overcome the limitations of theory and abstract reasoning that so define *techne*.[xiii]

This is central to all proponents of tectonic theory if not explicitly then implicitly in their remarks regarding the expressive nature of materials. Such a claim, that materials inherently express or rather elicit certain characteristics or qualities implies the material bring something to the table that has an effect on the expressivity of the architectural detail. This is precisely what Louis Kahn meant when he made the claim that he 'asked the brick what it wanted to be'. It is this immanence that is manipulated by the architect in the application of his or her *techne*.

In a linguistic interpretation of architecture here we would have to make the claim that the architect who masters the *techne* of building is like the poet who elicits from the given vocabulary of words their inner expressive potentiality. We would not claim that the poet imposes meaning on words, but rather brings forth meanings overlooked, repressed or underused to create images that are more powerful and expressive than mere prose.

"good action is an end and desire aims at this."
Aristotle
Nicomachean Ethics, 1139a. 36- 1139b. 4

Phronesis and the Means and Ends Equation

The second parameter of classical tectonics is the resistance to instrumentalization. As stated above, *techne* can be split between possession and application, a condition which allows it to focus solely on either means or ends and to potentially become instrumentalist as a form of excellence.

Aristotle's analysis of *phronesis* was conducted in terms of means and ends and this has often lead to a concentration on means. But one must be careful how one interprets it from such a stand point.[xiv] Because *phronesis* is revealed through a network of social interactions and communal responsibilities, its purpose is not the maximization of what one has (that would be greed), but the maximization of what one must become. This implies a concern with ends (*telos*) as concerns the agent. Aristotle himself pointed to this when he claimed that "good action is an end and desire aims at this."[xv]

Aristotle was at pains to prove that *phronesis* was a natural intuitiveness and not an independently achieved knowledge, that is to say, it is not an abstract knowledge in the sense that mathematics or geometry are abstract because they are independently demonstrable. This means that *phronesis* does not categorically serve the universal and therefore he must repudiate any attribution to *phronesis* of mere calculative efficiency in respect to means. To do so would be to make the claim that it has the ability to serve indifferently to ends. Thus goodness would be only incidental to action. In the end we are left with the idea that *phronesis* is a virtue that must suffuse knowledge such that it

guides it toward the end (*telos*) of man: the greater good i.e. a better life in the ethical as opposed to the materialist sense. For this reason the conceptual framework of instrumentality can only provide a negative formulation.[xvi] In *praxis* the end is determined within the means because of this neither the ends nor the means can be securely fixed a priori.[xvii]

Phronesis therefore does not contain a true distinction between means and ends nor the distinction between possession and application present in 'theoretical' *techne.* It is not as self- contained. The a priori indeterminacy of the means/ends equation within *phronesis* is its defining condition. Any interpretation of it solely as a concern for means would literally be un- *phronetic*. The insinuation is that *phronesis* is always caught up in the temporal dispersion of life making it contingent in the process, and this prevents it from being instrumentalized.[xviii] It must be understood *within* the dialectic of means and ends. *Phronesis* is the third term of the dialectic, taking into consideration the broader social context as a particularity.

This point is a significant one. The tendency to view 'theoretical' *techne* as a deliberative activity of the mind hinges on it as an analysis of means to ends. But in the design process we are not trying to calculate the best means, but rather to calculate what is an appropriate end what is feasible and appropriate in the given situation. This is very relevant to architecture because when confronted with a project we do not begin with an end in any real sense of the term. We may be asked to design a house or library but there is no set model of such a program in the purest sense of the term model. Outside of speculative housing we do not replicate ala mass production an a priori model. It must be remembered that this is precisely what contemporary tectonic theorist's object to the

most. Instead we are confronted with the development of a particular that addresses the concerns in that situation. There is no fixed end from which the architect need only to determine the best means available to achieve it. The end is still fluid. All design studios prove this point; given identical sites and programs a multitude of final projects emerge that solve the problem, but bear no resemblance to one another, they posses the same utility but by different means and to different ends. To conceive of the problem as a simple calculation of efficiency of means to ends is to significantly miss the point and the nature of the task at hand.

> "We are always already in the situation of having to act."
>
> *Gadamer*
> *Truth and Method,* pg. 283

Phronesis and Right Judgment

The third parameter of classical tectonics is it's assertion of the primacy of ethics as a quality of the maker and the made. Theoretical *techne* is concerned with the excellence of possession, the efficiency of the process of production in achieving a priori ends. But such efficiency takes on a utilitarian framework- one that is focused on the quantitative aspects of *poesis* independent of its qualitative aspects- one that potentially leads to 'instrumentalization'. In addition the excellences of possession lie in its evaluation of the process independent of an evaluation of its ends or *telos*. It does not contain the necessary questioning of either means or ends proposed in a given situation that would be necessary for it to possess an ethical structure. In the case of architecture, as Vitruvius asserted, this could lead to impropriety.

What distinguishes *phronesis* is the presence of the agent, according to Aristotle "a man has *phronesis* not by knowing only but by acting."[xix] The agent is by definition more invested in his or her own action then the producer is in the product. As Dunne notes the agent: "is constituted through the actions which disclose him both to others and to himself as the person that he is . . . he becomes and discovers who he is through these actions . . . the medium for this becoming through action is . . . a network of other people who are also agents and with whom he is bound up in relationships of interdependency."[xx] *Phronesis* is bound up in this desire and striving for 'Becoming' in a political sense- as a member of a community determining what constitutes justice.[xxi] It concerns itself with the intentionality of the agent in actions, as well as their eventual effect. It emerges from the desire to be civil.

The finality of *phronesis* as a form of episteme is coterminous with *praxis*. This sets up the real contrast between it and *techne*. While both are described by Aristotle as belonging to *hexis meta logo*u "a reasoned state', *techne* can be forgotten and it can be applied in any direction towards the greater good or as an evil. The reason for this is that *techne* can be split between being and use, or to use Gadamer's terms 'possession' and 'application', this allows it to focus solely on either means or ends and to potentially become an instrumentalist form of excellence. [xxii] *Phronesis,* on the other hand, cannot be forgotten neither can it be misapplied. [xxiii] We cannot speak of an excellence in *phronesis* because it is excellence; a fault in action is a lack of excellence. Ones actions are either just or unjust.[xxiv] Dunne points out that this is so because *praxis* as action and *phronesis* as excellence are so intimately related. "*Phronesis* comes into its own only in the situations that draw the self into action. . . . all genuine *phronesis* is absorbed into

action."[xxv] Or to use Gadamer's understanding of it: "We are always already in the situation of having to act."[xxvi]

In *phronesis* knowledge and virtue become moments in a more comprehensive process of experience. Dunne explains that: "knowledge and virtue taken on their own as concepts are abstractions that must be negated or successively 'sublated' in order to express the concrete and unitary experience of the virtuous person in action."[xxvii] Virtuous action and the knowledge of it are concrete in the sense that both simultaneously occur as real entities and not independently. In the end we are left with the idea of *phronesis* not as knowledge of ethics in any abstract sense, but a resourcefulness of mind that can respond to a particular situation in which these ideas are to be applied. It was a natural proclivity to learn through experience the proper means of action in society. The point here being that what is endemic to *phronesis* and its relationship to knowledge is its dependency on experience as part of the learning process.

Phronesis is that resourcefulness of mind that allows for contemplation of particularity which turns experience into right judgment and action. It is the ability to recollect the past and transform it, in order to provide insight into its future application. Its purpose is to exploit the collective meaning of experience in an attempt to continuously self- correct itself as knowledge. Moreover, it is an 'openness' to experience that allows for a continuation of the learning process.

This is why in *De architectura libri decem* Vitruvius did not provide a prescriptive definition of *décor*. Instead we are told what it demands, its results and we are treated to examples of it in particularity. It suffuses the design process, but is not its precept. Its

origins in status, custom and nature indicate its dependency on experience while its' application in the particularities of a given situation espouse its return to it.

At issue here is that in all productive acts of *poesis,* including architecture, there is both a product and an action taken. We can discuss the product, but its coming into being, its production, was still the conscious action of an agent that exerted some level of inquiry, discovery and judgment. But what must be asserted further is that the product bears within itself the action, which brought it into being in the first place and hence is a manifestation of that judgment. A failure of judgment lies in the nature of the discoveries regarding the relationship between the principles of *techne* and the particulars of the situation. In the case of architecture incorrect judgments and wrong orderings are embodied within the built environment serving to reinforce such judgments.

It is this point that lies at the historical assertion of the relationship between architecture and ethics. In other words, ones' actions as an architect are subordinate to ones actions as a human being. We are talking of the ethics involved in the manifestation of excellences (*arête*) in the process of making. While *techne* refers to an excellence in production, *phronesis* refers the application of that excellence in action. To truly possess excellence the architect must possess both forms of excellence.

The idea that the architect must be just or virtuous or that the architect is accountable for the effects of his or her actions in production has had a long standing. Its conception is present in Vitruvius' notion of *décor,* but decorum has since pervaded architectural literature. It is present in Albeti's *de Re Aedificatoria,* and in the writings of John Ruskin and William Morris, both of whom were concerned with the ethics of production for society, and it also served as the foundational concern of the Deutscher Werkbund.

The heart of the distinction between *techne* and *phronesis* is one of distinction between the subjects of their excellence. Theoretical *techne's* pairing with *phronesis* therefore serves to ensure not only an excellence in possession found in *techne,* but an excellence in application found in *phronesis* as well.

Phronesis and Design Cognition

Aristotle called *phronesis* an intuitive reason concerned with the ultimate particular whose object was not knowledge but perception, the ability to perceive similarities or verisimilitudes. [xxviii] He contrasted this with *nous,* another form of intuitive reason. [xxix] *Nous,* the reason of the *archai,* was the end point of all deductive reasoning, the first principle or ultimate premise, which cannot be further proven. [xxx] It also served therefore as the origin of knowledge. Together *nous,* the ability to find the *archai,* and *phronesis,* the ability to perceive verisimilitudes in particularity, form the beginning and end limits of argumentation. They share a correspondence, becoming the same intuitive reasoning ability at opposite ends of topical thinking; one moving towards universals the other towards particulars.

As a form of cognition, this is what Dunne has referred to as *phronesis- nous;* it served as a cognitive theory of making whose subject matter moves from particular to universal, finding its loci and significance in the uniqueness of the situation and condition. This includes the nature of the materials and the particularity of place.

When we are looking for *phronesis- nous* we should look to: "a mode of knowledge, which is immediate and 'intuitive' rather than to a range of objects which are analytically

simple."[xxxi] The perceptive ability of *phronesis- nous* is one that does not look to description in its apprehension of relationships, but rather to explanation in its apprehension. Within it and its explanatory knowledge there is a sense of 'because' in its formulation. This sense is not one of general propositions, but inscribed within a given particular. Such insight comes not from analyzing general principles, but from the study of particularity.

According to Dunne, this allows for the revelation of significance.[xxxii] *Phronesis* provides us with the ability to see what is really significant in the particularity of existence, allowing for the manifestation of meaning, anchoring it in the *genus loci* of its own condition. It fits itself into the domain of contingent and variable being, what Aristotle called *ta endechomena allos echein*, things that could be otherwise and are within our power to change. *Phronesis* is the cognitive ability to deal with the necessities of lived experience, and to learn from them. This form of cognition is at odds with *theoria*, reason in its abstract sense, which by definition is fixed and permanent.

Phronesis occupies itself with seeking the best solution in a given particular situation such that it bears a close affinity to the discourse of topics. That is to say that it is topical in it structure. It therefore searches for a variable *arche* of a given condition. By doing so it anchors itself into the loci of the situation, as well as its temporal condition. It develops its knowledge base from the particular to the universal as opposed to applying a universal to the particular situation, in order to search for the best solution to a given particular.

It should be no surprise therefore that Vitruvius borrowed the structure of *De architectura libri decem* and his architectural theory from Cicero's rhetoric. Rhetoric is after all a topical form of reasoning.

Summation

The origins of tectonic culture can be found in the Homeric belief that the actions of the *tektons* shape the character of human existence. Increasingly, understanding their actions and ability to create became the paradigm for understanding the world.

During the classical age the increased focus on rationally explaining those actions resulted in the formulation of the dialectic of *techne* (to make) and *phronesis* (to act). The dialectic placed a premium on the cognitive aspects of making, as it asserted that there are in essence two means of conceiving the establishment of order in the world: that of theory and practice.

Aristotle's division of *techne* into two forms: one practical and generative and the other theoretical and analytic, allowed him to establish two epistemological frameworks for dealing with production. Theoretical *techne* conformed to the epistemology of theory while generative *techne* conformed to the epistemology of *phronesis*. The division is clearly one between theory and practice and Aristotle implies that this division carries with it two forms of knowledge associated with them; the first focuses on reason and the other deals in necessities. The true knowledge of the *technite* was neither one of these, but their union in the final act of *poesis*. The creation of real meaning and signification must come from both forms of knowledge,[xxxiii] and the ability to freely move between them.

For his part the Roman architect Vitruvius was able to transform the basic tenets of tectonic culture into a working theory for architecture. Architectural knowledge, its *techne*, following Plato, was the union of theory and practice. The possession of only the

first results in the chasing of shadows, while possession of only the latter could bring no prestige.[xxxiv] Modeled on Aristotle's epistemological structure and the dialectic of *techne* and *phronesis, De architectura libri decem* demonstrated how the *archi-tekton* possessed *sophryosyne* in all three facets, as the dialectic became embedded in his six principles of architecture. Central to his theory was the principle of *décor*, itself a demonstration of *phronesis* taken into *praxis* that served as the third term of the dialectic.

The conceptualization of tectonics in the classical world was crouched in the dialectic and its cognitive implications. This in turn set operable epistemological parameters for both tectonics and architecture.

Inherent in classical tectonics was a critique of *techne* and the limits of rationalism applied to the design process. Its union with *phronesis* in the dialectic served to ameliorate these limitations as the epistemological structure of *phronesis* set operable parameters for tectonics. Central to it was an emphasis on experience and perceptiveness rather that formulated knowledge as the starting point of design, a resistance to instrumentalization, and an assertion of the primacy of ethics in the taking of judgments in design. As a cognitive theory of making, *phronesis* proves to be topical in nature, moving from particular to universal, as it finds its loci and signification in the particularity of the given situation and condition.

ENDNOTES

[i] According to Aristotle; "Having set the end they [*technai*] consider how and by what means it is to be attained; and if it seems to be produced by several means they consider by which it is most easily and best produced . . ." *Nicomachean Ethics*, 3.3.1112b 11-24.

[ii] The critique of *techne* was certainly not limited to the classical age. Herder pointed this out in his writings and framed his critique of the Enlightenment on what he saw as an inappropriate understanding of reason. It was also the same critique leveled by Heidegger at what he termed 'standing reserve', by Jacques Ellul at what he termed 'technique' or 'technical phenomena' and by Louis Mumford at what he termed 'technics'.

[iii] Aristotle, *Nicomachean Ethics*, 1.3.1095a 4-5. See also 10.9.

[iv] Ibid, 5.10.1137b 13-24.

[v] What Aristotle had done was to reject Socrates' understanding of Ethics as *theoria*, in doing so he provided for the possibility of understanding *sophrosyne* as a practical episteme. It is true that Socrates' had insisted that wisdom had to be practical and was in fact credited with bring philosophy down form the heavens. But it was Aristotle in his definition of phronesis that provided the epistemological framework for understanding it as episteme. One must understand Aristotle here as continuing Socrates' intentions.

[vi] Dunne refers to this as 'Phronetic Experience' and claims that it is distinguished from the universalism of theory and 'ordinary experience' in that: ". . . while it retains familiarity with particulars, it still contains a greater pressure toward universalization . . . it may lag behind theory in the degree of formal universality possessed by its major premises, but it has the advantage over theory in that it can redeem all the minor premises implicitly contained in each of its major premises and thus maximize its contribution to action." Dunne, *Back to the Rough Ground: 'Phronesis' and 'Techne' in Modern Philosophy and in Aristotle*, University of Notre Dame Press, Notre Dame, London, 1993, pp. 294- 5.

[vii] Gadamer, *Truth and Method*, trans. edit. by G. Barden and J. Cumming, London: Sheed and Ward, 1975, p. 324.

[viii] "experience [*Erfahrung*] itself can never be science [*Wissenscaft*]. It is in absolute antithesis to knowledge [*Wissen*] and that kind of instruction that follows from general theoretical or technical knowledge. The truth of experience always contains an orientation towards new experience. That is why a person who is called 'experienced' has not only become such through experiences but is also open to new experiences. . . . [the experienced person] is particularly well- equipped to have new experiences and to learn from them. The dialectic of experience has its own fulfillment not in definitive knowledge, but in that openness to experience that is encouraged by experience itself." Gadamer, *Truth and Method*, trans. edit. by G. Barden and J. Cumming, London: Sheed and Ward, 1975, p. 319.

[ix] See Gadamer *Truth and Method*, trans. edit. by G. Barden and J. Cumming, London: Sheed and Ward, 1975, pg. 286.

[x] In the *Eudemian Ethics*, Aristolte argued this very point. "The Socratic saying that nothing is stronger than *phronesis* is right. But when Socrates said this of knowledge he was wrong. For *phronesis* is an excellence and not a species of knowledge, but another kind of cognition." Aristotle, *Eudemian Ethics*, 1246b 8-11. *Theoria*, is the highest form of wisdom, but in the realm of practical knowledge nothing is higher than *phronesis.* It rules over all forms of practical knowledge, it does so because it is precisely not knowledge, but another means of cognition or thinking. It is the knowledge of good and evil, of right action, applied in the particularity of existence.

[xi] Gadamer, *Truth and Method*, trans. edit. by G. Barden and J. Cumming, London: Sheed and Ward, 1975, p. 319.

[xii] Aristotle alludes to the limits of techne as theoretical and the concreteness of *phronesis* when he states: "This is why some who do not know, and especially those who have experience, are more practical than others who know [possess techne]; for if a man knew that light meats are digestible and wholesome, but did not know which sorts of meat are light, he would not produce health, but the man who knows that chicken is wholesome is more likely to produce health. Now *phronesis* is concerned with action; therefore one needs both kinds of knowledge, but particularly the latter [*phronesis*]." Aristotle, *Nicomachean Ethics*, 1141b 16- 22.

[xiii] Hegel would later refer to this organic union of the universal and the particular as the concrete universal and it served as the basis of his aesthetic theory something I shall return to later.

[xiv] There is ample justification for this given that the common usage in Ancient and Classical times was as what was in one's own best interest. In fact Arsitotle gives us this list of common usage that imply a concern with means that leads to an instrumentalist interpretation. But it is important to note that Aristotle

rejected them. This point is noted by Alastair MacIntyre in *After Virtue* were he states: ". . . although Aristotle treats the acquisition and exercise of the virtues as means to an end, the relationship of means to end is internal and not external. I call a means internal to a given end when the end cannot be adequately characterized independently of a characterization of the means." See MacIntyre, *After Virtue: a Study in Moral Virtue,* University of Notre Dame Press, Notre Dame, London, 1984, pg. 184.

[xv] His complete remark was that *phronesis:* "rules the productive intellect as well, since every one who makes, makes for an end, and that which is made is not an end in an unqualified sense but only relative to something i.e. of something)- only that which is done is that; for good action is an end and desire aims at this." Thus his understanding of *phronesis* in relation to ends was framed within an understanding of the means ends dialectic as relates to production. Aristotle, *Nicomachean Ethics,* 1139a 36- 1139b 4.

[xvi] Dunne argues: "I have been trying to show that the whole conceptual framework of instrumentality, which is so well fitted to the analysis of *techne,* can provide only negative formulations in relation to *phronesis* and *praxis* and that we must continually stretch our thinking beyond it if we are to catch the movement of the self as agent." Dunne, *Back to the Rough Ground: 'Phronesis' and 'Techne' in Modern Philosophy and in Aristotle,* University of Notre Dame Press, Notre Dame, London, 1993, pg. 269.

[xvii] Because *phronesis* is rooted in the ethos of the good it cannot be determined prior to the actual situations in which it is realized. This leads Dunne to assert that as a form of episteme it is 'characterized at least as much by a perceptivness with regard to concrete particulars as by knowledge of universal principles.' See Dunne, *Back to the Rough Ground: 'Phronesis' and 'Techne' in Modern Philosophy and in Aristotle,* University of Notre Dame Press, Notre Dame, London, 1993, pg. 273.

[xviii] On this point Dunne states: "Whatever issues from it, by way of action, already has the full weight of ourselves behind it and so can be instrumentalized not by ourselves but, if at all, only by someone else who may try to use what we have done for his own ends. The point here, however, is that such a person will not be able to manipulate *himself* in the same way." See Dunne, *Back to the Rough Ground: 'Phronesis' and 'Techne' in Modern Philosophy and in Aristotle,* University of Notre Dame Press, Notre Dame, London, 1993, pg. 268. The same point was made by Alastair MacIntyre in *After Virtue* when he notes in chapter 8 that the social sciences cannot in fact hold to generalized statements of action because there can be no predictive certainty in human action. See Alastair MacIntyre, *After Virtue a Study in Moral Virtue,* University of Notre Dame Press, Notre Dame, London, 1984, chapter 8 pp. 88- 108.

[xix] Aristotle, *Nicomachean Ethics,* 7.10.1152a 8-9.

[xx] Dunne, *Back to the Rough Ground: 'Phronesis' and 'Techne' in Modern Philosophy and in Aristotle,* University of Notre Dame Press, Notre Dame, London, 1993, see pages 263.

[xxi] Aristotle notes that man is a political animal whose nature it is to live with others and in fact needs others. See Aristotle, *Nicomachean Ethics,* 10.7.1177a 30-34 & 9.9.1169b 16-19.

[xxii] Gadamer, *Truth and Method,* trans. edit. by G. Barden and J. Cumming, London: Sheed and Ward, 1975, pg. 284.

[xxiii] "While there is such a thing as excellence in *techne,* there is no such thing as excellence in *phronesis*; and in *techne* he who errs willingly is preferable, but in *phronesis,* as in the [ethical] excellences he is the reverse." Aristotle, *Nicomachean Ethics,* 6.5.1140b 28-30.

[xxiv] "While one cannot indeed from knowledge be ignorant, but only make mistakes and do the same things as one does form ignorance, in the case of justice a man cannot even act from it in the way that he will act from injustice." Aristotle, *Eudemian Ethics,* 1246b 2-4.

[xxv] Dunne, *Back to the Rough Ground: 'Phronesis' and 'Techne' in Modern Philosophy and in Aristotle,* University of Notre Dame Press, Notre Dame, London, 1993, pg. 268.

[xxvi] Gadamer, *Truth and Method,* trans. edit. by G. Barden and J. Cumming, London: Sheed and Ward, 1975, pg. 283.

[xxvii] Dunne, *Back to the Rough Ground: 'Phronesis' and 'Techne' in Modern Philosophy and in Aristotle,* University of Notre Dame Press, Notre Dame, London, 1993, pg. 280.

[xxviii] "It [*phronesis*] is opposed, then to *nous*; for nous is of the definitions, for which no reason can be given, while *phronesis* is concerned with the ultimate particular [*eschaton*], which is the object not of knowledge but of perception- not the perception of qualities peculiar to one sense but a perception akin to that by which we perceive that the *eschaton* is a triangle for in the direction too there will be a limit." Aristotle, *Nicomachean Ethics,* 6.8. 1142a 25- 29.

[xxix] "*Nous* is concerned with the *ultimates* in both directions; for both the primary definitions and their *ultimates* are objects of *nous* and not of argument, and in demonstrations *nous* grasps the unchangeable and

primary definitions, while in practical reasoning it grasps the last and contingent fact, i.e. the second proposition. For these are the staring points of that for the sake of which, since the universals are reached from the particulars; of these therefore we must have perception and this is *nous*." Aristotle, *Nicomachean Ethics*, 6.11. 1143a 35- 1143b5.

[xxx] Ernesto Grassi notes that "We claim to know something [theoretical knowledge] when we are able to prove it. to prove means to show something to be something, on the basis of something. To have something through which something is shown and explained definitively is the foundation of our knowledge." This may be referred to as apodictic speech, which shows to demonstrate through the tracing back to first principles or archai. This is the basis of theoretical knowledge according to Aristotle and the subject of *nous*. The *archai* by definition cannot be demonstrated to be true. They cannot be the object of apodictic or logical speech, for if they could they would cease to be the *archai*, by definition. We can then state that we arrive at the *archai* via deductive and inductive reasoning but we must confront the fact that the *archai* is not itself the product of reasoning. In the end as Grassi rightly notes it proves to be a belief that cannot be proven but that serves as the basis of knowledge and cognition. It is the indicative nature of the *archai*, which provides the framework within which knowledge and meaning can come into being. Thus it is the source or beginning of knowledge understood theoretically. See Grassi *Rhetoric as Philosophy*, The Pennsylvania State University Press, University Park & London, 1980, pg. 19.

[xxxi] Dunne, *Back to the Rough Ground: 'Phronesis' and 'Techne' in Modern Philosophy and in Aristotle*, University of Notre Dame Press, Notre Dame, London, 1993, see pp. 302.

[xxxii] "Phronesis is a habit of attentiveness that makes the resources of one's past experience flexibly available to one and, at the same time, allows the present situation to 'unconceal' its particular significance- which it may do comfortably within the terms of one's experience or else only by evincing as insight which, while it could not occur without one's past experience, still transcends, and so enriches, it."Dunne, *Back to the Rough Ground: 'Phronesis' and 'Techne' in Modern Philosophy and in Aristotle*, University of Notre Dame Press, Notre Dame, London, 1993, see pp. 305- 6.

[xxxiii] "Both in general and especially in architecture are these two things found; that which signifies and that which is signified. That which is signified is the thing proposed about which we speak; that which signifies is the demonstration unfolded in systems of precepts. Wherefore a man who is to follow the architectural profession manifestly needs to have experience of both kinds." Vitruvius, *On Architecture in Ten Books*, trans. Granger, Loeb Classical Library, Harvard University Press, bk. 1 chap. 1 par 3.

[xxxiv] "So architects who without culture aim at manual skill cannot gain a prestige corresponding to their labours, while those who trust to theory and literature obviously follow a shadow and not reality. But those who have mastered both, like men equipped in full armour, soon acquire influence and attain their purpose." Vitruvius, *On Architecture in Ten Books*, trans. Granger, Loeb Classical Library, Harvard University Press, bk. 1 chap. 1 par 2.

Part III

Architecture and the Epistemology of Science: The Formulation of a Rational Tectonics

Chapter 7: Science and the Image of the World

> ". . . of all those who have already searched for truth in the sciences, only the mathematicians were able to find demonstrations, that is, certain and evident reasons."
>
> Rene Descartes
> *Discourse on Method*

The Medieval Imago Mundi: Geometry and the World

One of the fundamental possessions of an age is the ultimate picture of the world that it conjures up for itself. This image is in the end the final controlling factor in all thinking and knowledge formation. That the image of the world formed after the Renaissance was fundamentally different from that prior to it is undeniable. The Renaissance set in motion the construction of a new image of the world and of man's place in it. It was a period of transformation, the junction between one image and another. Since our first task is to examine this new image, we must begin our construing at the juncture where this new image was constructed. We need to determine how the Renaissance transformed the image of the medieval world.

What was the medieval *imago mundi*? In medieval cosmology man occupied a more significant and determinative place in relation to physical nature. The world not only existed for man, but was also fully present and fully intelligible. It possessed an essentially human character, seen as explainable in terms of its relationship to humanity and human purposes. These explanations were valued above those of efficient causality.[i]

Aristotelian metaphysics was one of difference that sought the distinct essence of the thing, through an examination of its qualitative characteristics. Its epistemology was

structured upon the doctrine of the Four Causes; four forms of questions designed to determine the nature of a thing. 1) Efficient Cause- what is the source of its beginning? (St. Thomas Aquinas had argued that God must be the efficient cause of all things), 2) Final Cause- what is its purpose or use? 3) Formal Cause- what is it? 4) Material Cause- what is its constitutive material? These questions were answered by analyzing both qualitative and quantitative characteristics as perceived by the senses. "The world of nature existed that it might be known and enjoyed by man. Man in turn existed that he might 'know God and enjoy him forever."[ii]

To relate this in architectural terms, we might claim that the material cause of a house is; either stone or wood. The formal cause is; shelter from the elements. Its final cause would be; to bring about a more civil and pious world. The efficient cause would be; God will's it.

In the medieval image of the world, God existed at the summit of a hierarchically arranged universe, in the middle was Man, and below was Nature. This hierarchical system was one of intrinsic value, in which God, the being *par excellence,* is the most real thing of all. It implies a hierarchy of reality, with degrees of being, wherein that which is at the bottom, the 'realm of nature', possesses the least reality- a reality explained in essentially qualitative terms

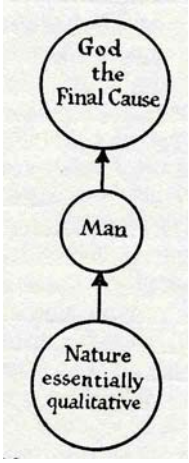


Fig. 1 Image of medieval Hierarchy

The fundamental task of philosophy and the pursuit of knowledge were to trace the architectonics of 'being'. Because of its structure, knowledge of nature had to pass through man, in order to reach the ultimate reality, God. "All knowledge, no matter what its content, is 'natural' so long as it springs from human reason alone and does not rely on other foundations of certainty. 'Nature' therefore does not so much signify a given group of objects as a certain 'horizon' of knowledge, of the comprehension of reality."[iii] Comprehension of this horizon required human reason, and was grasped through a combination of sense perception, logical inference and judgment. The task of Scholastic philosophy was to reconcile the 'realm of nature' with the 'realm of grace' in order to find the harmony of God's world.[iv] Stress was placed on final causality, given in terms of purpose or use that was tied to man's relationship to God.

For medieval philosophy, the questioning of events in the 'realm of nature' was always a question of '*why*' explained in terms of use and purpose for man and eventually via the quest for union with God. In this way medieval metaphysics was both a

theological and a practical philosophy. Why was this explanation of the world that gave accounts of reality in terms of use and the 'Good', abandoned? What replaced it?

> "We do not learn to demonstrate from the manuals of logic, but from the books which are full of demonstrations, which are the mathematical and not the logical."
>
> Galileo
> *Opera*, I, 42

The Transformation of the World

The rise of Neo-Platonism in the Renaissance brought with it a redefinition of Nature that had a profound impact on Western metaphysics. Renaissance philosophy, due to the influence of men like Nicholas of Cusa, abolished the dualism between God and the created world. The true essence of nature was now seen to be the creative process (*natura naturans*) rather than the created world (*natura naturata*). Because this process is ongoing, divine essence participates in nature, moving within it as a formative principle. In this new system there was no need for the soul to act as a mediator.

Ernst Cassirer has noted that this shift literally elevated Nature to the sphere of the Divine, while at the same time giving priority to the individual entities of nature themselves, each of which possessed the Divine within their own nature. The underlying harmonies sought in Nature as a reflection of the Divine could now be found within a given entity.[v] It is important to note here that this implies that the part asserts itself as equal to the whole, within the discourse of knowledge.

The 'realm of nature' and the 'realm of grace' were still viewed as distinct but their interconnectedness was now one of direct participation. While we often think of

Renaissance Humanism as placing Man in a central position, its definition of nature actually removed Man from that location. The search for fixed immutable essences was now to be found within the structure of each of the individual parts of nature itself.

In Medieval philosophy the' realm of nature' had been described in both qualitative and quantitative terms, but its essence was seen in fundamentally qualitative terms, that were best described through logic. Mathematics was a quantitative means of description. Since quantity was only one of ten predicaments and not considered the most important, logic was higher than mathematics as a means of ascertaining certain truth.

The reinterpretation of nature not only removed the centuries old homocentric focus of philosophy and challenged the relationship between part and whole, but it also had a profound impact on the course of epistemology. It essentially removed the Aristotelian conception of logic- defined as deductive inference - from its central position in the epistemology of natural physics. It was replaced with a mathematical methodology, defined first as geometrical, then algebraic and finally calculus. This substitution of quantitative over qualitative, mathematical method over logical inference, has been debated in metaphysics ever since. It also played a significant role in the history of architectural theory. Why and how did this substitution take place?

Since the time of the ancients, the world had always been seen as reducible to geometrical representations and geometry was the mathematical science *par excellence*. According to Pythagorean doctrine, the world was made up of numbers understood as geometrical units. Plato took this up in the *Timaeus*, when he discussed the structure of the universe in mathematical terms. In the *Meno* he resorted to mathematics to explain his

doctrine of ‘Recollection’, and in the *Parmenides* Plato had suggested that the plurality of the universe unfolded from unity to multiplicity via a mathematical process.

By the late Middle Ages there was a tendency to explain the world through spatial images or geometrical figures. Evidence of this form of conceptualization might be found in the 13th century lodge-book of Villard de Honnecourt. In the section on draftsmanship entitled ‘Portraiture’, Villard introduces us to the geometrical system used during that time to describe the natural world. Forms are broken down, their parts abstracted or reduced to pure geometrical figures and then reconstructed. Unlike the proportional systems of Antiquity that were based on modular measurements of organic forms, the medieval draftsman interprets the world as a compilation of autonomous geometrical figures added together. Villard’s sketches give us an insight into a system through which the world might have been understood, as a world conceived as essentially geometrical.

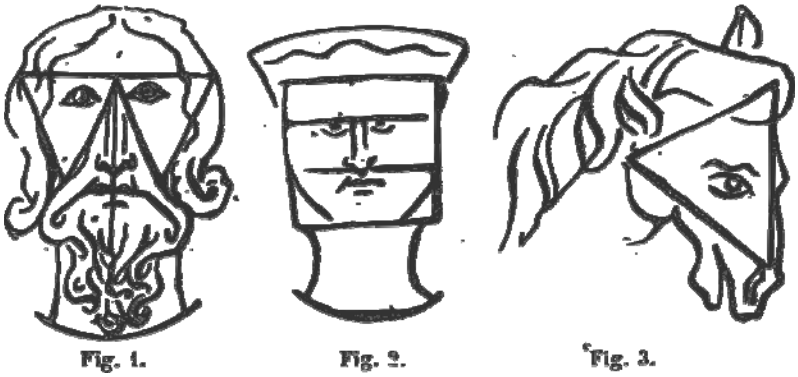


Fig. 2 Image from Villard de Honnecourt’s Lodge- book

After the 13th century there was a strong revival in mathematical studies. Men like Roger Bacon began to express the desire to find a fuller mathematical interpretation of nature.

With the 'discovery' in c. 1410 of linear, or scientific, perspective by Brunelleschi and others, the world had a model for the conceptualization of geometric space. Reality could now be defined, reduced and represented through mathematical formulation. It provided a means by which reality could now be understood not only in geometrical figures, but also as geometrical space. With its codification by Alberti, in his 1435 *Della Pittura,* the model became readily available and a vital part of the Renaissance image of the world.

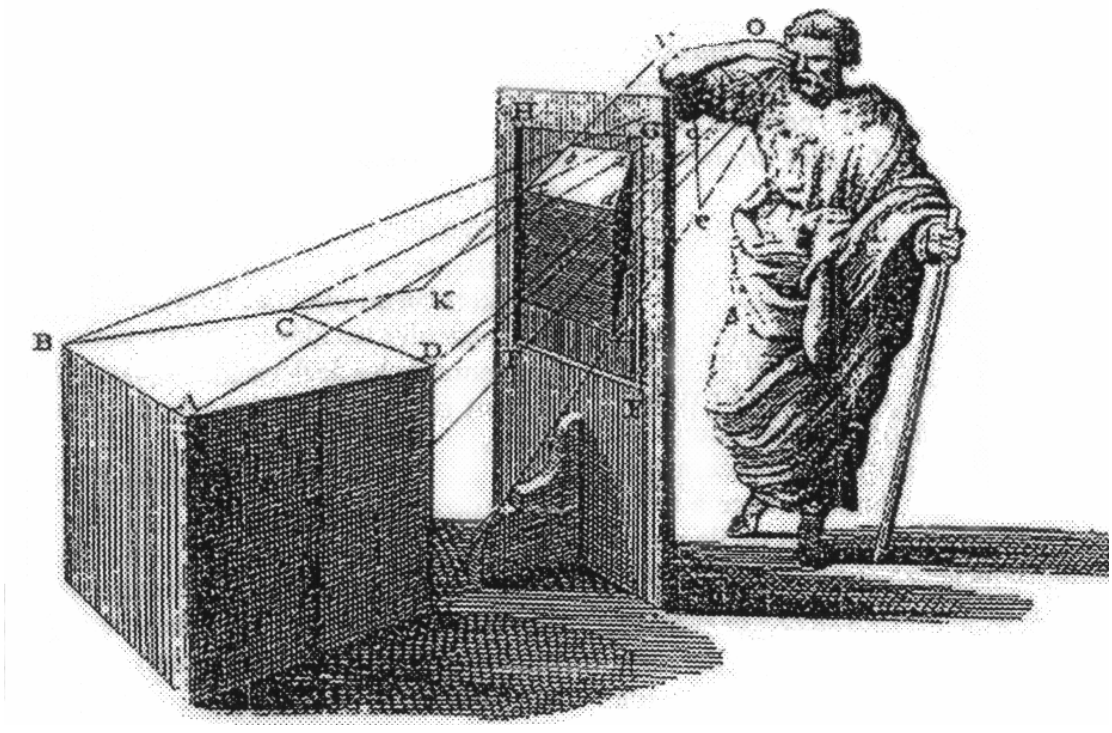
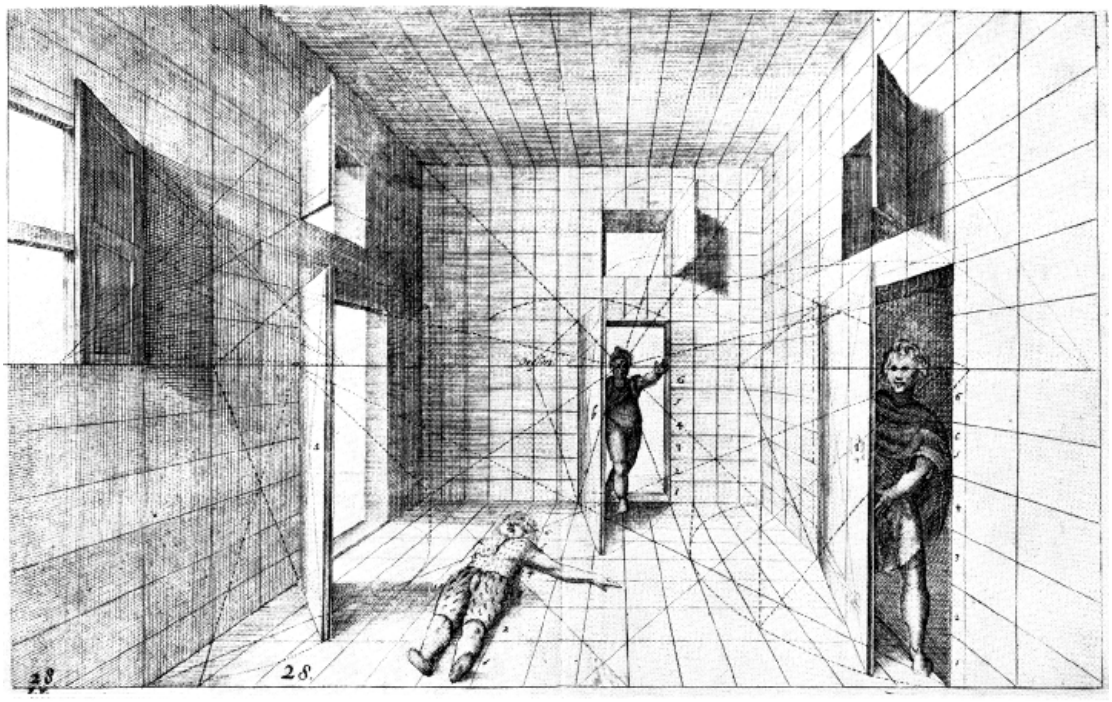


Fig. 3 Image of Construction of Linear Perspective



JAN VREDEMAN DE VRIES, *Perspective* (Leiden, 1604–5), plate 28. Courtesy, the Bancroft Library, Berkeley, California.

Fig. 4 Image Geometric construction of Space

Renaissance thinkers such as, Nicolas of Cusa[vi], Leonardo Da Vinci and Giordano Bruno perceived the infinite harmony of the world as based on mathematical proportions. The 'realm of nature' was one of number and measurement and the stage was set for the belief that all certain knowledge was mathematical. It is no accident that Leonardo takes for granted that the only way to communicate the conclusions to his experiments in mechanics, hydraulics and optics is mathematically. Nor is it by accident that architects of the Renaissance became ever more concerned with Ideal form and proportion. The studies of ideal geometrical compositions found in the work of Leonardo and Bramante, the proportional systems of Alberti and Palladio, as well as ideal city plans such as Palmanova are ample proof of this desire to conceive space in geometrical terms.

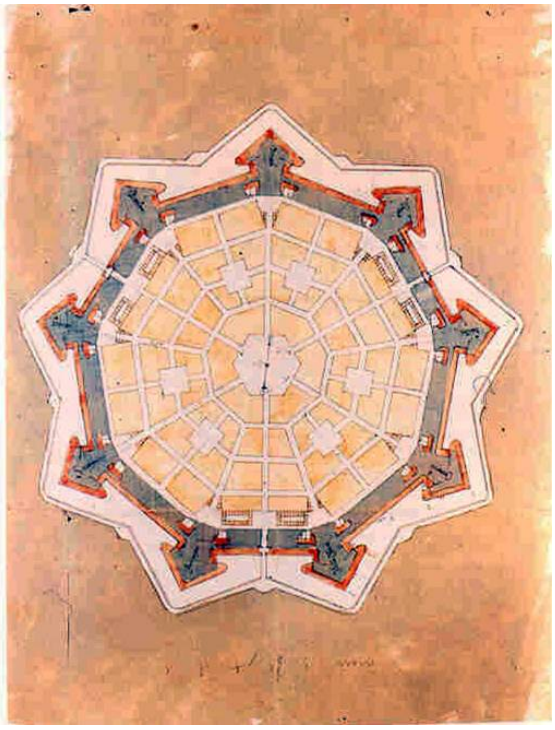


Fig. 5 Images of ideal forms and city plans

Neo-Platonism and Humanism eventually weakened the strong hold of Aristotelian metaphysics. Plato's philosophy, like Aristotle's, included a hierarchical cosmology in which the 'realm of nature' was subordinate to the 'realm of Ideas', leaving in place a concern with the transcendental, so important to Aristotelian metaphysics. For this reason the majority of Renaissance Neo-Platonists continued to study the world from the perspective of human purpose and use. While the focus of humanistic studies had shifted from 'the realm of grace' to the 'realm of nature' and the 'realm of human action', the boundaries of that knowledge were still conceived within the relationship between human reason and divine knowledge. The arts and humanities, including architecture, developed in line with this traditional Neo-Platonism.

But that also carried with it a Pythagorean element in which the world was viewed as a mathematical structure and harmony. The universe was fundamentally geometrical and could therefore, as in Plato's *Timeaus,* be reduced to limited geometrical figures or portions of space. A universal mathematics of nature was conceivable, even though how it was to be applied was unresolved. But the overall focus of Neo-Platonism was not on that form of mathematical reduction. The interest in mathematical harmonies and proportions in architecture were central but they were balanced with other qualitative concerns such as Beauty and Ethics. Alberti for example, had defined the task of architecture and the architect in terms of social commitment, ethics and service to humanity as a whole. That balance would remain undisturbed until the middle of the 1600's.

> "I often considered if perchance a more rational system of circles might be discovered, on which all the apparent diversity might depend, in such a manner that each of the planet would be uniformly moved, as the principle of absolute motion requires."
>
> Copernicus
> *Commentariolus*, fol.1a,b,2a

The Copernican Revolution and the New Image of the World

With the world comprehended as geometrical space, it was only logical to extend this to cosmology. It is with this extension, the Copernican Revolution and the development of Galilean science, that the epistemological foundations of science were formulated. While still maintaining geometry as a form of *mathmesis*, a *scientia universalis* relating

the microcosm to the macrocosm, it opened the door for the later 'instrumentalization' of mathematics devoid of transcendental dimensions.[vii]

In Ptolemaic cosmology the earth was given as a fixed condition, but when astronomers looked to the heavens they observed a series of regularly changing phenomena that produced a series of anomalies. These had to be accounted for by a complex set of equations that provided a certain dilemma. Since antiquity, nature and God's order had been perceived as governed by the principle of simplicity. As evidenced by the common proverbs *'Natura semper agit per vias brevissimas'; 'Natura nihil facit frustr'; and 'natura neque redundat in superfluis, neque deficit in necessariis.'* This carried over into mathematics in the form of an aesthetic prerogative- the simpler mathematical solution is always the best solution. If the equations could be simplified it would be an improvement. This is precisely what Renaissance astronomers sought to find- a means for generating a simpler set of mathematical equations.

The complexity of the Ptolemaic system inspired Copernicus to question its basic assumption: that the earth was the only legitimate reference for the study of the universe. In seeking a simpler mathematical solution he came upon his now famous conclusion; if the sun was used as the reference point instead of the earth the geometrical equations and solution were far simpler. What attracted many to Copernicus' new cosmology was the elegant simplicity of its mathematical explanation, not whether it was true or false that the earth revolved around the sun.[viii]

Copernicus' solution carried with it ramifications that his contemporaries were quick to realize. It raised an important question concerning the legitimacy of taking any point of reference other than the earth. Not only does this produce a non-geocentric worldview

and support the emerging non-homocentric philosophy of science, but it also forced, as we shall see, a reevaluation of the principle of final causality: what is the use and purpose of the thing? Copernicus' solution, if accepted, meant subordinating the universe as a whole to a mathematical structure. Once convinced of the mathematical structure it was only natural that the principle of mathematical relativity must pertain to the earth and the 'realm of nature'. The acceptance of his solution meant a radical transformation in epistemology and the reduction of all certain truth to mathematical methodology.

If the fundamental epistemological distinction of the emerging new science had to do with the significance of mathematics, it was Kepler who gave it its preeminence. He believed that the universe was composed of mathematical harmonies, and that the diverse facts of the 'realm of nature', were connected by them. The object of scientific study became the search for connecting harmonies that united the diverse phenomena of the world. He accomplished this by applying Copernicus' ideas to a broader range of knowledge.

To prove that the universe was simple, ordered and harmonious he had to overcome the Aristotelian philosophy of distinction by reducing empirical facts to mathematical relationships. Following men like Vives, Sanchez, Montaigne and Campanella he revived the distinction between primary and secondary qualities found in the ancient atomist and skeptic schools of thought. Kepler believed that: "Knowledge as it is immediately offered the mind through the senses is obscure, confused, contradictory, and hence untrustworthy; only those features of the world in terms of which we get certain and consistent knowledge open before us what is indubitably and permanently real. Other qualities are not real qualities of things, but only signs of them."[ix]

This skeptical position became an important part of the emerging image of the world. All real qualities were those that related to the mathematical harmonies of the world and the world could be known with certainty only through its quantitative characteristics. All difference became difference of number alone. From this point forward quantity became the primary feature of things and the only objects of study as far as the world of knowledge was concerned. The qualitative and changeable surface qualities did not fit into the harmony of the rationally ordered mathematical schema of reality, and were no longer viewed as possessing substantial reality.

With Kepler the task of knowledge was no longer to define what a thing 'is', what makes it distinct, its 'essence', but how it was mathematically related to everything else. The world of objects was reduced to mathematical homogeneity, a uniform system of exchange, related to each other through a common set of principles. A true hypothesis was one that addressed underlying mathematical harmonies and mathematical demonstration became the only means of proof.

The beginnings of the impact of this definition of knowledge on architecture can be found in the treatises of the late 1500's. It was during that time that theorists such as Serlio and Vignola began to emphasize the prescriptive character of the orders. In 1537 with the publication of Book IV the *Regola,* Serlio began the rigid codification of the proportional system of the orders unknown in Antiquity and the early Renaissance. Vignola's 1562 publication of the *Regola della cinque ordini,* the most widely used 'textbook' on architecture up to the 19th century, was an attempt to provide a simplified means of calculating the measurements of the parts of the orders.

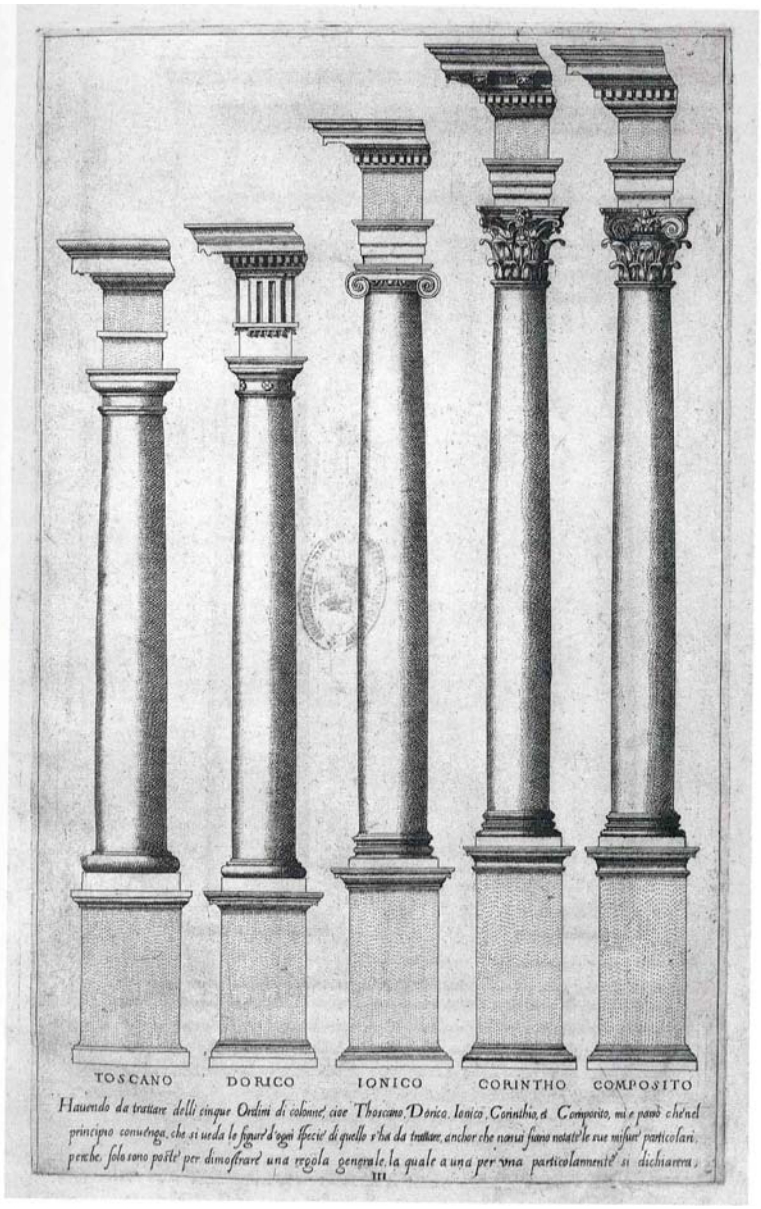


Fig. 6 Image of Plate #3 The system of the Orders from the Regola

Vignola sought a unified mathematical principle for determining the dimensions of the orders. But his formalism and a complete reluctance to derive the canon of the orders from their symbolic meanings, is also evident. Neither of these architects intended to introduce a dogmatic approach to the orders, or to reduce architecture to mathematical prescription. Yet their theoretical writings on the orders formed the basis for a

concentration on proportion and the orders that would define architectural discourse for the next century, a discourse that would transform the very nature of architectural theory by the early 1700's.

It was this new image of the world, mathematically structured and determined, that was the basis of the new science and the emerging metaphysics of the modern age. But this image was still endowed with a transcendental character. Mathematics was still a symbolic system designed to relate the macrocosm to the microcosm, in a universe charged with divinity and composed of difference. This would soon change as the development of Galileo's new science and Cartesian metaphysics threatened that symbolic understanding.

> "My Purpose is to set forth a very new science dealing with a very ancient subject."
>
> Galileo
> *Dialogues Concerning Two New Sciences*

The New Metaphysics of Science

The new science restructured the epistemological foundation that had existed since antiquity, essentially turning it on its ear. It was based upon the assumption of the mathematical nature of the universe- an assumption that was essentially impossible to prove without resorting to the use of mathematical demonstration. This form of logic appears circular, but it was based upon a firm conviction of the mathematical structure of both nature and the mind of God, a conviction that, at the time, was uncontestable. It was impossible for men like Galileo, Descartes, Newton, and those that followed them, to step outside of the very *episteme* they were constructing. That construction saw a redefinition

not only of epistemology but also, of the definition of reality, the human mind, and causality. The scientific quest for certain knowledge of the world would eventually result in the complete capitulation of those who believed that it would be possible to understand the world in its complexity. By the 1730's the result was a concept of the world profoundly different from the world of Aristotelian categories. A world in which man saw himself increasingly alienated as all transcendent qualities disappeared. The writings of three key figures, Galileo, Descartes and Newton, played important parts in that transformation.

> "This book [the universe] is written in the mathematical language, and the symbols are triangles, circles and other geometrical figures, without whose help it is impossible to comprehend a single word of it; without which one wanders in vain through a dark labyrinth."
>
> Galileo
> *Dialogues Concerning Two New Sciences*

Galileo and the Foundations of a New Epistemology

A contemporary and friend of Kepler, Galileo adhered to many of the same basic beliefs as the former. But he would take these beliefs one step further, and with even more profound implications. Logic had formerly always been seen as the primary means of accessing truth but in Galileo it assumed a secondary role. "We do not learn to demonstrate from the manuals of logic, but from the books which are full of demonstrations, which are the mathematical and not the logical."[x] No longer the means of demonstration, it became a means to analyze the consistency of a conclusion derived from mathematical demonstration. "Logic teaches us to know, whether the conclusions

and demonstrations which are already discovered and at hand are consistent, but it cannot be said that it teaches us how to find consistent conclusions and demonstrations."[xi] Mathematics was now placed higher than logic as a vehicle of truth.

For Galileo, Divine Wisdom was mathematical and since the human mind also possessed mathematical reason, the difference between the two was simply one of degree. Divine Wisdom was more complete and thorough. In his *Dialogues Concerning Two Great Systems of the World* (1632) he wrote: "As to the truth, of which mathematical demonstrations give us the knowledge, it is the same which the divine Wisdom knoweth; but . . . the whereof we understand some few, is highly more excellent than ours, which proceedeth by ratiocination, and passeth from conclusion to conclusion, whereas his is done at the single thought or intuition."[xii] The book of the universe and knowledge of it could not be understood ". . . if we do not first learn the language and grasp the symbols, in which it is written. This book [the universe] is written in the mathematical language, and the symbols are triangles, circles and other geometrical figures, without whose help it is impossible to comprehend a single word of it; without which one wanders in vain through a dark labyrinth."[xiii] The key to nature was its underlying mathematical principles, now conceived of as the only valid method of study and proof in the natural sciences.

Galileo was to a certain degree an empiricist. But, as Copernicus' astronomical observations had proven, the senses could not always be trusted. They were an inaccurate cipher, one that often led to inaccurate judgments. For Galileo, the empirical method was unreliable and opened a Pandora's box when it came to the verification of truth.

The goal of the new science was to establish the rational mathematical order of the universe, but when empirical observation could not confirm this, it had to be superseded. Thus the empirical method became subservient to the mathematical demonstration. The former was used only to demonstrate a previously proven mathematical postulate.[xiv] In this Galileo reveals one of the key problems of science; the *a priori* belief that the world was mathematical could not be confirmed by sensory experience, therefore the validity of sensory experience had to be challenged. Sense perception had to conform to mathematical principles.

Like Kepler, he had adopted a doctrine of primary and secondary causes.[xv] But Galileo would develop a form of Atomism that would explain and justify the doctrine. He postulated that all bodies were made up of infinitely small indivisible atoms that possessed only the quantitative characteristics of number, figure, magnitude, position and motion, only these characteristics could be ascribed to atoms. These could not be divorced from a given body, and therefore, they remained the fixed and permanent aspects of the 'Thing- in- itself'. It was the quantitative, and not the qualitative, characteristics that defined the formal cause, and so only they were aspects of reality.

This meant that the secondary qualities observed by the senses, such as hot, cold, soft, hard, loud etc, were derived from another source and were not truly real. Galileo attributed them to the human sense organs themselves. This allowed him to ascribe the secondary qualitative characteristics perceived by the senses to opinion and sensorial illusion and dismiss them from the discourse of knowledge.

Galileo's primary interest was in terrestrial dynamics- the movement of earthly, as opposed to heavenly bodies. He was not interested in '*Why?'* but specifically *"How?'*

bodies moved. Given his brand of atomism, it should be no surprise that in his brand of dynamics all bodily movements would have to be reduced to exact mathematical measurement.

Since the 'thing- in- itself was an atomic figure of numerical extension, and physical space was assumed identical with geometry, motion became a mathematical concept. Within Galileo's science, space, distance and time now became fundamental categories.[xvi] The redefinition of reality in terms of distance, measured in units of time turned the finite world of Aristotle into an infinite extension. Center, place and location became relative concepts, a point in space dependent upon its relationship to another body moving in space and time.

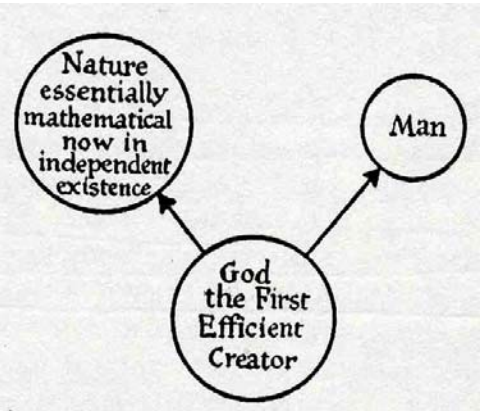


Fig. 7 Image of Galilean conception of God nature and man

Causality became a question of the '*how'* of atomic motions themselves. Under such conditions final causality- use and purpose- have no bearing whatsoever. The separation of man from nature and God, latent in Kelper, now became overt. God, in Aristotelian terms, was no longer possible. To maintain the notion of Divinity, Galileo had to set God as the first efficient cause, or creator, of the atoms. No longer the Supreme Good that

directs, controls or "is" the universe, God was now something quite separate from nature, the inventor of a vast mechanical machine, and man an unimportant spectator.

Within his system of dynamics, Time became nothing more than a mathematical measurement, a point in an ever-flowing continuum. The temporal moment became nothing more than the slipping boundary between the past and the future. All is in a state of permanent becoming, with no possible conception of actuality, in Aristotelian terms. The lived experience became inconsequential, as utopian dreams of the future became the only potential reality.

> "I was a substance the whole essence or nature of which was merely to think, and which, in order to exist, needed no place and depended on no material thing. Thus this 'I' that is, the soul through which I am what I am, is entirely distinct from the body, and is even easier to know than the body, and even if there were no body, the soul would not cease to be all that it is."
>
> Rene Descartes
> *Discourse on Method*

Descartes and the Foundation of Modern Metaphysics

Galileo's new science dramatically altered the epistemology of science, as it was understood in Aristotelian metaphysics. But it also indirectly affected architectural theory and the built environment, when it was transformed into a metaphysical structure. That task would fall to another mathematician and scientist, René Descartes. He invented analytic geometry, a means of reducing the description of phenomena to a set of mathematical numbers, referred to as the Cartesian Coordinates. Considered the first philosopher of the modern age, his writings had a profound impact on the nature of

thought and education in the late 1600's and early 1700's. That impact would fundamentally change the nature of philosophy and ultimately it would change architectural discourse in the modern era.

Descartes was the first to offer a metaphysics that responded to the new science. Where Galileo and Kelper had sought a unified principle for all the discourses of science, Descartes sought to take that principle and apply it directly to philosophy and in so doing make it the key to all human knowledge. If scientists debated the supremacy of rational induction over empirical observation, Descartes came down decisively on the side of rationalism.[xvii] His refutation of Empiricism was an essential part of his epistemology.

He would align reason with the mathematical method so that it would gain the same clarity and certainty for philosophy that it had in geometry. According to him, the mathematical method consists of two mental operations: intuition, or self- evident principles, and deduction, the orderly logical inference from those propositions. The key to method was the determination of a 'true', self- evident proposition, presented to the mind as a clear and certain idea. Such ideas are so self-evidently true that reason cannot help but accept them. Descartes referred to this as *charité.* All searches for knowledge must begin with the search for the clear and simple ideas that are subject to the principles of mathematics and logic.

The quest for certainty led him to introduce systematic doubt into the philosophic system. If I am deceived in all my beliefs, I must exist in order to be deceived. Every time I doubt I must exist to doubt. Since I must exist in order to doubt, the one proposition that cannot be doubted is "I think therefore I am", his infamous *Cogito Ergo Sum.* It is the ultimate form of rationalism. The only thing that cannot be called into doubt

is that a human being is a thinking being. In *Discourse on Method* he wrote: "I was a substance the whole essence or nature of which was merely to think, and which, in order to exist, needed no place and depended on no material thing. Thus this 'I' that is, the soul through which I am what I am, is entirely distinct from the body, and is even easier to know than the body, and even if there were no body, the soul would not cease to be all that it is."[xviii] The essence of man is as thinking consciousness only, hence the comment that both the body and the place, or location in space, are also unnecessary in understanding what it is to be human. Descartes *Cogito* led to a dualism that established a separation between an intelligent nature and physical nature.

For Descartes the world is divided between two forms of substance: the *res extensa*, and the *res cogitans*, or mind, each with a specific discipline that studies it. *Res extensa* is studied and analyzed by the science of physics, *res cogitans* by philosophy and theology. Each of the two substances has properties that are unique to it and that define it. The *res extensa* is spatially extended, measurable by geometry, infinitely divisible, its mechanical motion is determined by the impact of other bodies, and it is without free will or any moral qualities. It exists without the capacity for reasoning. The *res cogitans* occupies no space, is not in motion and has the capacity for reasoning, remembering, denying, free will, and is morally responsible for its actions. Its principle property is the attribute of consciousness. It can never be shown to be derived from, or a form of, or a function of, or reducible to, matter. These two forms of substance present two distinct realities whose division cannot be bridged. The dualism produces a mind that occupies no space and a body that cannot think.

In order to account for the primary and secondary causes in Galileo, Descartes had to relegate the senses to the mind, outside of physical reality. He then denigrated them, along with memory and the imagination, as confused elements of the thinking substance, in order to preface rationality as the basis of knowledge. According to him, the imagination and memory are distinct from the rational intellect. In the 'Sixth Meditation' from *Meditations on First Philosophy* Descartes tells us that the imagination requires a particular effort, one that is distinct from the understanding. The same can be said of the senses. Both are distinct modes of thinking. He states that " . . . the mind, when it understands, in a sense turns toward itself and looks at one of the ideas that are in it; whereas when it imagines, it turns toward the body, and intuits in the body something that conforms to an idea either understood by the mind or perceived by sense. . . . I can clearly and distinctly understand myself in my entirety without these faculties, but not vice versa: I cannot understand them clearly and distinctly without me, that is without a substance endowed with understanding in which they inhere, for they include an act of understanding in their formal concept. Thus I perceive them to be distinguished from me as modes of a thing."[xix]

This distinction is of central importance. Both sensing and imagining represent a co-mingling of mind and body and are therefore confused modes of thinking. Since the imagination comes from the body and from sensory perception, it directs the intellect away from the innate ideas that are held to be true. Accordingly, these faculties of the mind cannot be trusted nor can they lead to truth. With Descartes the traditional relationship between art (and architecture) and truth became problematized.

His work had an enormous impact on all of Europe during the course of the seventeenth century. But it did have its critics, even within the scientific community. In England, the Cartesian system's extreme rationalism was countered with a more empirical approach viewed as essential in the development of a hypothesis that was credible. But reason was to be the ultimate judge of those observations. Scientists like Gilbert and Boyle attempted to postulate a new philosophy built upon the two foundations of Rationalism and Empiricism. But the basic metaphysical suppositions of Cartesian philosophy were maintained. [xx]

Hobbes saw the Cartesian Dualism as a form of scholastic occultism. For him, all activity and change was motion, since thinking was an activity, it too must be motion, if so then the mind must be corporeal. The mind for Hobbes became a corporeal body, and the idea too, must be corporeal. The nominalistic aspect of his philosophy had been present in England since the middle ages and so there is no surprise that in England, at least, Descartes metaphysics would be challenged along these lines.

But this implies that there can be no essence without existence. The only things that can exist for Hobbes are particular objects in motion which must be thought of as corporeal images present to the mind. The activity of thinking becomes nothing more than the stringing together of images. The problem of the Cartesian Dualism was in fact not solved, but worsened in the following way.

This new theory of mind postulated not a *res cogitans*, distinct from the *res extensa*, but one dependent wholly upon it. Since the *res extensa* consisted of only bodies in motion and the *res cogitans* consisted of organic bodies in motion the *res cogitans* becomes a small dependent aspect confined to a section of the human brain.

Hobbes interpretation of the Cartesian Dualism became the standard interpretation of the problem. Mind was still confined and shut off from the *res extensa*, but now it was no longer distinct. It became just a ghost image of it, a collection of gradually decaying images of sense perception, external motions communicated via the sense organs as motions in the mind. In this way, Hobbes continued the Galilean conception of the *res extensa* as a geometrical configuration into a description of the human mind. What applied to the *res extensa* in terms of its accurate description via mathematical demonstration was now applicable to the mind.

The problem of Descartes dualism found its final resolution in Boyle. Both Descartes and Galileo had been eager to banish man from the mathematical cosmos and place mind in a meager location, the pineal gland, with the only access to the *res extensa* via the secondary qualities of an unreal interface. The result was the reduction of the secondary causes to sensory illusion. Boyle asserted that they were in fact just as real as the primary causes in extension. But they were not real, in the sense of being a part of the *res extensa*; they were real as images of the mind. The mind's perception of reality was now introduced as a key component. While perception may be real, it is real only in the sense that it is present to the mind. Truth and its relationship to the object was now a subjective aspect.

"Whatever is not deduced from the phenomena is to be called an hypothesis; and hypotheses, whether metaphysical or physical, whether occult qualities or mechanical, have no place in experimental philosophy."

Isaac Newton
Principles, II, 314

Newton and the Metaphysics of Science

If Descartes effectively translated the epistemology of science into philosophy, its rationalism failed to mediate the empirical and mathematical strains of science. The final coming together of both strains with philosophy, to form a cogent metaphysics would fall to Sir Isaac Newton. He did not significantly differ from the physiology or the metaphysics of Descartes when it came to the mind. While he speaks of man as being in immediate contact with the world, the point of contact is a small window through which the soul gains access via the senses. Like Descartes' pineal gland, Newton postulated the *sensorium,* a tiny seat in the brain where the soul resides. It is through that tiny region that all contact with the *res extensa* takes place. The secondary qualities have no real existence outside the human mind, but are manufactured within the *sensorium*, in response to the mechanical manipulation of particulate matter by the *res extensa*.

Where he differed was that unlike Galileo, Kepler and Descartes, Newton did not believe in the *a priori* notion of mathematical certainty. For him there were mathematical truths, and there were physical truths. Mathematical formulations had to be continually modeled on experience. He rejected outright any hypothesis, or speculative philosophy that might attempt to explain a truth, beyond empirically observed facts. Without the verification of experience, the mathematical demonstration was only an abstraction. In this way, Newton managed to fuse the two dominant strains of seventeenth century science; the empirical and mathematical. In the end, we have to acknowledge that it was the empirical that took a slight dominance.

The inability of mathematics to solve all problems with certainty led him to consider the ancient position that what is certain is geometrical and what is less so is mechanical. In the *Principia* Newton developed an empirical and practical method where geometry was a part of universal mechanics. It, along with other branches of mechanics, makes up the science of bodily motions, a science that is always in the service of practical needs. Science became a twofold process, the deduction of forces from certain motion, and the demonstration of other motions from the forces thus identified.

For Newton, it was an analysis of force existent in the 'thing- in- itself', evidenced by motions, that was the starting point of both science and philosophy. This single Newtonian achievement was necessary for the development of modern mechanics, the new definition of physical bodies as mass. It meant that in addition to their geometrical characteristics of extension they also posses *vis inertia,* the acceleration imparted to them by a given external force.

The concept of Mass helped to transform Descartes mechanical vision of the universe into a strict geometrical machine, as Newton's theory of gravity replaced the questionable Cartesian theory of Vortices. The transformation was aided by new definitions of Space, Time, Place and Motion, found in the *Principles* that proved to have significant impact on metaphysics.

It is clear that in Newton the concept of place, a part of space occupied by a body, is reduced to a mathematical understanding of relative relationship between masses. It is stripped of any potential qualities outside the discourse of mathematical demonstration. The result is that any conception of the *genus loci*, understood from either the position of Ancient Greek philosophy or Modern Phenomenology, becomes unthinkable.

Space was divided into absolute and relative. Absolute space exists without regard to anything external and remains singular and immovable. It is a total abstraction existing without reference to anything real. Relative space refers to movable dimension, or the measure of absolute space between bodies in absolute space. It therefore requires a fixed reference point from which to measure the bodies in question.

How Newton related these concepts to time became an enduring metaphysical problem. Again in the *Principles*, Newton gave his definition of time, but it is under the section on motion that he developed an understanding of time that was completely mathematical and divorced from human experience. Absolute motion is the translation of a mass from one place in absolute space to another, and relative motion the translation of a mass from one relative place to another.

The relationship between time and the length of the day, or the seasons, Newton saw as vulgar, the exact length of a day varies and so this experiential understanding is false. Real or absolute time is liable to no change and therefore, immutable. Absolute, True, and mathematical time flows equably without regard to anything external. Referred to as duration, it was a means of quantifying motion. Space and time now became quotients in a mathematical equation, attaching the concept of absolute time to the concept of motion. Space and time become either entirely relative or entirely abstract concepts.[xxi] The result was the construct of Space- Time, which possesses no metaphysical or mythic dimension.

> "I wish we could derive the rest of the phenomena of nature by the same kind of reasoning from mechanical principles."
>
> Isaac Newton
> *Principia,* Preface

Science and the Image of the World

Science created a new image of the world through the redefinition of three metaphysical categories, reality, causality and mind. But this image brought with it several fundamental problems that would manifest themselves in the form of crisis in both science and modern metaphysics. They would also surface within the discourse of architecture, and are fundamental to understanding the critique posed by tectonic theory.

Reality was no longer a world of substances possessing ultimate qualities discoverable through the logic of human reason. It was now a world of atomic particles possessing only quantitative characteristics, composed of the primary causes of extension, mass and *vis inertia,* explainable through mathematical axioms. But the phenomenal world was surely a more complex construct than that.

The dismissal of the qualitative characteristics, as sensory illusion, created an interesting enigma. If reality is only that which is fixed, permanent, and known through quantitative analysis, how do we account for the apparent fact that the majority of human experiences are of flux and change? And how is it that our knowledge of the world is predominantly through qualitative sensory perception? It must consist of the secondary causes as well.

It is perhaps the conception of time as quantitative, divorced from any qualitative conception of 'being' that has had the most profound impact. Myth, that attempts to

overcome the temporal spectrum by making a past moment ever present, became a major problem for modern metaphysics. Memory and the platonic notion of 'Recollection' also became irrelevant. The result was the permanent exclusion of lived experience from the world of reality.

Modern science redefined causality, when it replaced the Aristotelian question '*Why is this thing not another?'* with the question *'how is this thing related to another?'*. Answers were expected in terms of mathematical equations that explained the underlying geometrical laws of physics. The purpose of a thing in the world of human knowing, it's final causality, became irrelevant to the discourse of knowledge.

The fundamental assumption of the new science was that all cause and effect is reducible to the motions of elementary 'mass- units', stated in the form of mathematical equations. All explanations were now given in terms of the simplest elements, related to causes mechanically treatable. The world became a vast mechanical machine, operating according to fixed geometrical laws. All transcendental value was effectively removed from reality when God, the efficient cause, ceased to be the embodiment of a geometrical universe, and became the originator of an efficient cosmological mechanism. God ceased to be present in reality and man lost his place as the connection between God and nature.

With the explanation of things in terms of efficient and final causes eliminated, the discourse of knowledge was reduced to a concern for formal and material causality ('what is it?' and 'what is its constitutive material?'). Purpose, understood as utility, and material understood as mass, became the only categories through which man could relate to the world.

But man inherently needs to ask the ‘Whys?’ of efficient and final causes. This is the very essence of religion and of human nature in general. The refusal of modern science and philosophy to ask the questions we most desperately need to ask, even if those answers are unsatisfactory, resulted in a sense of alienation in the modern world.

With the adoption of the doctrine of primary and secondary causes came a new conception of mind. No longer defined by its faculties, the mind became a collection of ‘images’, sensations caused by external mechanical motions. Locked away in a small corner of the brain, it was only a passive spectator in a world of infinite extension. The resulting dualism produced a rift between the world of nature and a world of subjective perception. The subjective consciousness of the individual mind was now severed from the physical world of nature, as well as the social world of human interaction. Access to these realms of experience now became problematic. The only way to prove their existence was through the abstract rationality of a subjective mind, one divorced from the body and from physical reality.

There are fundamental epistemological concerns with this theory of mind. The soul is conceived of as that part of the mind that possesses intellection, the capacity for understanding. It resides within a small part of the brain with the only means of accessing the external *res extensa* being via atomic motions acting through the senses. But those senses can deceive and therefore, need correction by the rational substance of the soul itself. How then can we be certain, given that reason sometimes fails us, that we have any knowledge of the *res extensa* that is true with any degree of certainty? The theory of mind, and the ensuing epistemology it determined, led inevitably to a skeptical position toward truth.

The result was Positivism. The discovery of knowledge was far too meager and limited to ever postulate a comprehensive system of knowing that would provide a theory of the whole. In the end, science fails to provide a greater understanding of the world of knowledge, both human and divine. Science, and the discourse of knowledge, was now limited to merely acquiring incomplete fragmentary bits of information, based upon observation and experiment, all in the hopes of one day having acquired enough, to begin to understand some small part. The establishment of principles and axioms were things now viewed with unease, as unscientific.

The theory of mind embodied in the Cartesian dualism has consistently been refuted. The very existence of art, religion and civilization, it has been argued,[xxii] imply a mind widely different from that proposed by science. As the philosopher of science E.A. Burtt has pointed out, unless science can develop a more accurate account of mind, it cannot produce a cosmology that is adequate to man's existence.[xxiii] Hence the problem with modern science, it cannot work within human experience, and is fundamentally, always at odds with it.

The basic assumption that caused this epistemological shift, the supremacy of mathematical demonstration in the attainment of absolute certainty, was never, from the time of Kelper to the present, questioned by science. But it was precisely this notion, that mathematical truths are discovered in the facts of the objective world that was later contested outside of science. The Neapolitan philosopher Vico would be the first to raise the question; 'was the truth discovered, the harmony of the universe, or the truth of mathematics itself as a closed hermetic system?'[xxiv] Scientists and their philosophical supporters in the 16th and 17th, insisted it was the former. The critics of this new

epistemology would insist on the later. While philosophy has challenged the supremacy of quantitative over qualitative characteristics, the dominant *episteme* of modernity, driven by science, has not conceded this.

ENDNOTES

[i] The nature of the medieval cosmology and its hierarchy can be found explained in various sources. Burtt notes that underlying medieval metaphysics was the view that "The entire world of nature was held not only to exist for man's sake, but to be likewise immediately present and fully intelligible to his mind." He also states that in terms of theology "an explanation in terms of the relation of things to human purposes was accounted just as real as and often more important than an explanation in terms of efficient causality." See Burt *The Metaphysical Foundations of Modern Physical Science: a Historical and Critical Essay*, London, Routledge and Kegan Paul ltd, 1967 ed., pg. 18. The emphasis on how knowledge relates to man can be found in the writings of several theologians of time many of whom saw intelligibility of God as possible only through the filter of human reason. For a summary of medieval thinkers on the dispute regarding the relationship between divine truth and human truth see Charles Van Doren, *A History of Knowledge*, a Birch Lane Press Book, Carol Publishing Group, New York NY, 1991, pp. 112- 126. See also *The Oxford History of Western Philosophy*, edit. Anthony Kenny, Oxford University Press, Oxford, 1994, chapter 2 'Medieval Philosophy', Paul Vincent Spade, pp. 55-105.

[ii] Edwin A. Burtt, *The Metaphysical Foundations of Modern Physical Science: a Historical and Critical Essay*, London, Routledge and Kegan Paul ltd, 1967 ed., pg. 7.

[iii] Ernst Cassirer, *The Philosophy of the Enlightenment*, trans. Kollen and Pettegrove, Princeton, Princeton University Press, 1951, pg. 39.

[iv] According to Ernst Cassirer "In medieval thought there remains, in theory as well as practice, side by side with divine law a relatively independent sphere of natural law accessible to and dominated by human reason. But 'natural law' (*lex naturalis*) can never be more than a point of departure for 'divine law' (*lex divina*), which alone is capable of restoring the original knowledge lost through the fall of man. Reason is and remains the servant of revelation (*tanquam famula et ministra*); within the sphere of natural intellectual and psychological forces, reason leads toward, and prepares the ground for, revelation." *The Philosophy of the Enlightenment*, Princeton University Press, Princeton, 1951, pg. 40.

[v] Ibid., pg. 41. "Nature is elevated to the sphere of the divine, and seems to be resolved into the infinity of the divine nature, but on the other hand it implies the individuality, the independence and particularity of objects. And from this characteristic force, which radiates from every object as a special center of activity, is derived also the inalienable worth, which belongs to it in the totality of being. All this is now summed up in the word 'nature', which signifies the integration of all parts into one all- inclusive whole of activity and life which, nevertheless, no longer means mere subordination. For the part not only exists within the whole but asserts itself against it, constituting a specific element of individuality and necessity. The law which governs individual entities is not prescribed by a foreign lawgiver, nor thrust upon them by force; it is founded in, and completely knowable through, their own nature."

[vi] Nicolas of Cusa proved to be an influential thinker in Renaissance philosophy. His thought was particularly important in the development of the Early Renaissance. Several studies have shown his impact on both Alberti and Leonardo. The means of challenging the Ptolemaic cosmology would also be found in his writings. His version of Neo-Platonism proved highly influential in the emerging sciences particularly, physics and astronomy which saw themselves as branches of mathematics. He had rejected outright Plato's doctrine of Ideas and its hierarchical structure. Because of this the Pythagorean element in his writings was stronger. He insisted that the world was an infinite harmony where all objects had their proper mathematical proportions. Number was the first model of things in the mind of the creator and all knowledge was measurement.

[vii] The term 'instrumentalization' is taken from Alberto Perez- Gomez' *Architecture and the Crisis of Modern Science*, in which the term is used to refer to mathematical proportions devoid of symbolic or transcendental content and used in a prescriptive manner only. Mathematics is here used as a technological instrument in architectural production and not for its analogical relationship to cosmology.

[viii] Burtt, , *The Metaphysical Foundations of Modern Science*, Atlantic highlands, NJ, Humanities Press, chapter II, pp. 36- 72

[ix] Ibid., pg. 67.

[x] Galileo, *Le Opere Galileo Galilei*, edit. Nationale, vols. I-XX, Firenze, 1890- 1909,Vol. I, 42.

[xi] Ibid., XIII, 134.

[xii] Galileo, *Dialogues Concerning the Two Great Systems of the World*, trans. Salusbury, included in his *Mathematical Collections and Translations*, Vol. I, London, p. 86.

[xiii] Galileo, *Opera Complete di Galileo Galilei*, 15 vols., Firenza, 1842, ff., Vol. IV, p. 171.

[xiv] The new scientific methodology, as Galileo would define it, was a combination of empiricism and mathematical demonstration. Accordingly Galileo saw the new method of science as a tripartite method of 1) *intuition*, 2) *demonstration* and 3) *experiment*. One first intuited a hypothesis from observed sensory data that must be converted to quantitative elements. It is these elements that are the real constituents of the object. From these came the mathematical demonstrations. It was from the mathematical demonstration then that Galileo would postulate that the verity of the demonstration must hold true for all similar phenomena even when empirical observation was impossible. It is at this point that one developed empirical experiments that visibly demonstrated the postulate to others.

[xv] Within Aristotelian metaphysics there exist two categories of characteristics quantitative and qualitative. The quantitative are those of number and extension the qualitative are those of sensory perception such as hard, soft, cold, hot, color etc. both sets of characteristics are seen as aspects of the object but what defines it as unique unto itself are those of qualitative origin. The Doctrine of primary and secondary causes on the other hand inverted this. Primary causes were the quantitative characteristics of number and extension, the secondary causes were those of sense perception. Contained within the doctrine is a clear epistemological hierarchy that when adopted changed the nature of Western metaphysics.

[xvi] Burtt, *The Metaphysical Foundations of Modern Science*, Humanities Press, Atlantic Highlands NJ, edit 1996, pg. 93.

[xvii] As noted above Galileo's method prefaced mathematical induction over empirical observation, but not everyone agreed. For Francis Bacon in England empiricism played the dominant role. For much of the history of modern science the debate over which should take precedence was very much alive.

[xviii] Rene Descartes, 'Discourse on Method', printed in *Discourse on Method and Meditations on First Philosophy*, third ed. Trans Donald A. Cress, Hackett Publishing Co. Inc., Indianapolis, 1993, pg. 19.

[xix] Descartes, *Discourse on Method and Meditations on First Philosophy, 3rd edit.*, trans. Donald A. Cress, Hackett Publishing Co. Indianapolis, 1993, pp. 94-98.

[xx] It is clear in his writings and their subsequent interpretations, that Descartes views all of the senses as suspect and deceptive. Yet vision remains an exception in his quest to exclude the senses. Only vision reveals the *charité* of *the res extensa*. It is difficult to see how Descartes could hold to this view while at the same time refuting Empiricism. This is one of the enigmas of his thought.

[xxi] See Burtt, *The Metaphysics of Science*, Humanities Press, Atlantic highlands, N.J., 1996, pp. 247-8.

[xxii] Vico, Hegel and the intellectuals of the German Enlightenment were strident in their insistence that the Cartesian mind could not account for large sectors of human experience. After Kant, it became clear that in particular, art could not be accounted for within the new subjective rationality. For Hegel this was proof of the fallibility of the dualism.

[xxiii] Burtt, *The Metaphysics of Science*, Humanities Press, Atlantic highlands, N.J., 1996 Chapter VIII. Burtt concludes that the only means of reconciliation between man and the world is the development of a more accurate theory of mind, one that will account for lived experience.

[xxiv] Vico first raised the question of the truth of mathematics in his opening academic address at the University of Naples in 1708, entitled 'On Method in Contemporary Field of Study'. In 'On the Ancient Wisdom of the Italians taken from the Origins of the Latin Language', first published in 1710, he challenged the Cartesian method and abstract rationality as a means of accessing truth. Both texts appear in *Vico Selected Writings*, edit. Leon Pomba, Cambridge University Press, London, New York, 1982.

Chapter 8: Rationalism and the Duality of Beauty

Classical architecture, through the sixteenth century, existed within an epistemological framework governed by transcendental values, and a metaphysics that understood the lived world as a microcosm of the macrocosm. The image of the world formed by that framework provided the foundation for both theory and practice. But that image was giving way, as the foundations on which it was based were increasingly undermined.

The seventeenth century began as a world of divided epistemology that applied an instrumental mathematics to the physical world of nature, while holding to transcendental values and Divine intervention. Francis Bacon's *Novum Organum,* of 1620, proposed a new form of knowledge, one derived from natural phenomena and independent of transcendental values. Knowledge was no longer perceived as the closed hermetic system it once was, proceeding from necessary particulars, to universal truths enshrouded in divine revelation.

By the middle of the century a new image of the world began to take hold, as Cartesian metaphysics became the pedagogical foundation of the newly formed academies, being established around Europe. Architectural theory, in the wake of these changes, found itself stripped of its metaphysical foundation, leaving the precepts, upon which the discipline had been founded, open to challenge and alteration. A response was inevitable, particularly in France, where there was a concerted effort to impose the methodology of the new sciences through formal education.

". . . the only things that fully convince me are those that I clearly and distinctly perceive."

René Descartes
Meditations on First Philosophy

". . . the things we conceive very clearly and very distinctly are all true . . ."

René Descartes
Discourse on Method

The Cartesian Influence on the National Academies

In the 17th century, the regime of Louis XIV began establishing state run academies. The establishment of the academies was not limited to France, but it was there that it began and was most comprehensive. They established a system of formal education in various areas of Science, and the Arts and Letters, all under the direct guidance of the monarchy, or its agents. The first of these, the *Academie Francaise*, was founded in 1635 by Richelieu to oversee the French Language. It was followed by the *Academie de Peinture et de Sculpture* (1648), the *Academie de Danse* (1661), the *Academie des Inscriptions et Belles- Lettres* (1663), the *Academie des Sciences* (1666), the *Academie de France a Rome* (1666), and the *Academie de Musique* (1669). The final academy to be established was the *Academie Royale d'Architecture* in 1671.

With the founding of the *Academie des Sciences*, the pedagogy of the academies became ever more influenced by the new epistemology of science and in particular, the philosophy of charité Descartes. His work, published between 1637 and 1644, had an influence on French thought that should not be underestimated. By mid- century Cartesian philosophy consistently shows up as the prominent philosophical underpinning in most disciplines.

The influential painter Charles Le Brun (1619- 90) had based his interpretations of the human emotions and their representation in painting on Descartes *Treatise of the Passions* of 1649. The writer Charles Perrault was a Cartesian, as were his four brothers, including his elder brother Claude, and Nicolas, a physicist who furthered Descartes mechanical conception of the universe. The philosopher Gerauld de Cordemoy, author of *Discours Physique de la Parole,* published in 1668, was a Cartesian. His son was the architectural theorist Jean Louis de Cordemoy (1626-1684).

In architecture, France saw several influential theorists emerge whose early training was in areas now widely considered to be sciences. They brought with them an understanding and respect for the new epistemology of science and the philosophy of Descartes. The theorist and professor of the *Academie Royal D'Architecture,* Roland Freart de Chambray (1606- 76) had been trained in mathematics, geometry and perspective. Claude Perrault (1613- 88), translator of Vitruvius and author of the *Ordonnance des cinq especes de colonnes selon la methode des Anciens,* was trained as a doctor and published several texts on diverse subjects such as *Histoire des animaux,* and *Traite de Mecanique*. Francois Blondel (1617- 1686), the first director of the *Royal Academie d' Architecture,* was an engineer and mathematician.

The new epistemology of science caused a rethinking of the traditional structure of the arts and sciences, as they had been passed down through history. Accepting its premises meant the rejection of ancient authority, not only in the natural sciences and astronomy. It also began to be rejected in the area of Arts and Letters as well. Scientists and intellectuals throughout Europe began to debate not only the authority of ancient texts and art, but also their role as canonical works to be imitated.

The debate was most vocal in France, where it took on political dimensions, when the monarchy sought to establish modern France as one of histories great civilizations. All that was needed was to show how modern achievements in the arts and sciences were equal or superior to those of the golden ages of Rome and Athens. What ensued was the now famous *Querelle des Anciens et Modernes*.

One of the central figures initiating the *Querrelle* was Charles Perrault. He was a well-known writer of fairy tales and was close to Jean- Baptiste Colbert who founded the Academies. He, like his brothers Claude and Nicolas, was heavily influenced by Cartesianism. Charles had credited Descartes with overturning Aristotelian metaphysics and both Nicolas and Claude had used Cartesian models and methods in their research in physics. While advancing the tenets of Descartes, they were also guarded, criticizing those that believed that his ideas would lead to final causes.

Charles was perhaps more an ardent anti- Aristotelian, than an ardent Cartesian. While accepting most of Descartes' ideas, he rejected the idea put forward in Descartes' *Principia Philosophiae* of 1644 regarding the origin of innate ideas. Descartes postulated that the mind was endowed with clear and distinct ideas, placed there by God that could be supported by mathematical demonstration and since God does not deceive, these ideas must be true. Charles Perrault and his brothers rejected Descartes' assumption, not on the basis of their *charité* to reason, or on the basis of their mathematical structure, this they accepted. What they did not accept as scientific truth was that such clear and distinct ideas were placed in the mind by God. For the Perrault's this was a theological issue. Descartes was still attempting to reconcile philosophy with theology. For him the universe was mechanistic, but it still retained a connection to the divine, if only

tangentially. The Perrault brothers, like other Cartesians at the time, attempted to avoid the obvious paradoxes in Descartes' thinking by separating reason and faith. There might be innate ideas possessing *charité* of reason, but their divine origin could not be proven. They were in one sense in the vanguard on this issue. Later 18th century philosophers would dismiss several of Descartes' hypothetical theories as flights of fantasy. While adhering to Descartes' methodology, they were more in tune with Galileo's maxim that all hypotheses' should be rejected. Following a strict interpretation of the epistemology of science they rejected any argument that claimed access to efficient, or final causes. Investigations that revealed the underlying laws of formal and material causality, in terms of necessary and mathematically determined relations, were of greater value and in possession of greater certainty.

This represents a proto- positivistic stance, a growing trend in the years between 1680 and 1730, when Newton's natural philosophy was first receiving general acceptance. We can see evidence of this in Claude Perrault's *Essais de Physique* published in 1680, where he states: "It is impossible to arrive at a perfect knowledge of things" and again ". . . we do not seek anything in this science other than what we can reasonably hope for, and this amounts only to the probability of knowledge."[i]

> "I could not do better than to try once and for all to get all the beliefs I had accepted from birth out of my mind, so that once I have reconciled them with reason I might again set up either other, better ones or even the same ones. And I firmly believed that by this means I would succeed in conducting my life much better than were I to build only on old foundations or to lean only on the principles of which I permitted myself to be persuaded in my youth without ever having examined whether or not they were true."
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> René Descartes
> *Discourse on Method*

The Querelle between the Ancients and the Moderns

The *Querelle* began on January 27, 1687 when Charles Perrault read a poem, entitled "*Le Siecle de Louis Le Grand*" ("The Century of Louis the Great"), to an assembly of members from the *Academie Francais* and the *Academie de Sciences*. In the poem Perrault compared the reign of Louis XIV with the age of Augustus. While admiring the greatness of the Roman age, its authors and artists, he claimed the moderns did not have to bow before them. Perrault went on to state that the progress in the sciences and the arts under Louis XIV was superior. In reaction to this D.N. Boileau, the famous literary critic and poet, is said to have stormed out, later calling Perrault ignorant of taste. While the actual *Querrelle* between Perrault and Boileau ended around 1703 with Perrault's death, it took the form of a broader cultural upheaval that lasted well into the 1700's.

For his part, Charles Perrault documented the debates in his *Parallel des ancienes et des modernes*, a four volume collection of five dialogues, published between 1687 and 1697. It spelled out and developed the form of the debates that would eventually shape French culture and the Enlightenment. The first dialogue stated the principles, the second covered the three visual arts of painting, sculpture and architecture, the third was devoted

to eloquence, the fourth to poetry, and the fifth to the sciences. Only eloquence and poetry were found to be superior in the work of the ancients.

The *Parallele* was important in the development of modern thought for several key reasons. First it established an awareness of the value of modern work, including the need for a modern canon of works. In doing so it challenged the conception of the past as a glorified golden age of perfection, to be copied but never quite achieved. It replaced it with a teleological view of history, in which man's perfectibility lay not in the past, but in the future.

In many ways the *Parallele* did for the arts and letters what Francis Bacon's *Novum Organun* had done for science. Bacon too, challenged the authority of the ancients and attacked the hermetic system of knowledge. He called for a new system independent of transcendental conceptions. Science was seen as progressive, based upon learned experience, accumulated over time, and added to by each successive generation. It became a collective task of humanity, moving toward greater perfectibility with time.

The *Parallele* also established a clear separation between the arts and sciences, by treating them as distinct systems in separate books. Only music was still considered a science, owing to the fixed and permanent mathematical proportions of the harmonic cords. He also rejected the Renaissance idea that art had any 'scientific' function. As the art historian Kristeller has pointed out, this is perhaps the first time in history that we find this kind of complete separation.[ii] It proved to be an important step in the development of a modern definition of art, one being formed by the painter Charles Le Brun (1619- 90).

Le Brun's lectures on art theory were the basis of the academies' teaching, in them he rejected the Renaissance notion that artists should emulate nature. This, he believed,

could only lead to confusion. He no longer saw art as a vehicle to uncover the underlying truths of nature. Instead, he proposed it as a product of an acquired culture. It became the basis of academism in the arts. The young artist, according to him, should study the canon of great masters. This was what was to be emulated. The *Parallele* supported this shift. The arts and sciences are separate because their subject of study is different.

In his dialogue on science, Perrault rejected astrology and alchemy as fantasy, lacking any true principles in the scientific sense. He also began to make the distinction between scientific thought, defined as truth, and the hermetic tradition, seen as shrouded in the occult and myth, and projected as pure illusion. He wrote in the *Parallele*: "Man has no proportion and no relation with the heavenly bodies . . . infinitely distant from us."[iii] The central tenet of the Aristotelian cosmology, man as the link between Nature and the divine was completely dismissed.

In the end, the *Querelle* and the subsequent publication of the *Parallele* represent an important step in the attempt to supplant one epistemological system by another. It began the removal of faith in transcendental values and replaced it with pure rationalism and science defined as mathematical demonstration. As Perez- Gomez has claimed: "It was an affirmation of faith in progress and militant reason . . ."[iv]

While the arguments in the *Parallele* were historically significant they were not the last word. The *Quarelle* in fact, lasted well into the 18th century. One of its chief battlegrounds was the *Academie Royal d'Architecture.* This had been founded in 1671 by Jean Baptiste Colbert[v], as the central architectural institution in France, and remained so until 1798. Its task was to establish binding architectural doctrine and develop a systematic method of teaching architecture historically, it was the first institution to do

so. The *Academie* was founded upon a belief in the absolute authority of antiquity and the notion that the only means of achieving perfection in architecture was through the imitation of ancient works. It met weekly to discuss themes central to architecture, which usually consisted of reading the texts of earlier theorists.

It also held public lectures twice a week for the education of young architects. Unlike the classic liberal arts education, structured according to two main fields of study, the *triuvium*, consisting of grammar, logic and rhetoric, and the *quadruvium*, consisting of arithmetic, geometry, astronomy and music, the public lectures of the *Academie Royal d'Architecture* show a heavier influence on the *quadruvium*. The subjects taught were geometry, arithmetic, mechanics, hydraulics, military architecture and perspective. There was in fact, a strong Cartesian influence from the beginning. As Kruft points out: ". . . in the case of Freart de Chambray, the principles on which the *Academie's* discussions were based were derived from philosophy and the natural sciences, and were not specific to architecture: in the spirit of Descartes' rationalist philosophy, the basic principle of all discussion is *raison.* Only mathematics can guarantee certitude, while geometry is the basis of all beauty. *Bons sens* (good Sense) saves the architect from mistakes. Experience serves as a control for *raison*."[vi]

It was in many ways this duality within the *Academie* itself, between the respect for the authority of the ancients and the influence of the new epistemology, that lead to its becoming a flash point for the *Querelle.* The debate lasted for nearly 80 years and eventually spread throughout Europe, dominating the discourse in all the newly formed national academies.

". . . the mind is wholly diverse from the body"
René Descartes
Meditations on First Philosophy

Baroque Science and the Duality of Beauty

Into this cantankerous world of shifting epistemologies, came three prominent Baroque architects. All were significant builders, having an enormous effect on the profession in their respective countries, and all were trained in the sciences. They were the Frenchman Claude Perrault (1613- 88), the Italian Guerin (1624- 83), and the Englishman Christopher Wren (1632- 1723). Each wrote treatises that were structured according to the epistemology of science, which examined the principles of architecture and challenged the foundations upon which they stood. All three provided a rationalized theory of architecture by recourse to a duality of beauty, that left architecture characterized as either an *airs fabricant*, or an *airs subjective*.

While all three were in Paris during the years of 1665 and 1666, there is no concrete evidence supporting the idea that they meet and conversed on the subject of architecture. But given their respective prominence, and Wren's comment that he sought to meet all the prominent scientists and architects in Paris during his stay, it is conceivable that they may have exchanged ideas. It is not likely that they were familiar with their respective publications. Each was formulating and writing during the same time period, and the publication of their texts, in their respective countries, appeared later. Peril's *Les Dix Livers d'Architecture de Vitruve* was published in 1673 and the *Ordonnance des cinq especes des colonnes selon la methode des anciens* in 1683. Guarini's treatise

Architettura civile was written between 1678 and 1683 but not published until 1737. For his part Wren formulated and most likely wrote his *Tracts* during the 1670's, they remained unpublished until 1750. Only Perrault's writings were translated into another language, English.

The similarities of their critiques of architecture and their similar proposal of a duality of beauty should be seen not as the result of direct, or indirect contact, but as a result of the influence of their early training in science. It is an indication of the pervasiveness of scientific thought, and the strong will to make every discipline conform to its methodology. This proved to be a tendency that was not limited to any single country, but was a general condition throughout Europe at the time.

> ". . . how ill-founded is the opinion of people who believe that the proportions supposed to be preserved in architecture are as certain and invariable as the proportions that give musical harmony its beauty and appeal, proportions that do not depend on us but that nature has established with absolutely immutable precision and that cannot be changed without immediately offending even the least sensitive ear."
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> Claude Perrault
> *Ordonnance for the five Kinds of Columns after the Method of the Ancients*

Claude Perrault and the Rationalization of Architectural Proportion

In France, the *Querelle* took center stage in the *Academie*, largely due to the 1683 publication, of the *Ordonnance*. It brought the debate straight to the heart of architectural theory. Claude Perrault, the brother of Charles Perrault, had been trained in medicine, but he showed a keen interest in various aspects of scientific research, much of which he

published in *Essais de Physique* (1680). The first volume of this contained his research on the workings of the body, the second and third on sound and perception.[vii] He is today best known for his translation of and commentary on, Vitruvius, that served as the definitive translation in French until the mid- 1850's. His most controversial text, the one that would undermine the *authoritas* of the canons of classical architecture, and the one that concerns us most here, was the *Ordonnance des cinq especes de colonnes selon la methode des Anciens.*

The *Ordonnance* can be divided into two parts: the more theoretical 'Preface', and the remaining text, which deals with Perrault's method for calculating the proportions of the orders and his refutation of optical refinements. It has been argued that the *Ordonnance* had little direct impact on architecture.[viii] This is to an extent correct. The system of proportion found within the *Ordonnance* did not substantially alter the method, and or means, of developing the classical orders in either France or England, the only other country in which it was published.

But Perrault's theory, found in the 'Preface', is another matter. Following his brother Charles' refutation of the superiority of the ancients, Claude launched an attack on Medieval Scholasticism and the hermeneutical approach toward knowledge and learning that had dominated the discourse since the Italian Renaissance. [ix] If, in the epistemology of science, knowledge had yet to attain its highest power then surely this was also the case for architecture. Perrault began to conceive of architecture as a progressive discourse moving ever forward in increasing rationalization. Rejecting the Renaissance definition of architecture as a reflection of cosmology, Perrault sought to align architectural theory with the epistemology of science by making it adhere to Cartesian reason.

The ‘Preface’ contained several key theoretical arguments, the first was the rejection of the musical analogy in architecture, the second was the rejection of the immutability of the theory of proportions and the third was Perrault’s assertion of ‘Positive’ and ‘Arbitrary’ beauty. While He was neither the first, nor the only one to assert this form of duality in beauty, the *Ordonnance* contains the first application of it to architectural theory. The Dual definition of beauty would take center stage in theoretical discussions for the next 75 years. It marked a radical shift in architectural theory one based on the epistemology of science and Descartes new theory of mind.

Even before its publication, Francois Blondel (1617- 86), Perrault’s contemporary and a professor at the *Academie Royale d’ Architecture*, dedicated three chapters of his *Cours D’Architecture* published between 1675 and 1683,[x] to its refutation. Blondel understood that Perrault was applying an instrumentalized understanding of number in his theory. While Blondel too asserted the geometrical nature of architecture, for him, it still possessed the transcendental qualities of *mathmesis*. Perrault’s theory, he believed, could lead to the establishment of fixed rules for the orders, even if Perrault, himself, would have rejected them.

In the ‘Preface’ to the *Ordonnance,* Perrault begins by stating that the five classical orders represent the only existent rule in architecture, but that the proportions of the orders were treated in one of two ways. The first is the imitation of an established model. The second is the use of an established set of proportions, such as those of Palladio, Vignola or Scamozzi. He does not seek a resolution of the first and second methods his intention is to propose a third.

Perrault blatantly rejects the first method, the imitation of a perceived model, or canon, outright in much the same way as a slavish adherence to ancient authority is rejected by science. He was keenly aware of the inherent occultism in the imitation theory. Architects, such as Villalpando, had argued that works like the Temple of Solomon embodied divine numbers, communicated to man directly by God. Like his brother Charles' rejection of Descartes' assertion that innate ideas were God- given, Claude rejected any notion that the proportions of the orders used by the ancients were either divinely inspired, or an absolute truth. It was this rejection of the transcendental origins of the orders or of their proportions that lead him to refute the musical analogy.

The rules for the orders, Perrault informs his reader, are well established as to their general character and proportions, but vary immensely in details and dimensions from architect to architect. He claims: "This shows just how ill- founded is the opinion of people who believe that the proportions, supposed to be preserved in architecture, are as certain and invariable as the proportions that give musical harmony its beauty and appeal, proportions that do not depend on us, but that nature has established with absolutely immutable precision and cannot be changed without immediately offending even the least sensitive ear."[xi] The statement is telling.

Why does Perrault attack the notions, first that the proportions are immutable, and second that they are related to musical harmonies? There are several key points to keep in mind here. First, Renaissance theory advanced the notion that architecture was related to the cosmos via proportions. Derived from the geometric symbolism of Pythagoras' *Iambicus* and Plato's *Timeaus,* Renaissance theorists from Francesco di Giorgio Martini, and Alberti, on to Daniele Barbaro and Palladio, all advanced the conception that

architecture embodied the harmony of the universe through the use of such symbolic numbers.[xii] In this way architecture was a microcosm of the macrocosm that embodied the absolute truth of the cosmos, making it a reflection of divine creation.

Second, it was Alberti who, in *De Re Aedificatoria*, claimed that the mathematical harmony of the universe could be found in certain proportional relationships identified in music as harmonic cords. It should be noted that the structure of that universe was Ptolemaic. Ptolemy's universe was a series of fixed concentric spheres each rotating at a unique rate. The rate of rotation from one sphere to the other was thought to be in a ratio equivalent to the ratio of a harmonic cord in music, hence the phrase: 'the harmony of the spheres'. Music therefore, was the manifestation of the beauty and harmony of divine creation in sound. Alberti argued that architects should use such ratios and proportions. In this way they could embody 'The Good" in the built environment. He claimed: "The very same numbers that cause sound to have that *concinnitas*, pleasing to the ears, can also fill the eyes and mind with wondrous delight. From musicians therefore who have already examined such numbers thoroughly, or from those objects in which nature has displayed some evident and noble quality, the whole method of outlining is derived."[xiii]

The musical analogy was key to understanding architecture in relationship to divine creation. God was conceived as in possession of a mathematical mind in the creation of the universe, but man and nature all partake in that mathematical construction. Architecture was a microcosm of the macrocosm because of its adherence to specific proportional ratios that embodied the underlying harmony of the universe. Number in the form of *mathmesis* possessed transcendental value as an absolute geometrical construction. In this way, the orders, and architecture in general, were endowed with

transcendental value. The insistence on right proportion, as a basis for a true architecture, was based upon this earlier symbolic understanding of number as *mathmesis* and its relationship to the Ptolemaic cosmology in particular the idea of the *sophron eros*.

The understanding of geometry, as a form of *mathmesis*, was still present in both Galileo and Kelper, but by the early 1600's Descartes was attempting to relegate God out of the mathematical operations of the universe. God became only the original creator, who only infrequently adjusted the system, which operates mechanically according to fixed geometrical laws. Number became reduced to those fixed immutable laws that are more and more independent from the Divine. By the time of Newton, number and mathematics had been striped of their transcendental value, as God was also factored out of the understanding of the universe. By 1700 number had become instrumentalized, a tool of science devoid of symbolic and transcendent meaning.

Perrault, the scientist, rejected the musical analogy because of its cosmological symbolism. Following his brother Charles, in the *Parallele*, Claude claimed music was a science, not because it embodied the harmony of the spheres, but because musical harmony could be quantifiably measured as the linear distance of the string plucked. Charles had demystified music and his brother Claude was doing the same for architecture. According to Perez- Gomez; "Architectural proportion lost in Perrault's system its quality of absolute truth. Numbers no longer had their traditional magic power, their connotations as an essential form of divine revelation. Perrault was thus able to reduce the problem to the immanent discourse of reason, and at the same time question proportions immemorial role as the ultimate justification of praxis."[xiv] With the symbolic, or mythical, basis for the proportional system of the orders debunked, Perrault was free to

advance his cause: the rationalization of architectural theory. He did this by applying the scientific method to the study of architecture.

Perrault rejected the second method, which relied on given canonical systems of proportion, because of the variety and complexity of the systems put forward. He saw Palladio, Vignola and Scamozzi attempt to establish a canon, or rule of proportion, for the orders, but notes that they were not granted the authority to do so, nor were they able to establish rules that were self- evident in themselves. That is to say, they did not possess either the strength of personality, or the reasoned authority of scientific probability, that would have produced a fixed, constant and established basis for the orders.

While most architects had used a clear whole number ratio of column diameter to height, they often resorted to complicated fractional ratios in the determination of their lesser details. Those ratios changed from order to order further complicating the method of designing the columns.

In point of fact, many of the variations had originated as optical refinements. Perrault rejected the need for these because, as he claimed, the eye cannot be deceived by visual imperfection. In so claiming, he is following the Cartesian belief that vision is the least deceptive of the senses, because the rationality of the mind quickly corrects such optical illusions. Descartes metaphysics was occularcentric, and Perrault's insistence that there was no need for optical refinements is one example of how this was carried over into architecture. But it also carries with it epistemological weight, the possibility that there could be no discrepancy between reality and the ideal. The optical refinements only served to complicate the measurements and thereby the proportions of the orders.

Like Copernicus before him, Perrault sought a simpler mathematical equation. This reveals his adherence to the aesthetic prerogative; the simpler mathematical formulation is the more beautiful solution, present in science from Copernicus onward. One must remember that the acceptance of the heliocentric theory of the universe by scientists had less to do with whether it was true, and more to do with the simplicity of the equations, as compared to the complexity of the Ptolemaic solution.

Perrault's 'third' method was an attempt to make the proportions conform to reason. He proposed a mathematical mean derived from the previously established canons that used only whole numbers. He claimed of his system: "Now it is easy to see that the third method is at least simpler and more convenient than the others . . . As a result, even if one may not be able to claim that this proportion is the true one . . . it should at least be considered a likely proportion, since it is founded on the regular division of a whole into three equal parts."[xv] He justified this system by stating that it was a return to the origins of architecture, Vitruvius' proportional system had been based upon whole numbers.[xvi]

The moderns, he believed, deviated from this system because they found inconsistencies in the ancient works studied, leading them to believe that there was no rational fixed basis for the proportions of the orders. Perrault blamed the inconsistencies on poor construction techniques. "The carelessness of those who built the ancient buildings we see is the only reason for the failure of these proportions to follow exactly their true ones, which one may reasonably believe were established by the first originators of architecture."[xvii] The ancients had of course intended to build consistently according to whole number proportions. His method therefore, built upon the previous

collected knowledge, and sought to perfect it through the rationalization of the mathematical formulations of its parts.

While Perrault's method failed to have much impact on architecture, it provides much insight in understanding his thinking. At the root of his discourse on the orders is a concern with the discrepancies between the dimensions of the real works and the theoretical calculations. Previous architects had never been concerned with this. In Aristotelian metaphysics there is an acknowledged gap between the ideal and the real, due to the lower level of nature in the hierarchy of reality. The irregularities are not questioned, but rather accepted, as the effects of attempting to transfer the ideal into the material world, a world that is in essence, always flawed. The earlier approach established a relationship between theory and practice that was continuous. Both theory and practice played reciprocal roles in the comprehension of architecture, as the ideal was translated into reality. Theory served as the metaphysical justification of praxis. In this way architectural value was tied to the proportional system of the orders, perceived as the link between the divine and reality.

The discrepancies can only become a problem once that hierarchy is eliminated. Science first defined nature as infused with the divine, this eliminated the gap. It then defined nature as mechanical and devoid of the divine. In the mechanical world- view proposed by Descartes and Newton, the dimensions of an object should be exact corollaries to any reasonable mathematical formulation. In the case of the proportional theory of the orders this would mean that praxis must become identical with theory. For the scientist Perrault, this can only be achieved by simplifying the method of calculation, making it more reasonable, and therefore easier to understand and implement

mechanically. But it resulted in the abandonment of the *sophron eros* and the dialectic of theory and praxis central to classical tectonics as the basis of the ethical component of architecture.

> "In order to judge rightly in this case, one must suppose two kinds of beauty in architecture and know which beauties are based on convincing reasons and which depend only on prejudice."
>
> Claude Perrault
> *Ordonnance for the five Kinds of Columns after the Method of the Ancients*

Claude Perrault and the Duality of Beauty

The orders had been considered the source of beauty, but observation had shown that those proportions were not fixed and permanent, they changed over time. From this Perrault concluded; the beauty of a building was less a product of unvarying proportions and the relative size of details, as the grace of its form. But this only proved that the orders varied and could not be considered a permanent, fixed truth. The fact remained that they were viewed by most as important to the overall beauty of a building, and Perrault himself viewed them as the only true rules of architecture. If they did not represent a fixed truth, what did they represent?

Perrault's answer was that they represented the shifts in culture and fashion. He explained this through his famous recourse to the duality of beauty. "In order to judge rightly in this case, one must suppose two kinds of beauty in architecture and know which beauties are based on convincing reasons and which depend only on prejudice."[xviii]

Perrault called the first kind of beauty, those based upon convincing reasons, 'Positive'. Those beauties Perrault saw as based upon prejudice he called 'Arbitrary'.

Before explaining Perrault's use of these terms it is important to note the Cartesian reference in the above quote. In the *Meditations on First Philosophy* Descartes claimed the greatest utility of his systematic doubt 'lies in freeing us of all prejudices'[xix], these are of course the false opinions that prevent us from seeing the clear and distinct ideas, the *charité* and truth found in true reason. Perrault's 'Preface' of the *Ordonnance* is Descartes method of systematic doubt, applied to architecture.

We are told the 'Positive' beauties please everyone because "common sense is all that is needed to apprehend most kinds of positive beauty."[xx] They are, in essence, clear, distinct and self- evident to reason, and bear close resemblance to Descartes innate ideas. Included among them are: the richness of the materials, the size and magnificence of the building, the precision and cleanness of the execution and symmetry. Perrault defines symmetry in two ways. The first is clearly the Vitruvian definition of symmetry, wherein a modular dimension is related proportionally to the parts, and to the whole establishing a continual series of proportional relationships between part and whole. The second is the more modern definition, and relates to the balanced disposition of size, number and order of spaces in plan- a simplistic understanding of this is bilateral symmetry.

In contrast, the 'Arbitrary' beauties were based on properties that were culturally determined, such as proportions. Perrault appears to make the claim that they are only beautiful by their association with the canonical works. It is the hidden, 'positive' beauties, detected by the mind's eye, which please us in such masterpieces. We associate the proportions of the orders with beauty because they are more obvious. This principle

of association is: “the natural basis for belief, which is nothing but the result of a predisposition not to doubt the truth of something we do not know if it is accompanied by our knowledge and good opinion of the person who assures us of it.”[xxi]

The orders, their proportions and their details, are not the product of utility or necessity, such as might be the case in military architecture, the construction of machines, the disposition of the building plan, or the durability of its structure, what Perrault called positive and necessary reasons. It is neither emulation of nature, nor the rules of reason, or even good sense that constitute the ‘Arbitrary’ beauties. They are the product of custom and tradition, and therefore, caught up in history. But Cartesian metaphysics is ahistorical, there can be no truth, either human or divine, revealed in it. Because of this the ‘Arbitrary’ beauties can have no certain truth in themselves. They are ‘likely probabilities’ at best, only hypotheses. As Perrault saw it, this is the reason that they have, and can, be altered.

But Perrault does not discount their validity. They are part of the accumulated knowledge of the discourse of architecture, a knowledge that is ever growing and moving toward perfectibility, in the Baconian sense. Perrault tells us his “purpose is simply to extend change a little further than before, to see if I might cause the rules for the orders of architecture to be given the precision, perfection, and ease of retention they lack by attempting to persuade those who have more knowledge and ability than I to work toward making the outcome of this project as successful as the project is itself useful and reasonable.”[xxii] His proto- positivistic stance toward science led him to proclaim that science was the search for probabilities of knowledge, and that is what he is searching for in the ‘Arbitrary’ beauties.

Where did Perrault get the idea of 'Positive' and 'Arbitrary' beauty? The concept is in fact, quite old and can be traced to Plato, who made a distinction between 'Absolute' and 'Relative' beauty.[xxiii] Given the Neo-platonic bent of the 17th century scientific community, and their familiarity with the recently restored dialogues, it could have been possible for Perrault to reinterpret those concepts into the contemporary scientific discourse.

Perrault was a Cartesian, and the central tenet of Cartesianism is the reduction of knowledge to abstract rational principles. Perrault's 'Positive' beauties are those that are answerable to rational criteria. Judgments regarding material, size, formal distribution of spaces and quality of construction, can all be quantified, and measured. As such, their truth is of a fixed and permanent nature. They are answerable to questions of material and formal causes and therefore, pose no problem to the scientific mind.

What was a problem for Perrault were the proportions of the orders. He had rejected the mystical or divine origin of the proportions, but was still left with a body of particular proportional systems each without authority of knowledge, yet collectively considered the body of rules for architecture. Given his empirical training as a scientist, it is not surprising Perrault valued the 'Arbitrary' Beauty of the orders, they were particulars derived from human observation and experience. While the Cartesians were less empirically minded than their English counterparts, observation of empirical phenomena still played an important role.

Francis Bacon's conception of scientific knowledge, as a continuous collective effort toward perfectibility, operates under the base assumption that our collective experience of particulars allows us a glimpse of a universal truth. By resorting to the dualism Perrault

found the means to account for the seeming inconsistency of the proportional systems and the historically observed facts, while still being able to hold to a geometrical structure of truth. The only thing necessary was to rationalize the particulars and extrapolate the universal truth they contained. By doing so the 'Arbitrary' beauty of the orders would become subject to Rationalism.

When looked at in this way, Perrault's dualism was an attempt to maintain the tradition of the orders, according to him the only true rule of architecture, in the face of scientific doubt. The epistemology of science demand that truth be reducible to mathematical law, but the observation of ancient and modern masterworks revealed a lack of strict adherence to mathematical law in the orders. Architecture was threatened with the loss of its status as the philosophy of built form. To prevent this, Perrault resorted to the duality, as a means of justifying the orders. He was able to remove the obstacle of inaccurate proportions in the orders, which prevented architecture from conforming to the rules of science. By doing so he effectively rationalized architectural theory.

But Perrault's process of rationalization produced two paradoxical results. The orders became either the location of licentious subjectivity, or a means of establishing absolute rules for artistic production. In the hundred years following the publication of the *Odonnance*, Perrault would be credited with having done both.

Because it is the clarity of the rational system that reveals truth, for Perrault architecture cannot be a signifier of anything beyond the rationality of its own theory. Theory becomes an *'ars fabricandi'*, a method of fabrication, as opposed to a means of metaphysically justifying *praxis*. The theoretical system becomes self-referential and has

no need of continuing reinterpretation. His attempt to rationalize architectural theory along the lines of Cartesian science implied an epistemological framework wherein the evolution of the rationalization process replaced traditional metaphysics as that which architecture communicates. The proportional system can, therefore, become fixed, altered only for the purpose of increasing its own rationality. Practice becomes instrumentalized, a mechanical tool to reflect the pure rationality of the mind. It was for this reason that most architects rejected his method of calculating the proportions.

Conversely, in his attempt to demystify the orders, he shifted the location of architectural value from the orders, now classified as 'Arbitrary' beauties, to the 'Positive' beauties of material, craftsmanship, construction and symmetry. The tendency of Enlightenment thinkers to search for absolute truths in Nature, caused them to reject Perrault's interpretation of 'Arbitrary' as a probable hypothesis. The orders, now freed from their adherence to an absolute value system, were interpreted by latter generations as the location of architectural license, the reflection of the subjective taste of the architect. In the late 1700's, Perrault's theory was interpreted in just this way. His justification of 'Arbitrary' beauty was seen as the cause of the extremes of the Rococo. As unjustified as those accusations were, what resulted was an attempt to shift the definition of architecture away from the 'Arbitrary' beauties and toward the 'Positive' beauties that opened the door to a further rationalization of theory in the form of functionalism.

In the end, Perrault's *Ordonnance* posed a challenge to traditional architecture. As Edward Robert de Zurko points out, it set the stage for the latter development of functionalist doctrines in two ways.[xxiv] First, by challenging the idea that beauty was

derived from *mathmesis*, the symbolic understanding of geometry and number present in the traditional theory of proportion. In classical tectonics this was the *sophron eros*. Perrault was attempting to remove the symbolic use of mathematics and geometry, and opting for a rational, or instrumentalized, application of number to architectural theory, in its place. And second by introducing the notion that beauty could be created by a variety of other factors such as culture, custom, material, and precise construction. This was the basis of his postulation of 'Positive' and 'Arbitrary': the Duality of Beauty. This too, would go a long way in disrupting traditional theory. It introduced the discourse of taste, and the subjective theory of mind, directly into architectural theory, raising new questions that required new answers.

> "There are two Causes of Beauty, natural and customary. . . . Here lies the great Occasion of Errors; here is tried the Architect's judgment: but always the true Test is natural or geometrical Beauty."
>
> Christopher Wren
> *Tract I*

Christopher Wren and the Rationalization of Architectural Perception

Sir Christopher Wren began his professional career, like Claude Perrault, as a scientist. A contemporary of Newton, and trained in Cartesian philosophy, he conducted significant research in mathematics, astronomy, optics, mechanics and experimental philosophy. Along with some colleagues from Oxford and London he founded the Royal Society, in 1660. Chartered by the King, it served as the first English scientific institution, much like the *Academie des Sciences* in France. It had been founded on the notion that one should reject all forms of received knowledge, in favor of the Baconian

approach. It set as its task, collecting a history of nature and the mechanical arts that could become the basis for establishing new scientific hypotheses.

Included within the scope of the mechanical arts was architecture. The Royal Society had, in fact, established an early program designed to study and reassess the existing principles of architecture, and develop new ones. Fellows of the Royal Society began to pursue studies in building types, strength of materials, instruments and techniques of the building trade, as well as the practical application of mathematics to architectural structures. The Royal Society did not limit its studies to contemporary architecture, rather its fellows studied not only the architecture of earlier ages in Europe, but around the world as well. Wren would prove an important contributor in these areas.[xxv]

Shortly after establishing the Royal Society, without having received any formal training, Wren turned to his second profession, as amateur architect. He received his first commission in 1661, the repair of Old St. Paul's Cathedral, London, and around 1669, he was appointed Surveyor General. He spent much of his life studying all forms of architecture using both material and literary sources, always applying the critical method of science. While having turned his attentions toward architecture, Wren never ceased work on his scientific experiments, or his active involvement with the Royal Society. It was Wren's dual professional life, as both architect and scientist, which shaped his outlook. He viewed architecture through the epistemological lens of the natural sciences.

In addition to his scientific research, Wren is remembered for his many buildings, and while it is true that he never published his writings on architecture, they were known. Wren's work as Surveyor General and his work and writings for the Royal Society concerning architecture made him a central figure in the architectural community. As

early as 1663, Wren was busy drawing reconstructions of historic buildings and investigating problems of structures. Lydia M. Soo, in *Wren's 'Tracts' on Architecture and Other Writings*, comments on the many requests made by individuals to see these drawings, which he used to illustrate theoretical points.[xxvi] We can infer from this that, while Wren did not publish, he did discuss his writings and thoughts with others. They in turn would have discussed them with others. Wren was therefore, influential on his own generation of architects and their thinking.

Eight of the eleven texts that he eventually wrote on architecture have survived due to the 1750 publication of the *Parentalia*.[xxvii] Wren's theoretical writings on architecture are preserved in his 5 *Tract*s, begun early in his career. He began writing the *Tracts* in the 1670's and more than likely had formulated much of his theoretical ideas regarding architecture by the 1690's.

While Wren concerned himself with traditional theoretical issues found in many treatises of the time he approached the subject matter from the standpoint of a natural philosopher. By applying the methods of 17th century science to his investigations of the history of architecture, Wren compiled a unique collection of information that compelled him to question the precepts of classical theory. In all, the five *Tracts* made four significant contributions to architectural theory. Wren 1) proposed a new hypothesis for the origins of classical architecture, 2) he produced the first history of architecture, 3) he provided one of the first dualistic definitions of beauty, Perrault's having been published in 1683, and 4) he also provided one of the earliest statical investigations of structures.[xxviii]

Where Perrault had rejected the musical analogy in the proportions of the orders, Wren rejected the Vitruvian analogy of the orders to the human body. Like the music analogy the theory of human proportions was designed to establish architecture as a microcosm of the macrocosm an embodiment of the *sophron eros* and *Alutheia*. Wren on the other hand saw no observable relationship between a column and the human form. He proposed that the earliest temples were no more than simple cellas around which the faithful gathered, and speculated, groves of trees would have been planted to shade the faithful. Eventually, wooden colonnades were constructed, and over time, stone columns replaced them. Wren referred to this proto-tree/column as the Tyrian order. Wren also believed that it was this order that was the one used by Tyrian and Phoenician artisans in the construction of the Temple of Solomon. It was from this natural/ divine order that the Doric, Ionic and Corinthian had evolved. With this hypothesis Wren not only dismissed the theory of human proportions, but also Vitruvius' assertion that the Doric order was a spontaneous creation of the Greeks. He proposed that the orders evolved over time, originating in nature and altered by subsequent cultures.

The persistence of the classical orders proved their universal appeal, and their adherence to both natural and divine law. It was for this reason that they had the right to be called the rules of architecture. Conversely, those orders of columns that had not persisted, or were used only by an individual nation, proved to be derived more from the fancy of the nation, or individual, than from natural and divine law. These Wren saw as egregious errors of judgment. But even the five orders were subject to alteration. Each subsequent culture had modified the proportions of the orders, as well as their small details, according to its own unique national taste. Wren came to the same conclusion as

Perrault; the proportions were a product of culture and not natural or divine law, but the orders although originating as cultural variations, adhered to natural and divine law and therefore, were the established rules of architecture

When it came to the study of architecture, Wren's hope was to uncover the underlying reasons for all architecture, in order to develop true theoretical principles. At the heart of his search was the desire to discover whether the true nature of architecture was based on universal, absolute laws of nature, or on the laws of man and society.

Wren approached the subject in much the same way a natural scientist would. The Scientific method required the investigator to search for, and gather all available data comprehensively, systematically and critically. Only after having done so could one determine its true principles. This was the basic agenda of the Royal Society in its investigations as well. The result was that Wren looked beyond the models and precedents used by the Renaissance theorists and included in his studies the architecture of the Near East, China, and Islam. Prehistoric monuments such as Stonehenge and contemporary primitive structures from around the globe were also included.

Soo has argued that Wren's description of architecture possesses an historical consciousness and thereby represents the first true history of architecture.[xxix] What he gives us in *Tracts IV* and *V* is a chronological account of the development of architecture from the earliest descriptions of *Old Testament* structures, through the various ancient works, including Egyptian, Babylonian, Greek, Etruscan and Roman. Wren views these as evolutionary with each culture developing its own unique forms based upon the knowledge and progress of the previous culture. Thus each 'style' is a product of its own

time and place but architecture taken as a whole is one that moves, changes, progresses and potentially declines, in response to culture.

Wren concludes that architecture is a product of culture, but the persistence of the classical orders with their roots in natural and divine law indicate that certain cultural 'inventions' in architecture possess legitimacy as reflections of universal truth. They do so because they adhere to natural law and the collected experience of the ages. It was this ability for architecture to express natural law that lead Wren to propose that beauty in architecture must be understood in dualistic terms. He used the terms 'Customary' and 'Natural' and his nomenclature clearly records his own bias. In *Tract I "of Architecture"* he states; "Beauty is a Harmony of Objects, begetting Pleasure by the eye. There are two causes of beauty, natural and customary. Natural is from geometry, consisting in uniformity (that is Equality) and proportion. Customary beauty is begotten by the use of our senses to those objects which are usually pleasing to us from other causes, as familiarity or particular inclination breeds a love to things not in themselves lovely. Here lies the great occasion of errors; here is tried the architect's judgment: but always the true test is natural or geometrical beauty."[xxx]

Wren's seemingly harmless statement belies a radical approach toward beauty. 'Natural' beauty is defined as the product of geometry, uniformity and proportion. It is linked here with number and mathematical demonstrations. But 'customary' beauty is understood through the faculty of the senses and linked with aesthetic judgment. In this statement, Wren has introduced rationalism and the modern conception of a subjective mind.

Wren is in part taking his clues from Renaissance theory, particularly Alberti, who saw nature as governed by the underlying laws of geometry. In *De Re Aedificatoria* Alberti defined beauty as that *Concinnitas,* or the reasoned harmony of parts where nothing may be added or taken away without detriment to the whole. For Alberti, beauty in architecture was a product of the design of the lineaments and disposition in plan of geometrical figures that both reflected the absolute values of the cosmos and were self-evident to the mind. Number possessed absolute transcendental value, a value that was continuous from the mind of God, through the human mind, and into nature. In Alberti it is this continuity that allows the mind to grasp the divine beauty of nature and architecture. There is no judgment implied in Alberti's thinking. Divine beauty is self-evident to the mind. But this kind of continuity does not exist in seventeenth century science.

'Natural' beauty and number are not necessarily architectural qualities as Wren applies them. He is here applying the systematic thinking of the scientist, who does not view number as transcendental, but rather as instrumental. Geometry and number are tools to define and quantify objects of the phenomenal realm. In his 1657 inaugural speech to Gresham College he stated: "Mathematical Demonstrations being built upon the impregnable Foundations of the Geometry and Arithmetick, are the only Truths, that can sink into the Mind of Man, void of all Uncertainty; and all other Discourses participate more or less of Truth, according as the Subjects are more or less capable of Mathematical Demonstrations."[xxxi] But Wren's use of the term mathematical demonstrations is unique and should be qualified.

The French Cartesians saw mathematics as a reflection of absolute rationality and truth, Descartes had believed that all truth was mathematical in nature and that it was the pure rationality of mathematical truths that underlay all of nature, God, and the mind. For this reason he believed the mind automatically corrected optical illusion and perspective distortion. Because of this, Perrault too, rejected optical refinements in the orders.

Wren was an English scientist, and in England the Empirical wing of science was more dominant. Empiricists placed more emphasis on the visual observation of facts that were then demonstrated using mathematical explanations. Wren was in many ways an extremist in this way. While most still saw mathematical proofs as truths in themselves, Wren saw them only as appearances of truth. In the body of his writings, mathematical demonstrations and number fail to possess the quality of absolute truth evident in Descartes and most of the Rationalists.

This may have been due to his extensive research into optics and the physiology of the human eye. Unlike Perrault who believed the mind able to correct the deficiencies of sight, Wren believed the opposite. While the geometric proportions of an object might be part of the phenomenal realm, the visual perception of those proportions, and hence the aesthetic experience of them, were not. According to Lydia Soo: “The phenomenon of architectural beauty was dependent upon the unique physical conditions under which an individual person would view the building, making it impossible to formulate absolute laws concerning the geometrical appearance, despite the fact that these appearances also depend upon a phenomenon of nature- the physiology of the human eye.”[xxxii] For this reason Wren often stressed the need for architects to be skilled in perspective and to think of perspective and viewing angles when designing. The purpose was not, as in classical

theory, to provide optical corrections, but to design in such a way as to minimize the distortion of the geometrical appearance.[xxxiii]

Wren introduced the notion of subjective perception into the definition of beauty. What is perceived is only appearance. The concept of subjective perception and its relationship to truth raised by the Cartesian duality was now brought directly into the discourse of architectural theory. The classical conception of beauty and its relationship to truth was now called into question.

Wren proposes a theory of architectural beauty in line with both Descartes and Newton's theory of mind. Consciousness locked away in the *sensorium* or pineal gland, gains access to the 'Natural' beauty of the object, in the *res extensa,* via the filter of the senses, in this case vision. The object may possess 'Natural' beauty, but this can only be perceived via the senses. The mind no longer has direct access to it, in the way it did say for Alberti. Because it must rely on the body, all aesthetic appreciation becomes a matter of judgment. Wren's text raises the question; is the beauty perceived the absolute beauty of the 'thing- in- itself' or the subjective beauty of the individual mind?

If what is perceived cannot be guaranteed to be the object of phenomenal existence, then what governs that perception? For Wren it was governed by culture and custom, over and against nature, now defined as the *res extensa* of atomic particles in extension. This is key to understanding Wren, who in effect produced an even greater division of beauty than Perrault.

In 'the Sixth Meditation' of *Meditations of First Philosophy* Descartes claimed: ". . . not all bodies exist exactly as I grasp them by sense, since this sensory grasp is in many cases very obscure and confused." [xxxiv] Descartes had argued that when the mind had to

rely on the body it produced a confused form of thinking, which opened the door to miss-judgments and prejudice. ". . . confused modes of thinking arise from the union and, as it were, the commingling of the mind with the body." Descartes defined the imagination, 'without exception feeble and limited', as this commingling of mind and body. This confusion opens the door to judgment, which Descartes saw as governed not by the intellect but by the will, which is easily lead astray.[xxxv]

Wren does not differ significantly, when he claims that in judgment the mind opens itself to outside influences that disturb the mind's understanding of 'Natural' beauty. Except that for Wren, speaking specifically of architecture, the will is replaced with a familiarity produced by 'Customary' beauty. 'Customary beauty is begotten by the use of our senses to those objects which are usually pleasing to us for other causes, as familiarity' that lead to the 'great occasion of errors.' Unlike 'Natural' beauty, 'Customary' beauty was a human invention, the product of the imagination, and a reflection of a given culture. It was here that the great occasion of errors could take place. 'Customary' beauty might lead to thinking that certain characteristics of an object were beautiful that were not truly so.

Because of this 'customary' beauty takes on in Wren a negative connotation, it is a "Fancy that blinds the judgment"[xxxvi]. As J. A. Bennett recognized Wren's 'Customary' beauties are similar to Bacon's 'Idols', false appearances that fool the mind and override the understanding.[xxxvii] But Wren does not specifically wish to eliminate 'Customary' Beauty altogether. It is also the source of great inventions that can and sometimes do reveal the truth of 'Natural' beauty, the prime example being for him the five classical orders. In one sense, they are also the source of progress in architecture. Like Descartes'

insistence that the rational intellect must keep watch over the judgment of the will, Wren insists that the architect must keep watch over the forces of custom, the imagination and personal style. Both Descartes and Wren used recourse to reason as a solution.

For Wren, the architect could maintain a standard of good taste by using functional utility, structural stability and geometry, to guide his design. In other words, Wren proposed subordinating 'Customary' beauty to 'Natural' beauty, or more specifically nature and the rules of physics. The primary quality of good design was structural equipoise. And it is with him that we see a decisive move toward a rational structuralism. In this way an architectural invention could be the product of eternal rational rules, while still being a product of a given culture.

In the end, Wren rationalized architectural theory by co-opting Vitruvius' triad. The true principles of architecture were Beauty, Firmness, and Convenience. But he qualified them by stating: "the two first depend upon the geometrical reasons of *Opticks* and *Statiks*; the third only makes variety."[xxxviii] Beauty and firmness became subject to the laws of science, while Convenience was where cultural differences were expressed.

This was the motivation behind Wren's studies in statics. He advocated the use of scientific analysis of materials and their strengths in determining proportions and size of members promoting it as a practical application of mathematics to architecture. This would eventually be realized by Jean Rondelet and his work with Jean Jacques Soufflot on Ste. Genevieve in Paris beginning in 1754 (shortly after the publication of Wren's writings). Wren's promotion, of the application of number, as an instrumental tool, for the architect was central to his work and his theory, but it paled in comparison to the pervasiveness of number found in Guarino Guarini.

"Although architecture is based on mathematics, it is nonetheless an art that delights"

Guarino Guarini
Architectura Civili
Trattato I Capo III intro

Guarino Guarini and the Rationalization of Invenzione

The Italian Guarino Guarini (1624- 83) entered the Teatine Order in 1639, and was ordained a priest in 1647. His architectural career was international, including works in Turin, Paris, Nice, Munich, Prague and Lisbon. But he is best known for his later work done in the Italian City of Turin.

His interests and studies were broad and in many ways comprehensive, revealing an intellectual curiosity that spanned almost every field of knowledge. Guarini studied theology, philosophy, mathematics, and astronomy, as well as military, civic and ecclesiastical architecture. His professional career is equally varied and accomplished he was not only an architect, but also a writer, playwright, priest, mathematician, scientist, and teacher. He taught both Philosophy and Mathematics in Modena and Messina, and Theology in Paris between 1662 and 1666. It was in Paris that he became familiar with the work of the French mathematicians Derand and Desargues, who pioneered the science of projective geometry, known as stereotomy, which proved highly influential in Guarini's career as an architect.

The diversity of Guarini's literary career, which began in 1660 with the moral tragicomedy *La Pieta Trifonfante*, is virtually unmatched. He continued writing throughout his life, producing works that might be termed *summas* because of the comprehensiveness of their subject matter. Those writings included the *Placita*

philosophica of 1665, in which he defended the geocentric theory of the universe, the *L'Euclides adauctis*, a treatise on mathematics, of 1671, the *Del modo di misurare le fabbriche* of 1674, *Trattato di fortificare* of 1675, the *Leges temporum et planetarum* of 1678, and the *Caelestis mathematicae* of 1683. Perhaps his most significant work, and the one that concerns us here, is the architectural treatise *Architettura Civile* published posthumously by Bernardo Vittone in 1737.

Like Perrault and Wren, Guarini was thoroughly modern. He too, rejected the authority of the ancients, preferring instead to absorb the body of historical knowledge, as if it were empirical evidence for the study of architecture, evidence that was to be critically analyzed according to rational categories of judgment. Like Wren he studied a large body of historical writings and built work, choosing not to limit himself to the received canonic works. He included in his literary survey not only Vitruvius and the Italian theorists, but also the French theorists Philibert Delorme and Roland Freart de Chambray and the Spaniard Juan Caramuel.

His historical survey of built works was equally broad in scope. His celebrated chapter on Gothic architecture is comprehensive and impressive for the amount of information and the unbiased review of its history. Guarini claimed that the Gothic master masons were ingenious builders whose work was, in his mind, possessing of great art. The masons had created buildings that: "astonish the intellect and render the spectators terrified" through their use of visually weak orders that miraculously stood as if by the hand of God.[xxxix]

His studies of military architecture, in *Trattato di fortificare,* had revealed that over time fortifications had changed as a direct result of technological advances in weaponry.

The realization that military architecture evolved overtime in response to external forces led him to conclude that civil architecture must be equally susceptible to outside influence. Those outside influences in civil architecture were convenience and utility which become fundamental categories in Guarini's theory. "Architecture is concerned above all else with convenience."[xl] These reflect the particularities of use and function that are the result of an individual culture.

In the end, he had to conclude that as society and man's needs change, it becomes necessary to correct the rules of architecture in order to accommodate those changes. Additional evidence of this conclusion could be found in the fact that the ancients did not adhere strictly to Vitruvius, and that the moderns hadn't either. Therefore the rules and proportions of architecture could not be the fixed 'absolute truth', proposed by classical theory, in the sense, that they were universal and self- evident to all. The result was that: "architecture can correct the rules of Antiquity, and invent new ones."[xli] And further "the symmetries of architecture can be varied without causing disharmony between parts."[xlii]

But Guarini does not advocate a relativistic approach toward architecture. He perceived architecture as a science, and by that he meant mathematics and geometry. Making a distinction between design (*designo*) and execution (*esecuzione*), following Alberti, Guarini saw the task of the architect primarily as that of design. This was made evident in his *Modo di misurare le fabbriche,* where in the first three chapters he discusses the architect's need to use drawing to communicate his ideas and then embarks on a description of the materials and implements which he uses.

Architecture according to him was "based on measure" and "depends on geometry."[xliii] And in this way Guarini adhered to a belief in 'true proportion' and a 'true

symmetry'[xliv] that prevented architecture from descending into relativism. For this reason geometry and its' practical application to architectural design, was central to the *Architettura Civile*. As a result whole chapters are dedicated to demonstrating the geometrical basis of the plan, the elevation, the orders and vaulting. The stereotomic method, learned from the French mathematicians Derand and Desargues, was also included in the *Architettura Civile*. In the introduction of *Trattato IV,* entitled '*Dell ortografia gettata'*, Guarini claimed that the method of projective geometry was "absolutely necessary to the architect, even though little understood in Italian architecture, but splendidly utilized by the French on many occasions."[xlv] As Rudolf Wittkower has pointed out, it was the new French geometry and Guarini's own additions to those theorems that provided the scientific basis of his architectural theory.[xlvi]

What remained relativistic was the perception of beauty and the pleasure it imparted, because custom and judgment affected it. "It is very difficult to know how this pleasure arises- just as difficult as to understand the pleasure we get from a pretty dress. Nay, more- not only are men constantly changing their minds, and hating that as deformed, which they used to admire as beautiful, but what one whole nation likes another will dislike. In our own subject, for instance, the architecture of the Romans was despised by the Goths, just as Gothic architecture is despised by us."[xlvii]

For Guarini, the perception of geometry takes precedence over numerical abstraction in aesthetic judgment. This is evident in his many statements to that effect: "although architecture is based on mathematics, it is nonetheless an art that delights"[xlviii] And again ". . . if the eye should be offended by the adherence to mathematical rules- change them, abandon them, and even contradict them."[xlix] Like Wren, Guarini, in studying projective

geometry, had observed the important role visual perception plays in understanding the geometrical figure. It was for this reason that, while Guarini saw architecture as mathematical, he still believed that: “Architecture has for its aim the pleasing of the senses.”[1] The senses in question here are limited to the sense of vision. Projective geometry is a means of visual representation and is therefore by definition occularcentric; nowhere does Guarini advocate an appeal to the other senses of sound, touch or smell.

It is evident that Guarini has adopted the Cartesian dualism of mind. Nature possesses truth but the mind does not directly participate in that truth. Its access is through the filter of the senses, which are often deceptive. Like Wren, he comes to the conclusion that the phenomenal realm and mental perception are two distinct realities, realities that must be acknowledged within the discourse of beauty. The result is that he, like Wren, proposes empirical laws to compensate for the problems of perception that lead to a dualistic definition of beauty.

The first problem of perception was the personal and cultural prejudice that often blinds one to true beauty. Guarini, like Wren and Perrault, advocated its rejection, arguing instead for an adherence to true proportion and symmetry. The fundamental categories of architecture, as he defined them: *Sodezza* (strength), *Eurythmia* (which he defined as ornament), *Simmetria* (understood as proportion) and *Distribuzione* (in the French sense of the arrangement of rooms in plan), were to determine proportion. Note that his criteria for architecture depart from Vitruvius’ six criteria, and place an emphasis on those aspects of design that reflect convenience and utility, and are in many ways subject to rational analysis and quantification. Only *Eurythmia* prevents architecture from becoming completely rationalized as a formal science.

The second problem of perception has to do with the mechanism of vision itself. Certain viewing angles produce a perspectival view that distorts the object. Descartes had claimed that the rational intellect automatically compensated for this visual distortion, a position that Perrault also took. Wren, on the other hand, had insisted on the application of the laws of optics to generate optical refinements. Guarini in one sense took a middle stance. He believed that the imagination would automatically correct the distortion, but still advocated optical corrections to minimize the effect. The architect often had to "depart from the rules and the true proportions" to produce the perception of true proportions and symmetry. [li] It was here that the architect's imagination, invention and knowledge of projective geometry come into play. In order to compensate for the distortions generated by the viewers' position relative to the work, the architect had to have a mastery of geometry, proportion and mathematics. Imagination and invention are guided by a rational understanding of these sciences. In his writings Guarini advocated the use of the imagination, guided by rational applications of the rules of geometry to invent means, by which the architect could reveal the truth of architecture and proportion. Such truths he believed responded to convenience and utility, and where therefore shaped by the changing needs, of a given culture.

> "It is as if logic and aesthetics, as if pure knowledge and artistic intuition, had to be tested in terms of one another before either of them could find its own inner standard and understand itself in the light of its own relational complex."
>
> Ernst Cassirer
> *The Philosophy of the Enlightenment*

Aesthetics and the Duality of Beauty

Descartes methodology of systematic doubt called for a distinction between innate ideas, those principles of transparent reason and *charité*- what he called truth, and what he termed prejudices- beliefs derived from tradition and culture. It was the application of this method and the inherent desire on the part of the epistemology of science to find permanent and fixed principles that lead to the wholesale reexamination of architectural theory by Perrault, Wren and Guarini. What they did was to launch an attack on the scholastic and hermeneutical approach toward architectural knowledge that dominated theory since the Renaissance. Following Bacon's assertion that scientific knowledge was teleological, increasing and moving toward greater perfection through the course of time, they each instituted a reassessment of theory conceptualizing architecture, like science, as a progressive discourse ever increasing in its rationality. The result was a wholesale redefinition of beauty along the lines of scientific rationalism bringing it in line with the new epistemology.

It was the classical orders, identified by Vitruvius as a notable 'device' demonstrating the analogy with cosmology, which became the focus of the originating attack. Were they in fact a 'law'-an innate idea- or merely a tradition?[lii] Challenging both the musical and the anthropomorphic analogies of the orders, they effectively removed the transcendental

underpinning of architectural theory and classical tectonics. The loss of their traditional association with cosmology and the lack of any evidence of either a fixed proportional canon or consistency of application meant the orders could only be deemed a tradition and hence in Cartesian terms a prejudice making them a hindrance to truth. Yet their traditional association with beauty and their persistence throughout western history meant that their rejection, at least during the Baroque era, was not a realistic option. Instead the tradition of the orders needed to be justified along rationalist lines to bring it in line with the new definitions of reality, causality and mind.

To achieve this each resorted to the duality of beauty as a means of providing a rational account of their persistence. The duality allowed Perrault, Wren and Guarini to assert that, while the orders were culturally determined and could not possess certain truth, their persistence identified them as accumulated knowledge reflecting the particularities of culture and use. Following Bacons assumption that our collective experience of particulars allows us a glimpse of a universal truth, the orders were maintained as a form of natural law. The duality of beauty had the purpose of saving the idea of an absolute value to art in the face of the loss of transcendental values and the growing realization of the relativity of national and personal taste.

The duality redirected aesthetic judgment by splitting it into two distinct categories that served to bring the new theory in line with the new epistemology of science; mirroring the duality present in the theory of mind, as well as the duality of method. The first made up of quantitative characteristics, mathematical demonstration, and the deductive method of rationalism; the second made up of qualitative characteristics, empirical observation, and the inductive method.

This allowed the first category to conform to the basic tenets of the new metaphysics. The nature of Architecture could be assessed via the Formal and Material causes: ‘What is it?’ (i.e. its function?) and ‘What is its constitutive material?’ The questions could be posed in rational terms conforming to the new definition of reality: quantitative characteristics using the primary causes of extension, mass and *vis inertia* all explainable through mathematical axioms. The answers given in terms of fixed universal laws. Beauty could now be analyzed and quantified. In this way architecture could be maintained as a discourse on truth, only now in the form of science as opposed to philosophy.

Empirical observation of the whole discourse of architecture revealed cultural traditions, themselves inventions that could be a source of licentiousness. As such they needed to be held in check by the precepts of the first aesthetic category making them examples of the collective experiential knowledge in response to convenience and use. In this way it provided a rational filter for the second category. It also provided the mechanism through which architectural knowledge could be understood as teleological in the same way as scientific knowledge. Over time architectural inventions through experience would become perfected and as use and custom advanced they would change.

The second category also shifted the focus from the physical nature of the thing-in-itself (in this case the individual work of architecture) to the perception of it within the subject/object relationship. The history of optical corrections and the diversity of proportions revealed the limitations of the senses, in this case the sense of vision, in the apprehension of the thing. The image of beauty in the mind proved to be a subjective response to the stimulus of the senses. Beauty is comprehended as both a possession of

the thing (that is the first category), as well as a collection of images themselves the result of a passive subjective perception. In this way the duality also reflected the complexity of Descartes duality with, to use Perrault's terminology, 'positive' beauty reflecting the structure of the *res extensa* and 'arbitrary' beauty reflecting the structure of the *res cogitans*.

The duality of beauty proved to have an enormous impact over the succeeding generations, as countless writers took up the discourse under various names and guises.[liii] What each had to come to terms with was the futility of a conception of beauty derived from custom. As Wolfgang Herrmann has pointed out, all dualistic theories of beauty had the same purpose: "to save the conception of beauty, as an absolute value, from the threat of being undermined by the constantly growing awareness of the relativity of taste."[liv] The inherent subjectivity of national or personal taste opened the discourse to the very same problems intrinsic to the Cartesian theory of mind. The problem of *'how can the mind have certainty regarding anything in the res extensa?'* became *'how can beauty possess any meaningful truth?'* The duality of beauty raised fundamental questions regarding not only the very nature of architecture and its truth, but also its comprehension, as regards the subject/ object relationship. These questions were not limited to the discourse of architecture, and spilled over into the general discourse of aesthetics as well. Beauty now conformed to the epistemology of science, but it was not an operative theory of art. As a result both philosophy and theory turned their attention to penetrating the nature of the aesthetic experience.

Following developments in both science and philosophy, 18th century thought sought clear and rational principles as explanations of phenomena. Both art and architecture

posed a serious threat to that system of thinking. Aesthetic criticism, and in particular architectural theory, now sought increasingly to interpret taste and aesthetic sensation through the light of rationality, as the strength of rationalism was tested by the very precepts of art. Ernst Cassirer described this curious relationship in the following way: "It is as if logic and aesthetics, as if pure knowledge and artistic intuition, had to be tested in terms of one another before either of them could find its own inner standard and understand itself in the light of its own relational complex."[lv] The result of this 'testing' was a furor of thought in art, as new aesthetic problems emerged and the general direction and goals of the art world remained transient.

Two trends in aesthetics emerged between 1675 and 1750. They should be seen as direct outgrowths of or corollaries to, the duality of beauty, elevated to general aesthetic theories. That is to say, that what underlies 'Positive' and 'Arbitrary', their respective foundation principles, likewise underlies these two theoretical positions.[lvi] The first, following along the lines of 'Arbitrary' beauty, was the emergence of a 'Subjective' aesthetics. It sought to empirically define the phenomena of artistic behavior and the subject/ object relationship along the lines of Newtonian empiricism. The second trend, following along the lines of 'Positive' beauty, was an 'Objective' aesthetic, which sought the rationalization of beauty along fundamentally Cartesian lines. These two operative theories not only framed the aesthetic discourse, but also the philosophical and architectural discourses, as well. It is important to note that both are the direct outgrowth of the epistemology of science, specifically the theory of mind it engenders. Since natural science seeks to identify the principles and laws of nature in a clear and distinct manner, aesthetic theory sought to represent those principles clearly and distinctly in art. The

methodology of how those laws were found- deductive or inductive reasoning, rationalism or empiricism- was what separated the two.

> "Beauty is no quality in things themselves: it exists merely in the mind that contemplates them, and each mind perceives a different beauty."
>
> David Hume
> *Of the Standard of Taste*

Taste and the Aesthetics of Subjectivity

The discourse of "Arbitrary' beauty had revealed that aesthetic judgment was outside the spectrum of mathematical, or scientific determination. This introduced fundamental problems. It essentially resisted the epistemology of Cartesian rationalism, in the face of which beauty became futile, revealing rationalism's greatest flaw: it could not encompass art, one of, if not the most significant, aspects of human experience.

In response to this problem, aesthetic theory attempted to find a new means of explaining aesthetic experience in light of the epistemology of science. To do this, 'Subjective' aesthetics shifted gears, turning to Newtonian empiricism as its guide. It rejected the discursive form of reasoning, holding to the claim that aesthetic appreciation does not lie in clarity and distinctness of the object, but rather in the wealth of associations brought forth in the mind of the subject by the object. It relied instead on the principles of artistic behavior for its validity, deriving its truth from an imitation of the 'nature' of man and the human mind. It is the perception of the object by the subject that became its' central concern.

But this is not to say that this approach gives up entirely on the concept of universality, in favor of isolated subjective responses. It was less the individually subjective character as the prominence of a thematic in the collective unconscious that provides authority, becoming an exemplar of the objective will- indicators of the principles or laws inherent in the human mind. The emphasis is on intellection and the process whereby the object itself is brought forward in the mind. Taste, defined as a shared common sensibility, becomes a general principle, uniform in human nature and discernable through empirical observation. The concept of 'taste' defined the nature of the aesthetic experience in terms of shared empirical observation.[lvii]

Bouhours, in his 1687 text *The Art of Thinking in Works of the Intellect*, rejected the concept of 'correctness' in aesthetics, as defined by Boileau in his *L'art Poetic* of 1674[lviii], and replaced it with the concept of *'delicatesse'*. Cassirer defines this term as a new 'organ' whose aim is: "not as with mathematical thinking, consolidation, stabilization, and fixation of concepts; on the contrary, it is expressed in lightness and flexibility of thought, in the ability to grasp the finest shades and the quickest transitions of meaning."[lix] For Bouhours, aesthetic 'reasoning' is not a product of a clear and distinct process, but rather its opposite, inexactness, the emphasis is shifted from objective thought and content, to the processes of intellection itself. Expression and representation are not a reflection of the objective truth of an object, but of the process by which the object is brought forward. The focus of aesthetic theory places greater emphasis on expression and representation than that found in objective beauty that sought a representation of nature that was 'correct'. In 'Subjective' aesthetics, the representation of nature is less a representation of the nature of the object, in the subject/ object

relationship, but a representation of the relationship itself. ‘Taste’ becomes a matter of perception. Nowhere is this more evident than in Hume’s statement: “Beauty is no quality in things themselves: it exists merely in the mind that contemplates them, and each mind perceives a different beauty.”[lx]

Hume’s proclamation appears as an assertion of aesthetic relativity, but this would be a mistaken interpretation. His approach is still beholden to the epistemology of science, only here the emphasis is on empiricism, as opposed to rationalism. The vast diversity of cultural and individual taste does not prevent the understanding from discerning an underlying rule, or commonality of perception. Those works that appear as consistently pleasing through history reveal this commonality of taste. Thus ‘taste’ for Hume becomes ‘a general principle’, that is ‘uniform in human nature’ and discernable through empirical observation of artworks that prove aesthetically pleasing to the connoisseur. The epistemological focus here is not on individual aesthetic perception but on the collective consensus of ‘taste’ that serves as the underlying universal ‘law’ of aesthetic judgment.

The epistemological focus here is not on individual aesthetic perception but on the collective consensus of taste that serves as the underlying universal rule of aesthetic judgment. For Diderot, this was both, subjective and objective. It is subjective because it was individual perception, objective because it could be found in hundreds of individuals. “What then is taste? It is the faculty acquired by reiterated experiences for grasping the true or the good along with the circumstances which render it beautiful, and for being readily and vitally moved by this perception.”[lxi] It is this concept of ‘Subjective’ aesthetics that lies at the base of the theory of Associationalism so central to both the Picturesque and the Neo- gothic styles.

> "Truth and beauty, reason and nature, are now but different expressions for the same thing, for one and the same inviolable order of being, different aspects of which are revealed in natural science and in art."
>
> Ernst Cassirer
> *The Philosophy of the Enlightenment*

Reason and the Aesthetics of Objectivity

'Objective' aesthetics sought to define beauty along the lines of Cartesian rationalism. Cartesian philosophy with its conception of 'universal knowledge' set a new standard and ideal not only for the sciences, but for art as well.[lxii] The absolute unity under which all knowledge was thought to exist within Descartes' system meant the rejection of, or at least the overcoming of, all arbitrary and conventional thinking. Art, like science, was now subjected to the rigorous demand of reason. Like the other areas of knowledge the arts were increasingly examined in an attempt to locate essential, permanent and fixed principles. The variability of aesthetic pleasure, witnessed in the fluctuation of national and cultural styles, became a fundamental problem that had to be overcome.

If aesthetic theory was to be anything more than just the observation of diverse cultural trends, it would have to reject the very diversity of such phenomena, and attempt to grasp the nature of the artistic process, and of aesthetic judgment, as a generalized principle. This is the very basis of the search for an 'Objective' aesthetics that emerged in the late 17th century. Just as nature herself, in all of her diverse manifestations, can be reduced to a series of generalized principles or laws, so must art. The truth of nature, its' eternal laws, become the foundation of the beautiful. But nature here is not understood in

the physical sense, but rather as a functional significance. The generalized laws of nature, as posited by both Descartes and Newton, were mechanistic.[lxiii]

'Objective' aesthetics derived its' truth from a representation of the mechanistic structure of nature. Art takes it inspiration from the simplicity and efficiency of 'la belle nature'. As Cassirer puts it: "Truth and beauty, reason and nature, are now but different expressions for the same thing, for one and the same inviolable order of being, different aspects of which are revealed in natural science and in art."[lxiv]

It is here that the 'Objective' aesthetics adheres most closely to Cartesian thought. In Descartes' writing the imagination is not viewed as a means toward truth, but rather as a confused means of thinking and judging that must be controlled and subjected to reason. Art becomes a representation of the forces, or laws, of nature, which are objective truths. These laws are not invented per se, but discovered in the nature of things. Subjective forces and the imagination essentially play little part in this, while essential in instigating the artistic process they must be purged from the process in the end by reason. Likewise according to Descartes, sensory qualities and properties are relegated out of the realm of truth as sensory illusion. In 'Objective' aesthetics the object is not the object of perception, but the object of pure relations expressed in terms of exact rules. These are the very characteristics of 'Positive' and 'Natural' beauty as defined by Perrault, Wren and Guarini.

'Objective' aesthetics adhered to Cartesian thought in other ways as well. Descartes' chief contribution to mathematics was the invention of analytic geometry, which succeeded in reducing all intuitive relations between objects to exact mathematical relationships. This transformed 'matter' into 'extension', within an abstract geometric

field of space. In Cartesian epistemology, space is a condition of pure reason, guided by the conditions of logic and arithmetic. In Descartes' world, space is not subject to sensory experience, or the play of the imagination. Similarly, such issues and concerns can play no part in the determination of either beauty or aesthetic judgment in architecture.

It was not just the concept of space that was affected. According to analytical geometry, the nature of a given form is not presented in its diverse manifestations, but rather in its' formative law. For example, an ellipse may be defined as "a closed plane curve generated by a point moving in such a way that the sums of its distances from two fixed points is a constant."[lxv] That some ellipses are more circular than others are and some are rather narrow is inconsequential to understanding the 'nature' of the ellipse. The diversity of reality is not denied, but rather reduced to general law.

This law of mathematical unity has its corollary in aesthetic theory as well. The diversity of the art object now achieves unity through the introduction of the concept of genre or type. Once again Cassirer explains it in the following way. "The genres and types of art correspond to the genera and species of natural objects; the former like the latter have their immutable and constant forms, their specific shape and function, to which nothing can be added and nothing taken away. The aesthetician is not the lawgiver of art any more than the mathematician, or physicist, is the lawgiver of nature."[lxvi]

In response, we find in the beginning of the 18th century the application of the concept of type applied to the history of architectural form. Unlike the traditional reverence for the ancients as authority, the recourse to the past, as type, was based upon this new desire to achieve unity in the diversity of historical form. What resulted was the reduction of antiquity to ideal type forms, now believed to hold the true principles of

architecture. It was the simplicity of form and the inherent clarity of relationship of part to whole that was of value. Such principles, clear, simple and hence rational, represent an attempt to maintain the absolute value of architecture, in the sense of possessing an 'objective truth'.

The central metaphysical issue that surrounds the epistemology of science, the relationship between the particular and the universal, is here carried over into aesthetics and architecture.[lxvii] The relationship between the general and the particular, the rule and the exception, now becomes a key concern in the nature of 'Objective' aesthetics, as the particular recedes into abstraction. The rule and order inherent in the type take precedence, and act now as guideposts for the artist and protect him/her from capricious judgment. Artistic freedom and creativity are here constrained by the selection of type that essentially constitutes both content and form. The result is that artistic creativity must now be found elsewhere, in the development of new means of expression and representation of the type. Such creativity is always in the service of a technical mastery of the type and is faithful to it in the sense that the expression, or representation, should be that which clearly and distinctly reveals its' truth. Simplicity, brevity and clarity become the aesthetic ideals in the search for 'objectivity' in art.

The objective view of nature allowed for the creation of a conception of beauty, wherein beauty of form was seen as the adaptation to necessities of environment. One of the earliest formulations of such a definition of beauty can be found in Francis Hutcheson's *An inquiry into the Origins of Our Ideas of Beauty and Virtue* of 1725. In it he claimed: "This beauty arising from correspondence to intention, would open to curious observers a new sense of beauty in the works of nature, by considering how the

mechanism of the various parts known to us, seems adapted to the perfection of that part and yet in subordination to the good of some system or whole."[lxviii]

By defining beauty as the adaptation to necessity Hutcheson begins to equate Nature, and its beauty, with mechanized devices and their beauty. He also compared the beauty of architecture, to the beauty of machines, or automatons. For him the same artistic principles applied to both, as well as art in general. The mechanistic view of the universe embodied in the metaphysics of Newton was now translated into the discourse of beauty, allowing it to be transferred to the man- made realm directly.

The clear and self- evident operation of means to ends became understood as evidence of beauty because this was also the way in which the physical sciences presented the world of nature, as clear self- evident means to ends. Just as nature was efficient and used an economy of forces to achieve many ends, the world of human creation was subjected to the same principle of beauty, mechanical efficiency. Thus Hutcheson becomes one of the first to define beauty as the clear expression of economy of means. He elevated the concept of *utilitas* to that of *venustas*, via the analogy of mechanical efficiency.[lxix] In this way nature becomes synonymous with reason itself.

"The novelty in painting does not consist principally in a new subject, but in good and new dispositions and expression, and thus the subject from being common and old becomes singular and new."
Nicolas Poussin
Lettres de Poussin

Science and the Image of Beauty

The new emerging epistemology of science resulted in the gradual dissolution of the classical notion of mimesis which served as the basis of the Vitruvian tradition. In its place was what has been called the theory of imitation, known as 'la belle nature'.[lxx] While both can be said to be theories of imitation they serve different epistemological ends and the content of their forms are different.

The classical doctrine of *mimesis*, operated on two fundamental premises.[lxxi] First the belief in a hierarchical set of transcendental values present as the underlying ordering system of all things both divine and in the world of nature. Second the theory of *mathmesis*; the belief that the fundamental structure of that ordering system was essentially geometrical in nature such that there was a clear relationship between the macrocosm and the microcosm owing to their fundamentally identical structure. The use of geometry and mathematical structures, the application of the *sophron eros*, provided an absolute value for art, grounding it in metaphysical foundations.

In classical mimesis art emulates nature in its forms, its orders and its underlying organization. It conceptualized the role of the artist, craftsman and tekton as working to analogically emulate the central guiding principle of creation, aesthetically defined as harmony. At its core was the philosophical concept of *sophrosyne*, a theory of right

proportion and balance that ensured and maintained the ethics of the Good. In architectural theory this was most often manifested in theories of right proportion and anthropomorphism. The process by which this was attained in the design process was via the dialectic of *techne* and *phronesis*.

The imitation theory of 'la belle nature' is not a mimesis of nature, the re-presencing of creation, wherein the work of art or architecture serves as a microcosm of the macrocosm and aesthetic theory a metaphysical justification of praxis. Derived from the epistemology of science it sought the same goals and aims. Science demands all knowledge be reducible to clear and precise principles and eventually that all principles be reduced to a single axiom, this held true for art as 17th and 18th century aesthetics came increasingly under the influence of the epistemology of science. As Cassirer notes of art's emulation of nature, ". . . all these partial laws must fix into and be subordinate to a simple principle, an axiom of imitation in general."[lxxii] Evidence of the strong desire to do for art what science was doing for nature can be found in the work of Boileau (1636-1711), often called 'The Law giver of Parnassus'.[lxxiii] and in the title of Abbe Charles Batteux's (1713-80) most important work *The Fine Arts reduced to a single Principle*[lxxiv]

According to Descartes all being must first be reduced to laws of spatial intuition in order to be clearly conceived and understood as pure concepts; this was considered the fundamental method for all knowledge. This idea of figurative expression was found in his *Rules for the Direction of the Understanding*. There is an intuitive character that belongs to geometrical figures. This led to analytical geometry; the discovery of a method where all intuitive relations among figures could be reduced to an exact numerical

relationships. According to Descartes it was the pure rationality of mathematical demonstration and truths that underlay all of nature.

The new aesthetic theory of imitation saw art as indicative of the physical set of rules of operation in 'la belle nature', a mechanistic image of nature derived from the new epistemology. Here the work of art indicated the mechanical organization of nature in its physical components. Nature here is analyzed via its quantitative characteristics in accordance with the methodology of scientific study determined by the epistemology of science. This method does not examine the qualitative characteristics of being and hence asks divergent questions. The central concerns of harmony; *sophrosyne* and ethics, of classical mimesis and the Vitruvian tradition are absent.

The imitation of 'la belle nature' seeks to represent the rationality found in nature as an idealized model: the model being the purity of reason exemplified in nature, not nature herself as an organism or system of relationships. It defined nature in a more restricted sense, as ideational concept derived from pure reason. It is the reduction of nature to fixed principles and laws which make it synonymous with reason. The work of art here is indicative of the purity of reason as abstract universal ideal. Accordingly, art is a representation of the ideal of what nature could or should be. It is not nature as object being represented, but the rational principle perceived as underlying it. It is not a field of objects, but the exercise of intellectual forces; it is in this sense that nature becomes synonymous with reason. Nature is understood as a functional significance.

In the first half of the eighteenth century, this new rationalized theory of imitation applied regardless of whether 'nature' referred to the nature of the *res extensa* or the nature of the *res cogitans.* It was therefore true of both, to 'Objective' and 'Subjective'

aesthetics. One looked to the natural sciences and the other to the past, in the form of an aesthetic canon, for its rational ideal.

Those that looked to nature found themselves searching for rational principles of design and composition that could be derived from an analysis of nature, or 'la Belle Nature'. While nature itself might not be perfect, the immanent principles underlying its construction were. Men like Batteux advocated a selective imitation, in which the relationships between phenomena and their principles, not the natural forms, were represented in artistic terms. [lxxv] In this case imitation was not of a given a priori model, but rather the processes, or principles of nature that could be observed a posteriori, and then applied to the design process. [lxxvi] Such concepts were not limited to architecture but proved to be a determining factor in the development of architectural theory.

Those that looked to the past found themselves searching for rational principles of design and composition that could be derived from an analysis of canonical works. Such principles, clear simple and hence rational, constituted what eighteenth century theories referred to as taste, and represented an attempt to maintain the absolute value of architecture, in the sense of possessing a 'truth'. This tendency can be found in the church studies and project of men like J.H. Mansart, Claude Perrault, Abbe de Cordemoy, Michel de Fremin, Germain Boffrand and Contant d'Ivry. It is also present in the idealization of Greek art and architecture found in the writings of Winckelmann and LeRoy.

Unlike the traditional reverence for the ancients as authority, this recourse to the past as model was based upon a new desire to overcome the relativity of custom, through a return to origins. Architects and theorists sought to find their true principles of

architecture in forms and types believed to be more pure, because less affected by cultural alterations. In other words, in sources closer in formulation to the principles of nature than of culture. What resulted was the reduction of antiquity to ideal type forms. It was the simplicity of form and the inherent clarity of relationship of part to whole that was of value.

Art like science was now subjected to the rigorous demand of reason, and like other areas of knowledge increasingly examined in an attempt to locate essential permanent and fixed principles. What resulted was a whole new foundation for aesthetic theory derived from the epistemology of science's emphasis on reason and clarity. Aesthetic theory became an *ars fabricandi* a method of fabrication as opposed to a means of metaphysically justifying praxis. It implied an epistemological framework wherein the evolution of the rationalization process replaced traditional metaphysics as that which art communicated.

It is the distinction between these too forms of imitation; the classical mimetic and 'la belle nature', too often overlooked or not fully understood, that leads to a failure to fully understand the extent of this epistemological revolution and its effect on aesthetics and architecture. It is also the very source of the instrumentalization of architectural theory and the production of what Perez Gomez referred to as the 'functionalization' of theory that, as he claimed transformed it "into a set of operational rules into a tool of an excessively technological character."

ENDNOTES

[i] Claude Perrault, *Essais de Physique*, Paris, 1680 & 1688, I, Preface, and IV, pg. 2.
[ii] Kristeller, *Renaissance Thought, II*, pp. 205 ff.
[iii] Charles Perrault, *Parallele des anciens et des modernes*, 2nd edit. 4 vols., Paris 1692- 1696, Vol. 4 pp. 46-59.
[iv] Perez- Gomez, *Architecture and the Crisis of Modern Science*, The MIT Press, Cambridge, Mass., 1983, pg. 26.
[v] Colbert was Minister of finance for Louis XIV and also founded the *Academie des Sciences*, the *Observatoir de Paris* and promoted the *Academie Francais*. He proved a central figure in the direction of the Academie system and was close to the Perrault brothers.
[vi] Kruft, *A History of Architectural Theory from Vitruvius to the Present*, trans. Taylor, Callander & Wood, Zwemmer Princeton Architectural Press, Princeton, 1994, pg. 129.
[vii] For a complete list of Claude Perrault's published texts and manuscripts see Wolfgang Herrmann, *The Theory of Claude Perrault*, A. Zwemmer Ltd, London 1973, appendix and bibliography. Herrmann provides a list of his writings in the Bibliography and Appendix II provides information on the reception of Perrault's Scientific Work.
[viii] See Wolfgang Hermmann, *The Theory of Claude Perrault*, A. Zwemmer, Ltd. London, 1973, pp. 130-189.
[ix] Claude Perrault, *Ordonnance for the Five Kinds of Columns after the Method of the Ancients*, edit. Harry F. Mallgrave, The Getty Center for the History of Art and the Humanities, Santa Monica, CA., 1993, pg. 57 ff.
[x] The *Cours* contained three chapters dedicated to refuting Perrault. The dates of publication indicate that the *Cours* was published prior to the *Ordonnance,* but it should be noted that the *Ordonnance* was circulated in the *Academie des Sciences* a decade prior t its publication. It was therefore, known in Paris. Additionally, much of what would become the *Ordonnance* was present in Perrault's commentaries on Vitruvius and in his public lectures. Blondel could not mention by name the unpublished manuscript but he could mention, and does, the other sources of Perrault's ideas.
[xi] Claude Perrault, *Ordonnance for the Five Kinds of Columns after the Method of the Ancients*, edit. Harry F. Mallgrave, The Getty Center for the History of Art and the Humanities, Santa Monica, CA., 1993, pg. 48.
[xii] For a more detailed survey of how such proportional systems were used by Renaissance architects see *The Problem of Harmonic Proportion in Architecture*, Longare and Howard, 1983.
[xiii] Alberti, *Leon Battista Alberti On the Art of Building in Ten Books*, trans. Joseph Rykwert, Neil Leach and Robert Tavernor, The MIT Press, Cambridge, Mass., 1994, pg. 305. For Alberti the term *Concinnitas*, was the harmony of divine creation, and was responsible for beauty in the world. But it was not solely an aesthetic category. The term also referred to the concept of the good in creation and Alberti uses this as a basis for an ethical foundation in architecture as well.
[xiv] Perez- Gomez, *Architecture and the Crisis of Modern Science*, The MIT Press, Cambridge, Mass., 1983, pg. 31.
[xv] Claude Perrault, *Ordonnance for the Five Kinds of Columns after the Method of the Ancients*, edit. Harry F. Mallgrave, The Getty Center for the History of Art and the Humanities, Santa Monica, CA., 1993, pg. 56.
[xvi] Vitruvius, *The Ten Books on Architecture*, trans. Morris Hichy Morgan, Dover Publications, Inc., New York, 1960, see Bk III chap. III, chap. V, bk. IV chap. III.
[xvii] Claude Perrault, *Ordonnance for the Five Kinds of Columns after the Method of the Ancients*, edit. Harry F. Mallgrave, The Getty Center for the History of Art and the Humanities, Santa Monica, CA., 1993, pg. 59.
[xviii] Claude Perrault, *Ordonnance for the Five Kinds of Columns after the Method of the Ancients*, edit. Harry F. Mallgrave, The Getty Center for the History of Art and the Humanities, Santa Monica, CA., 1993, pg. 50.
[xix] Descartes, *Rene Descartes Discourse on Method and Meditations on First Philosophy*, 3rd ed. Trans Cress, Hackett Publishing Co. Indianapolis, 1993, 'Synopsis of the Following Six Meditations' pg. 54.
[xx] Claude Perrault, *Ordonnance for the Five Kinds of Columns after the Method of the Ancients*, edit. Harry F. Mallgrave, The Getty Center for the History of Art and the Humanities, Santa Monica, CA., 1993, pg. 54.

[xxi] Ibid. pg. 51.
[xxii]Ibid., pg. 62.
[xxiii] According to Plato, 'Absolute' beauty was the idea, or *eidos*, of beauty as a divine concept, while 'Relative' beauty was that beauty, which is found in a particular object, in the 'thing- in- itself'. In Plato's system of thinking, no single particularity in the realm of nature could be as comprehensive as the *eidos* of the thing, as it exists in the realm of ideas. Because of its particularity, the 'Relative' beauty of the 'thing- in -itself', while not as comprehensive, still makes reference to the *eidos* of 'Absolute' beauty.
[xxiv] Zurko, *Origins of Functionalist Theory*, Columbia University Press, New York 1957, pg. 69-70.
[xxv] The vast majority of work on architecture, carried out by the Royal Society, was done by Wren and his circle of colleagues, that included John Evelyn (162- 1706), Robert Hooke (1635- 1703), and John Aubrey (1626- 1697).
[xxvi] Soo, *Wren's 'Tracts' on Architecture and Other Writings*, Cambridge University Press, Cambridge, 1998, chapter 5.
[xxvii] The unpublished manuscripts were edited by Christopher Wren Jr. (1675- 1747), Wren's son, who began to compile his father's writings before Wren's death in 1723. His grandson Stephen finally published the collected texts as the *Parentalia*, in 1750.
[xxviii] For an elaboration of these contributions see Soo, *Wren's Tracts' on Architecture and Other Writings*, Cambridge University Press, Cambridge, 1998, pg. 120-40.
[xxix]Ibid., pg. 131. Soo also notes that Fisher von Erlach also produced a history of architecture, *Entwurff einer historischen Architektur*. It too included alternative cultures and expressed an understanding of historical consciousness but was not published until 1721 and therefore antidates the work of Wren. Her argument is that earlier 'histories' amounted to lists of buildings without a sense of stylistic evolution overtime.
[xxx] Christopher Wren, *Tract I, "Of Architecture*", reprinted in Soo, *Wren's 'Tracts' on Architecture and Other Writings*, Cambridge University Press, Cambridge, 1998, pg. 154.
[xxxi] Christopher Wren Jr., *Parentalia: or, Memoirs of the Family of the Wrens*, London, 1750. Facsimile ed. Farnborough: Gregg, 1965, pp. 200- 201.
[xxxii] Soo, *Wren's 'Tracts' on Architecture and Other Writings*, Cambridge University Press, Cambridge, 1998, pg. 136.
[xxxiii] This is evident in Wren's design for St. Paul's London, where the inner most dome (the actual structure is a triple shelled dome) has a perspective rendering on the interior that makes it appear taller. One might assume that Wren employed this device to give the inner shell the visual height of the external dome.
[xxxiv] Descartes, *Rene Descartes Discourse on Method and Meditations on First Philosophy*, 3rd ed. Trans Cress, Hackett Publishing Co. Indianapolis, 1993, 'Synopsis of the Following Six Meditations' pg. 98- 99.
[xxxv] Ibid., pg. 84.
[xxxvi] Christopher Wren, *Tract I, "Of Architecture*", reprinted in Soo, *Wren's 'Tracts' on Architecture and Other Writings*, Cambridge University Press, Cambridge, 1998, pg. 155.
[xxxvii] See Bennett, 'Christopher Wren: The Natural Causes of Beauty', Architectural History, 15 (1972): 5- 22. And Francis Bacon, *Works*, 4:431 (*De augmentis scientiarum*, vol. 5 chap. 4) and *Works*, 4:54- 5 (*Novum Organum*, vol. I, Aph. 43.
[xxxviii] Christopher Wren, *Tract I, "Of Architecture*", reprinted in Soo, *Wren's 'Tracts' on Architecture and Other Writings*, Cambridge University Press, Cambridge, 1998, pg. 154.
[xxxix] Guarini, *Architettura civile*, The Gregg Limited Press, London, 1964, *Trattato III*, Capo XIII, oss.1.
[xl] Ibid., *Trattato I*, Capo III, oss 1.
[xli] Ibid., *Trattato I*, Capo III, oss 6.
[xlii] Ibid., *Trattato I*, Capo III, oss. 9.
[xliii] Ibid., *I*, Capo II, oss. 10,.
[xliv] Ibid., *Trattato I*, Capo III, oss 7 & 9..
[xlv] Ibid.,, *Trattato IV*, intro.
[xlvi] Wittkower, 'Guarini the Man', in *Studies in the Italian Baroque*, Westview Press, Boulder CO., 1975, pg. 184. See also Werner Muller, 'The Authenticity of Guarini's Stereotomy in his *Architettura Civile*', in *Journal of the Society of Architectural Historians*, XXVII, 1968, pp. 203- 8, and Elwin C. Robison, "optics and Mathematics in the Domed Churches of Guarinio Guarini', in *Journal of the Society of Architectural Historians*, 50, no. 4 Dec. 1991, pp. 384- 401.
[xlvii] Guarini, *Architettura civile, Trattato III*, Capo III, The Gregg Limited Press, London, 1964.

[xlviii] Ibid.,, *Trattato I* Capo III, intro.
[xlix] Ibid., *Trattato I*, Capo II, oss. 3.
[l] Ibid., *Trattato I*, Capo III, oss. 7. The Gregg Limited Press, London, 1964.
[li] Ibid.,, *Trattato I*, Capo III, oss. 7 & 17. The Gregg Limited Press, London, 1964.
[lii] It must be stated that Ancient Greek and Roman architecture, and Early Renaissance architecture for that matter, did not conceptualize the orders as such. For Vitruvius they served only as devices, demonstrations of the true underlying rule of proportion and harmony, itself an artistic device used to reveal the *sophron eros*, the actual underlying rule or principle of creation. Alberti's concinnitas was an extension of this principle. It was only after attempts by Palladio, Serlio and Vignola to establish a canon of the orders and their proportions that they were conceptualized as 'rules'.
[liii] For a comprehensive run down of the those writers who took up the discourse see E. R. de Zurcko, *The Origins of Functionalist Theory*, Columbia University Press, New York, 1957, pp. 75- 200.
[liv] Herrmann, *The Theory of Claude Perrault*, A. Zwemmer, Ltd. London, 1973, pg. 150. See also Herrman, *Laugier and Eighteenth Century French Theory*, A. Zwemmer, Ltd. London 1962, Appendix III.
[lv] Ernst Cassirer, *The Philosophy of the Enlightenment*, Princeton University Press, Princeton, NJ, 1951, pg. 277.
[lvi] I am here using Cassirer's terminology of 'objective' and 'subjective' aesthetics as outlined in his text *The Philosophy of the Enlightenment*, Princeton University Press, Princeton, NJ, 1951, pg. 275-312.
[lvii] The rise of this definition of beauty and taste should be seen as a response to the shift between the natural sciences of Descartes and Newton. If Cartesian thought sought truth solely through deduction, Newtonian thought sought it through combinations of both deduction and induction.
[lviii] Nicolas Despreaux Boileau (1636- 1711) known as the 'lawgiver of Parnassus' essentially defined Neo-Classic aesthetics. It was Boileau who stormed out of the *Academie Francais* meeting when Charles Perrault read his famous poem. He insisted that the arts and sciences were united under the sovereign power of reason, and that what was common to both was that "license is the crime which is never permitted." The majority of his aesthetic theory is contained in *The Poetic Art.* For information on Boileau see Cassirer, *The Philosophy of the Enlightenment* pp. 280-286.
[lix] Ernst Cassirer, *The Philosophy of the Enlightenment*, Princeton University Press, Princeton, NJ, 1951, pg. 300.
[lx] David Hume, *Essays Moral Political and Literary*, edit. Miller, Liberty Fund, Indianapolis, 1985, *'Of the Standard of Taste'*, pg. 230.
[lxi] Denis Diderot, *Essai sur la peinture*, ch. VI, *Oeuvres*, x, 519.
[lxii] Descartes never provides a comprehensive aesthetics in his writings yet they do contain broad outlines for an aesthetic theory. Descartes 'universal wisdom' was conceived of as a universally valid postulate, in his discussion of 'universal knowledge', in the *Rules of the Direction of the Understanding*, he includes music along with optics, geometry arithmetic and astronomy in typical medieval fashion. But this move also brought with it the implication that such rules should be equally applicable to other forms of art. As Cartesianism expanded the desire to apply 'universal knowledge' to art also became more prominent.
[lxiii] Traces of this emerging vision of nature can be detected in Wren's insistence on the development of the science of statics as a means of determining form, and Guarini's insistence on the architects' use of projective geometry as a means of determining vaulting profiles. In both cases the determination of design profiles can be reduced to mathematical equations. This falls in line with the new causality, *'how is this thing related to another?'*, explained in terms in terms of the simplest elements, related to causes mechanically treatable. It also defines architecture in terms of the new reality, defined as a world of atomic particles possessing only quantitative characteristics, composed of primary causes, explainable through mathematical axioms.
[lxiv] Ernst Cassirer, *The Philosophy of the Enlightenment*, Princeton University Press, Princeton, NJ, 1951, pg. 281.
[lxv] *Webster's Ninth New Collegiate Dictionary*, Merriam-Webster Inc., Springfield Mass, 1987.
[lxvi] Ernst Cassirer, *The Philosophy of the Enlightenment*, Princeton University Press, Princeton, NJ, 1951, pg. 290.
[lxvii] It was precisely this issue and its effects on both epistemology and art that Vico criticized in his *New Science* and Hegel so vehemently attacked in the Prolegomena to his *Phenomenology of Spirit.*
[lxviii] Hutcheson, *An Inquiry into the Origins of Our Ideas of beauty and Virtue*, pg. 40.

[lxix] This mechanical and proto- functionalist view of beauty was generally adopted during the 18th century. It is present in many of the French architectural theorists but can also be seen in England where it can be found in the writings of men like George Berkley, David Hume, William Hogarth, Edmund Burke, Adam Smith, and Henry Home (Lord Kames).

[lxx] Such theories are called so because they purport art to be the imitation of nature hence the term 'la belle nature'. While mimesis is also an imitation theory it is distinct in its formulation as noted below and thus historians make the distinction between mimesis and the theory of imitation. For more information on 'the theory of imitation' see Yim, Seockjae *Imitation and Ideal type: a Study of Eighteenth Century French Architecture*, UMI, Ann Arbor Michigan, 1995. See also Mosche Barasch, *Theories of Art form Plato the Winckelmann*, New York University Press, New York & London, 1985 and Mosche Barasch, *Modern Theories of Art I From Winckelmann to Baudelaire*, New York University Press, New York & London, 1990.

[lxxi] Mimesis is a theory of imitation in which the object is mimetic of a given thing. Traditional architectural theory from Vitruvius through Perrault adhered to this theory. Beauty in architecture was derived from the mimetic imitation of cosmology. The classical orders were the embodiment of a transcendental numerology transformed into a theory of proportion. From Vitruvius' theory of proportions derived from the proportions of the human body, to Palladio's harmonic proportions derived from the celestial harmony of the spheres, architecture was seen as the embodiment of the very structure of the divine cosmos. Ernst Cassirer notes this very shift from mimesis to representation in the *Philosophy of Symbolic Forms,* where he identifies two forms of artistic gesture the *mimetic*, and the *indicative.* The *mimetic gesture* is derived from a form of thought in which form and content are one. It implies no distance between the object and the knowing subject. In such a case the knowing subject becomes the thing it is referring to. This form of thought and expression is presentational by nature and Cassirer identifies this with myth. In contrast the *indicative gesture* is derived from a form of abstract thought wherein form and content are distinct, an arbitrary sign stands for an absent present. The thing refers to an object outside itself through the act of pointing, whether physically or intellectually. It is representational by nature and Cassirer identified this with language. See Ernst Cassirer, *The Philosophy of Symbolic Forms*, Vol. I, chap. 2, Vol. II, chap. 1, Yale University Press, New Haven, 1955. See also Cassirer *Language and Myth*, Dover Publications Inc., New York, 1946.

[lxxii] Ernst Cassirer, *The Philosophy of the Enlightenment*, Princeton University Press, Princeton, 1951, pg. 280.

[lxxiii] It was Boileau who in *L'Art Poetique* set up rules for the language of poetry and the general precepts of *bon sens* or good taste.

[lxxiv] Written by Batteux and published in 1746 in it he asserted that the beauty of nature resides in representations of it as it *could* or *should* be, in its idealized form and according to formal aesthetic laws. Form is necessarily *ideal* perfection and *ideal* beauty. He also asserted that the imitation of 'la belle nature' is characteristic of all the arts and that the fine arts in particular have as their end pleasure. His ideas were inspired by the writings of John Locke and Voltaire. His writings were influential and that influence can be seen in Hume's *Of the Standard of Taste*.

[lxxv] Mosche Barasch has defined three dominant definitions of imitation from roughly the Renaissance up to the Romantic period. The first was the *sacrosancta venutas*, it is "a faithful and precise replication of the original" and affords "no change of the model" and "prevents the creation of new and dynamic forms". The second the past as model, is conserved as a repository of forms and motifs, the model chosen has "only a limited influence on the imitator". The Third, according to Barache; "rich in nuances is one in which the imitator is aware of the distance between himself and his model; he does not entertain the illusion that he can reproduce it with precision, but he knows that he cannot step out of this relationship to the past, that he cannot treat his model as just 'mater, to be handled at will. His relationship to imitating is not an innocent one; it is based on the awarenessffo the model's otherness and specificity . . . this kind of imitation combines the model's power to impose on the present an overall structure or direction and the imitator's freedom to develop and create what was implied in the model. In this dialectical view, imitation is both a following of the past and a new creation." See Moshe Barasch, *Modern Theories of Art I, from Winkelmann to Baudelaire*, New York University Press, New York & London, 1990, Pg. 111-112.

[lxxvi] For a more complete explanation of the way in which imitation was define in the 18th century in architectural theory see Yim Seockjae, Ph.D Dissertation *Imitation and Ideal Type: A study of Eighteenth Century French Architecture*, University of Pennsylvania, 1992.

Chapter 9: Function and the Instrumentalization of Architecture

> "Architecture is an Art of Building having regard to the thing itself, the person for whom it is built, and the site."
>
> Michel Fremin
> *Memoires critiques d'architecture*

With the dawn of the eighteenth century, after the Copernican Revolution and the new 'mechanized' cosmology of Descartes and Newton, came the steady progressive influence of the epistemology of science on architectural thought. The wholesale restructuring of aesthetics along either 'Objective' or 'Subjective' lines was widely accepted as the writings of Perrault, Guarini and Wren were more broadly distributed.

In France the objective aesthetics of 'la belle nature' had become the academic standard for the definition of beauty. Based on a functional prerogative, it manifested itself in two interrelated cognitive mechanisms of efficiency, what I have termed: 1) The Mechanism of Structure- the functional relationships of the structural elements, and 2) The Mechanism of Disposition- the functional relationships of spatial elements defined by the concept *utilitas*. The first evolved into what has been called the 'Greco-gothic Ideal' and the second a general discourse on typology which played a significant role in the development of a theory of type. Both manifestations appeared within the discourse of architecture in the 18th century and as I intend to demonstrate both played significant roles in the formulation of what can be termed a rational tectonic.

". . . insofar as it relates to the whole, each part should be proportionate, and have a form appropriate to its use."

Germain Boffrand
L'aventure d'un architecte independant

Architectural Theory and 'Objective' Aesthetics

One of the first to directly advocate the representation of 'la belle nature' in architecture was Amedee- Francois Frezier (1682- 1773), who called for a return to the simplicity of primitive times. He advocated an *architecture naturelle,* based upon fixed rules that made close reference to nature, going so far as to expound the beauty of simple Caribbean huts which he had seen on his trip to South America.[i] According to him, it was in the representation of nature that true beauty lay.[ii] Frezier was not alone, as a slew of writers began to see nature as the source of clear and rational principles.

Philippe de la Hire (1640-1718), Blondel's successor as Director of the *Academie d' Architecture* subordinated taste to use and function. In 1734 the *Academie* approved definitions of four fundamental principles of architecture: *bon gout, ordonnance, proportion* and *convenance*. The guiding principle was *bon gout,* which consisted of the harmony between the whole and its parts, and was dependent upon the remaining three. *Ordonnance* or the distribution of parts, was dependent on the size of the building and its intended use. *Proportion* was the appropriate measure, or dimension, of the parts determined by use and location, and based on nature. *Convenance* was the adherence to established use. It is important to note here that taste was not based on any system of rationality, even Perrault in his theoretical analysis of beauty had to a certain degree acknowledged this in his definition of 'Arbitrary' Beauty. But that does not prevent it

from taking on a significant role. As Kruft points out, *Bon gout* takes on the theoretical status of Alberti's *Concinnitas*. "*Ordonnace, proportion* and *convenance* are all defined in terms of use (usage), i.e. of the function of architecture. This latter concept, on the other hand, is no longer subject to definition. Usage is evidently whatever is required of architecture in any given case: practicality, comfort, fashionableness, etc. Basic aesthetic concepts become dependent on the utility value of architecture."[iii] What becomes significant is the apparent move to align taste, i.e. *bon gout*, with categories that eventually could and would become subject to a system of rationality, notably function in the form of disposition, as I intend to show.

Germain Boffrand (1667- 1754) had argued, in his *Livre d'architecture* (1745), that while the principles of architecture were subject to development and were therefore not constants, they had their origins in Nature. According to him, the closer the adherence to the principles of 'noble simplicity' found in Nature, the closer to true architecture. It was through reflection and experience that those principles could be brought nearer to perfection. Boffrand would introduce the term *caractere* as a reflection of the function, or purpose, of the building. Thus establishing a rhetorical fitness of purpose between form and function, akin to that found in nature. He would write "insofar as it relates to the whole, each part should be proportionate, and have a form appropriate to its use."[iv]

Charles- Ettienne Briseax (1660- 1754) had also claimed that the laws of beauty were to be derived from the study of nature. In his *Traite du Beau Essential dans les arts* (1752), he claimed such laws were found in nature's proportions, evident in both music and architecture. Briseax was a rationalist, applying the epistemology of science in his aesthetics. Placing intellectual comprehension over receptivity to the senses, he rejected

the conception of taste, in favor of the establishment of firm principles. While he emphasizes the use of harmonious proportions, they are not derived from the same metaphysical precepts found in earlier classical theory. Rather for Briseax they are derived from science's analysis of nature. It is from this scientific understanding of the underlying principles of nature that aesthetic certainty is to be derived.

Deriving his theories from John Locke and J.J. Rousseu, Charles Batteux (1713-1780) held that art consists of the faithful imitation of the beautiful in nature. In his *Les Beaux-Arts Reduits a un meme Principe* (1746) he advocated a selective imitation, in which the relationships between phenomena and their principles, not the natural forms, were represented in artistic terms. In this case architecture does not represent a given *a priori* model, but rather the processes, or principles of nature that could be observed *a posteriori,* and then applied to the design process.

It is important to note that underlying all of these writers was their adherence to 'Objective' aesthetics and the insistence on a return to 'la belle nature'; the view that nature operated according to clear, rational principles and that the expression of form was a response to the necessities of function. Aligning itself more fully with the methodology of science, architectural beauty was increasingly tied explicitly to this functional significance through the theoretical categories of *usage, commodite* and *convenience* to become a representation of the 'fitness for purpose' of the thing. It was in this way that architectural theory became 'functionalized', as metaphysical concerns became increasingly replaced by the attempt to develop a science of architecture. This inherent view of nature would become the basis of a functionalist approach to beauty that took hold in the 18th century and became a dominant feature of both the engineer's aesthetic of

the 19th century and the doctrine of functionalism in Modern architecture in the 20th century.

> "*Ordonnance* is that which gives to all parts of a building the appropriate dignity that is proper to their use."
>
> J. L. De Cordemoy
> *Dissertation sur la maniere dont les eglise doivent entre batires*

The Abbe De Cordemoy and The Dawn of the Greco- gothic Ideal

In the early 18th century a new form of architectural conceptualization began to take hold, in response to the rationalism of 'Objective' aesthetics, termed the Greco- gothic Ideal[v] by the Abbe Jean-Louis de Cordemoy (1660- 1713),[vi]. The fifth son of the Cartesian philosopher Gerauld de Cordemoy, he first coined the term in his *Nouveau traite de toute l'architecture* of 1706. The Greco-gothic Ideal advocated simplicity of form and composition, as well as a clear articulation of parts and their functional relationship to each other. This tendency can be found in the church studies and projects of men like J. H. Mansart, Claude Perrault, Abbe de Cordemoy, Michel de Fremin, Germain Boffrand and Contant d'Ivry. It is also present in the latter idealization of Greek art and architecture, found in the writings of Winckelmann and LeRoy, and Neo-classicism.

As Robin Middleton has shown the Greco-gothic Ideal was instigated by two trends in architectural thinking in the early eighteenth century.[vii] The first was the interest in the more pure rectilinear forms of classical architecture. This trend was more a reaction

against what was seen as the excesses of the Rococo than any true academic appreciation of Greek architecture. Middleton notes that it was not until the middle to late eighteenth century that any true study of Greek art and architecture became influential on French architecture, most notably with the publications of Pere Pancrazi's *Antichita Siciliane* (1752) and Julian David LeRoy's *Les ruines des plus beaux monuments de la Grece* (1758). It wasn't until 1778 with C.N. Ledoux's incorporation of the Paestum Doric column at the theater at Besancon that a true appreciation of Greek architecture took hold.[viii] Thus the Greco aspect of the Ideal must be understood as a return to the classicism of earlier French works most notably that of Perrault and Mansart.

Likewise, the Gothic aspect of the Ideal did not emerge out of an appreciation of the Gothic style. To the contrary, the Gothic was not appreciated as a complete aesthetic until the late eighteenth century. Instead the growing interest in a rational exploration of architecture, its structure and structural economy brought many architects to an appreciation of the construction practices of the Gothic masons. Their work was praised for its clarity and economy, as well as its resulting lightness. It was these aspects of the Gothic that French architects now began to call for in architecture, again in part as a reaction to the Rococo.

Thus the Greco-gothic Ideal was born not out of an aesthetic appreciation of historical form or the desire to find a new third hybrid style, but a growing rationalist trend to introduce simplicity of form, clarity of structural expression and economy of means into the theoretical discourse. This was in essence the 'Ideal" sought; justified via a specific reading of historical precedent. It reveals the depth of the influence of the epistemology of science on architecture and the art world. The Ideal was promulgated by three

influential writers; Michel de Fremin, A.F. Frezier and Abbe de Cordemoy, whose collective work placed a decidedly rational bent on architectural theory.[ix] Middleton asserts that it is their continued influence on the succeeding generations that lent a rationalist undertone to French theory right up to the writings of Violet-le-Duc in the mid-nineteenth century.

Not much is known of Michel Fremin other than that he was the President du Bureau des Finances in Paris. In 1702 he published his *Memoires critiques d'architecture contenans l'idee de la vraye & de la fausse Architecture* where he insisted on a reasoned approach to design, stressing the supremacy of functional concerns over aesthetic ones. The only valid aesthetic concern for him was the orderly distribution of spaces in plan and all ornament had to be subordinate to functional concerns. Restrictions of site, cost, materials and client needs took precedence in his writings. Michel Fremin was not the first to approach architecture from a rationalist perspective, but it was his rational analysis of Notre Dame de Paris that opened the door to the exploration of the values of Gothic construction, if not the Gothic style. While he disliked the details of Gothic architecture he nonetheless saw good architecture in the mason's rational and prudent approach to construction, believing that architects needed to be better informed about construction.

A.F. Frezier viewed Gothic as a precisely calculated, rational structural system. He in fact, advocated adopting the rational principles of Gothic, if not its forms. In his magnum opus *La Theorie et la pratique de la coupe des pierres et des bois pour la construction des voutes, ou Traite de stereotomie a l"usage de l'architecture* of 1737, Frezier provides an analysis of Gothic architecture as a precise and calculated system of vaulting. He was

perhaps the first to recognize that the webs of the gothic vaults were irregular spheroids and not simple curves. These were in turn supported on the ribs of the vault which were then supported by the columns, the entire structure balanced and braced by the buttresses. The work of the Gothic mason was practical and economic in its lightness. This was accomplished by redirecting the forces almost vertically into the piers, reducing the structure's overall dimensions. Frezier's analysis of Gothic architecture was as a perfected system of engineering, where the construction is viewed primarily as a solution to the problem of statical equilibrium.

His analysis was in no way wholly original; there had been a long standing precedent for considering the structural efficiency of Gothic going as far back as Philibert de l'Orme (1505-1570). In his *Nouvelles Invenions pur bien bastir* the latter postulated that the ribs of the Gothic vault were an independent structural support system.[x] His idea was picked up by Francois Derand (1591-1644) who, like de l'Orme, studied the construction of the Gothic vaults and their materials. Derand noted the importance of the buttresses in the structural system of the Gothic cathedral and was more explicit than De l'Orme in his assertion that the Gothic rib was a functional structural member.[xi]

The dominant interest in Gothic architecture and construction in the seventeenth and eighteenth centuries lay in its lightness and structural finesse and the image of it as a rational system of construction, an interpretation that persisted through the nineteenth century, where it was an important aspect of the theories of Violet-le-Duc (1814-1879). In fact Middleton asserts that "in France, the rational interpretation of Gothic was clearly familiar long before Violet-le Duc emerged during the nineteenth century to elaborate and codify it."[xii]

The most vociferous proponent of the Greco-gothic Ideal was the man who coined the term, Abbe de Cordemoy. Inspired by Michel Fremin's book *Memoires critiques d'architecture* he proved more forceful in developing an appreciation of Gothic architecture based upon the conception of honest and economical construction than either Fremin or Frezier. It was the writings of Claude Perrault, in particular his anoted edition of Vitruvius, that served as the basis for his theory of architecture. Nowhere in his *Nouveau traite de toute l'architecture* of 1706 does the Abbe de Cordemoy provide a definition for either 'beauty' or 'taste', nor does he specifically state that beauty depends on fitness of use, but all three of his principles of architecture are linked though the concept of it. He listed the principles of architecture as 1) *Ordonnance*, 2) *Distribution* or disposition, 3) and *Bienseance*, or propriety and fitness. *Ordonnance* was the order, arrangement or regulation, of all the parts of a building that give them their proper size, in relationship to their use. *Disposition* was the convenient arrangement of the parts, or spaces, within a building. In France, the concept of *Distribution* had a long- standing tradition, men like Salomon de Brosse and Jules Hardouin Mansart had insisted that spaces be laid out according to convenience for use, initiating a functional disposition of rooms in plan that replaced the formal symmetrical compositional strategies of earlier styles.[xiii] De Cordemoy defined *Bienseance* as "that which ensures that this *Disposition* is such that nothing will be found that is contrary to Nature, to custom, or to the use of things."[xiv] De Cordemoy saw *bienseance* as dependent on custom, as it related to function, and thereby placed the aesthetic category on par with *usage* and *commodite* as a determinant of beauty in architecture. While de Cordemoy did not embrace the dominant

rule of function, he did propose that the principles of architecture were united under the heading of *utilitas*.

Perrault had questioned the significance of the orders as the essence of architecture and its beauty. The Abbe also challenged the significance of the orders, but on different grounds. They were not significant because of an inherent beauty of a priori proportions but because of their structural expression. This proved to be a key interpretation in the development of later Neo- classical aesthetics in architecture. In his studies of architectural history, de Cordemoy came to the conclusion that Gothic structures were more rational due to the fact that the structural supports, in fact the entire structural system, were clearly expressed and evident. It was the rational expression of the structure that constituted the Gothic edifice according to de Cordemoy.[xv] The same, he believed, was true of Greek architecture, whose simplicity of form and basic trabeated system of construction was equally rational. This led him to demand that the freestanding column be seen as the primary architectural and structural element, it was the rhythmic progression of these elements that gave both styles their effect. But for him it was the underlying belief that they were successful in expressing their function that made their use paramount.

On this point Frezier was critical of de Cordemoy. He disagreed with his advocacy of the free-standing column and lintels in churches, pointing out that France did not possess stone with the strength to build trabeated systems advocating the archuated system of construction which he believed served French construction better. [xvi]

De Cordemoy's conclusions about both Gothic and Greek architecture led him to advocate what he termed a Greco- gothic Ideal, based on simple geometric forms that

would possess a unity of structure. But at the same time he called for the articulation of independent structural members that would clearly express their rational function. He referred to this last characteristic as *degagement* and it is the central and most important characteristic in his theory of architecture. It is also a direct translation of the aesthetic of 'la belle nature' into a precept of architectural theory. The term would be taken up by other French architects and played an important role in the aesthetic judgment of architecture.

De Cordemoy had proposed, as an example of his Greco-gothic style, a church model that contained freestanding columns, between the nave and side aisles that would support horizontal entablatures and not arches. The nave he proposed should be covered with a barrel vault. The west front was to be preceded by a portico with balustrade above. This model, it has been suggested, came from an unrealized, 1680 design for the Paris church of St. Genevieve, proposed by Claude and Charles Perrault.[xvii] In fact a version of the model was actually under construction in 1698; the Royal chapel at Versailles follows this same typology. While attributed to Jules Hardouin Mansart with Robert de Cotte, there is evidence that Claude Perrault was involved with that early design.[xviii]

The first consistent attempt to translate de Cordemoy's Greco-gothic Ideal into architecture was in the work of Contant d'Ivry (1698-1777). He was fascinated with testing structural techniques and it was his desire for economy and precision that lead him to an appreciation of de Cordemoy and to attempt to apply his theories. This was done first in his Church of St Vaanon at the Conde-sur- Escaut in 1751. It was here that he attempted to illustrate de Cordemoy's theoretical concept of 'degagement'. This was then followed by his St. Vaast at Arras begun in 1754. While neither of these attempts was

heralded as important or influential works they nonetheless served as a basis for exploration of the ideas. It was in his unrealized plans for La Madeleine in Paris (1761) that the application of freestanding columns and a clear expression of structure were best expressed. D'Ivry died while the foundations were being laid and the project was redesigned and built by P.A. Vignon in 1807.

Fig. 8 Interior of Contant d'Ivry's Madeleine from Engraving by de Machy.

More significant was de Cordemoy's influence on Germain Boffrand whose manner of composition and use of free standing columns can be attributed to him. In 1703 he was commissioned to build the Chateau de Luneville outside Nancy. Not finished until 1740 it was the first chapel in France to reflect de Cordemoy's theories in their entirety. The chapel was a hall style plan with an apse at its far end. Surrounding the nave were aisles and galleries composed of superimposed freestanding columns bearing an unbroken

horizontal entablature. Its significance lies in the way in which the mass is reduced to a minimum and its windows made as large as possible. Boffrand's chapel at Luneville bears a certain resemblance to his master Jules Hardouin Mansart's chapel at Versailles, but there the second floor galleries are supported by arcaded walls. Only the galleries appear light and airy. It was therefore Boffrand that achieved the lightness and *delicatesse* of the Gothic with the clarity and simplicity of the Classical as de Cordemoy had advocated. Interestingly it was the upper gallery in Mansart's chapel at Versailles that de Cordemoy had in mind when he conceived of the Ideal church form.

Fig. 9 Interior of Boffrand's Luneville Chapel

What De Cordemoy successfully managed to do was to give form to an architectural principle derived from the precepts of 'Objective' aesthetics. The Greco-gothic Ideal embodies all of the aesthetic categories of judgment found in 'Objective' beauty; its' representation of a mechanistic understanding of beauty defined as 'fitness of purpose', and its' desire for simplicity of form and composition as ideal type. The Greco-gothic Ideal understands architectural form as the rational exposition of structure, elevating the architectural principle of *firmitas* to the status of formative law. It translated the functional signification of nature into the functional relationships of the Structural Mechanism. It is the exercise of forces understood intellectually, there is no understanding of architectural form, or space, in terms of sensation, or perception. It is an object of pure relations expressed in terms of the rationally understood principles of statics. Artistic expression and representation is relegated to the clarity of such principles.

> "Before art had molded our manners and taught our passions to speak an affected language, our customs were rustic and natural, and differences of conduct announced at first glance those of character."
>
> Jean-Jacques Rousseau
> *First and Second Discourses*

Philosophy and the Reconciliation of Nature and Culture

While 'Objective' aesthetics saved the objective 'truth' of architectural beauty along rationalistic lines, it failed to address the issue of cultural diversity revealed by 'Arbitrary' beauty. In the spirit of Bacon's *Novum Organum* there had to be some rational means to extrapolate the universal truths inherent in the particularities of

architectural history. The role of culture and its relationship to both 'taste' and the 'nature' of man, now became a concern. Could they be reconciled with Reason and Nature?

The issue of Taste proved to be a serious matter in the course of architectural history, but it also had broader implications that carried with them metaphysical weight. The duality of beauty implied a fundamental, categorical distinction between nature and culture. By the middle of the 18th century, that dichotomy had become the primary focus, not only of architecture, but of philosophy as well, becoming the very ground of Enlightenment thought as a whole.

It was as a reaction against the Rococo and its excessively 'subjective' ornamentation that concerns over convention and custom were raised in architecture. This combined with the anti- theoretical stance of the Rococo resulted in a desire to find rationally justifiable rules, or parameters, from which to design. Perrault's 'Arbitrary' beauty was increasingly viewed as the source of architectural licentiousness.[xix] Its cultural corollary was seen in the pomp and circumstance of the Rococo courtiers, now viewed as a sign of moral degeneracy.

This attitude can be found in the writings of the French 'Cafe Philosophes', most notably in the *First and Second Discourses* of Jean- Jacques Rousseau.[xx] "Richness of attire may announce a wealthy man, and elegance a man of taste; the healthy, robust man is known by other signs. It is in the rustic clothes of a farmer and not beneath the gilt of a courtier that strength and vigor of the body will be found. . . . The good man is an athlete who likes to compete in the nude. He disdains all those vile ornaments which would hamper the use of his strength, most of which were invented only to hide some

deformity."[xxi] For Rousseau the advancement of the arts and sciences represented a move away from the natural form of society, where customs were based upon necessity and utility. In its place was a world of urbanity and convention, where the art of pleasing takes precedence, producing a base and deceptive uniformity.[xxii] It becomes clear that 'taste' and 'culture', categories now associated with a lack of virtue, are opposed to those of nature. "Before art had molded our manners and taught our passions to speak an affected language, our customs were rustic and natural, and differences of conduct announced at first glance those of character. Human nature, basically, was no better, but men found their security in the ease of seeing through each other, and that advantage, which we no longer appreciate, spared them many vices."[xxiii] Rousseau advocated a return to the condition of the 'noble savage', a time, at the dawn of culture, when man was most free, and most virtuous. Rousseau's position not only elaborated the distinction between nature and culture, natural and arbitrary, but also came down squarely on one side. A return to man's origins in nature, was a return to a more virtuous, moral and true state, of being. Condillac too, believed that human understanding had been lead astray. He thought it would have taken a different course had it stayed true to nature. What ensued was a quest for the origins of culture, seen now as a quest for the true 'nature' of man.

"What is art, if not that mode of expression (*maniere*) which is based on clear principles and it carried out with the help of unchanging precepts?"[xxiv]

Abbe Laugier
Essai sur L'architecture

Laugier and the Reconciliation of Taste and Reason

Where philosophy sought the reconciliation of 'Culture' and 'Nature', architecture sought the reconciliation of 'Taste' and 'Reason.' [xxv] That reconciliation would come in the writings of the Jesuit priest Marc- Antoine Laugier (1713-1769), who, in many ways took his cue from Rousseau's argument.[xxvi] Laugier was not an architect, nor had he formally studied the profession, yet in 1752, at the age of 36, he produced one of the most widely influential texts in the history of architecture. In it he claimed that previous writers had failed to provide firm principles upon which to base architecture. Laugier's *Essai sur l'Architecture* proposed to do just that. In point of fact, Laugier would rely heavily on the writings of men like Michel Fremin, J.F. Felibien and most significantly the Abbe de Cordemoy, taking his criteria and developing them further into a more cohesive theoretical stance. In the *Essai* the Greco-gothic Ideal found its most refined definition. The book had an almost immediate impact, only one year after its publication, J-F. Blondel had recommended it to his students at the *Academie d'Architecture*. It was translated into English by 1755, and into German in 1756. In 1765 Laugier followed it with the publication of *Observations*, a book on the orders and proportion.

The traditional basis of architectural beauty in classical aesthetics had relied on the proportions of the orders, which was for him a futile task. Adopting a positivistic stance he claimed: "about all this we really have no rule which is well established. . . . Only

natural taste together with great experience can safely guide the architect on this obscure path. . . It would be desirable if critical research were undertaken in this field which in time could arrest uncertainty . . .” and again “Perhaps one day through study and reflection, I shall succeed in basing the science of proportions on more rational and firmer principles.”[xxvii] Laugier attempted instead to step behind the issue of the proportions and find the rational explanation, or principle, as to why we associate them with beauty in the first place. Adopting the very methodology of science, architectural theory for Laugier became the deductive search for the ‘first principles’, or *arche* of architecture. But before he could establish it for architecture, he would have to establish it for the concept of ‘Taste’.

For the Jesuit priest, the most fatal of all prejudices was the belief that a rational test was unnecessary in matters of aesthetic beauty and taste.[xxviii] For Laugier, as for many of his day, ‘Taste’ was seen as an inborn talent that could be refined through reflection and training. It was this refinement, brought about by a rational, or theoretical, foundation that prevented the licentiousness and caprice that marked the Rococo. Taking a rationalist position, Laugier believed that taste should be overseen by reason, whose task it was to prevent the miss-judgments of taste brought on by prejudice and custom. He claimed: “If only arbitrary rules were wanted for the arts one can insist on custom, but if the processes of art must go back to fixed principles it is necessary to appeal to reason against custom and to sacrifice to the light of one the force and sway of the other.”[xxix] This position had been stated earlier by Wren. Taste, defined as universal approval sanctioned by reason, was to be accepted whereas universal approval that relied on custom he abhorred. For Laugier ‘Taste’ was a combination of both ‘Subjective’ and ‘Objective’ aesthetics.

Following the likes of Frezier, de Cordemoy, Boffrand, and Briseax, Laugier also advocated a return to 'la belle nature' as the source of taste, beauty and the true principles of architecture. This is evident throughout the *Essai*. "Let us keep to the simple and the natural, it is the only road to beauty." And slightly later on: "One must always come back to nature to forestall flights of fancy . . ." [xxx] His concern for the 'Noble Simplicity' of nature was also motivated by a desire to remove the trappings of culture. This in turn was derived from Rousseau and Condillac, thus Laugier relied on 'la belle nature' for the guiding principles of taste used to resist the poor judgments that lead to licentiousness and caprice.

His fascination was with the air of elegance conveyed by nature's simple efficiency. One can perceive Hutcheson's 'new sense of beauty', in Laugier's text. ". . . nature's process clearly indicates its rules." And again: ". . . by imitating the natural process, art is born."[xxxi] Art takes its inspiration from the simplicity and efficiency of 'la belle nature', in this sense Laugier reveals an adherence to an 'Objective' aesthetic.

Wanting to penetrate the cause of aesthetic effects, he applied the empirical methodology of Newton[xxxii] in his search for a shared common sensibility. Using direct observation of architectural works, he recorded his reaction to them and, by comparing it to the reaction of others, felt that he could determine a general principle of aesthetic judgment, a universal truth, from which to begin. He thought he'd found it in his observations, and the observations of others, praising simplicity and nobility of form and composition.

The aesthetic effect that Laugier sought proved to be the ability to perceive a clear and simple efficiency of form and composition that made both nature and architecture

beautiful in his eyes, and he believed in the eyes of others. It was the object of universal approval, which was necessary for a true 'Taste', based on reason. Unable to determine why these effects were pleasing and beautiful, he settled for proving to himself "the inevitability of these effects without knowing the cause."[xxxiii]

His early fascination with Greek architecture was motivated by this and not with a concern for its rationally defined geometric forms. The idea that Greek architecture embodied a simple elegance, a 'Noble Simplicity', had become increasing popular in the early 18th century as architects and theorists began to see the Greeks as having been the first to develop a true form of architectural beauty and proportion.[xxxiv] The Greeks were also praised for their nearness to nature.[xxxv]

This then became the ground of Laugier's 'first principle', or *arche* of 'Taste'. The charm of nature lay in her gracefulness and ease, her dexterity of form. Nothing is excessive or superfluous. These were the very qualities he admired in those modern works he considered of good taste and in Greek architecture in general. He translated this into the terms *Degagement* (lightness) and *Legerete* (fineness), which he associated under his idea of *Delicatesse* (refinement).[xxxvi] It was the ability of the architect to communicate, and the subject to perceive *Delicatesse* in the details of a building that was evidence of taste. It served as the universal truth underlying the diversity of the particulars of taste and 'arbitrary' beauty. Bouhours had defined *Delicatesse* as the lightness and flexibility of thought represented in art.[xxxvii] Laugier applied it to both the creative process and to its perception. In both his empirical method and his application of the term *Delicatesse* Laugier reveals an adherence to a 'Subjective' aesthetic, but his

anchoring it in ‘la belle nature’ grounds it in ‘Objective’ aesthetics. Affecting, for him at least, a universal ‘Taste’ based on reason.[xxxviii]

If Laugier believed he had identified the aesthetic effects of taste and translated them into architecture, they were not enough of a base for a theory of architecture. Its principles had to be derived from reflection on those effects. It was essential for the architect to learn to think and to consciously understand what he does and why. As he explained it: “An artist should be able to explain to himself everything he does, and for this he needs firm principles to determine his judgments and justify his choice so that he can tell whether a thing is good or bad, not simply by instinct but by reasoning and as a man experienced in the way of beauty.”[xxxix] For him, art, and architecture, had to conform to ‘fixed and unchanging laws’ “What is art, if not that mode of expression (*maniere*) which is based on clear principles and it carried out with the help of unchanging precepts?”[xl] Once again turning to the methodology of science, Laugier now sought a ‘first principle’, or *arche* for architecture.

From his observations, Laugier drew the following conclusions about architecture. “1) That absolute beauty (*beauties essentielles*) is inherent in architecture, independent of mental habit and human prejudice; 2) that the composition of a piece of architecture is, like all creative work, susceptible to dullness and liveliness, to propriety and disorder; 3) that there is necessary for this as for any other art talent which cannot be acquired, a measure of inborn genius, and that this talent, this genius, must nevertheless be subjected to and governed by laws.”[xli] We could assume that the third conclusion is an assertion that individual genius is subject to scrutiny by the universal principle derived from the collective consensus of ‘Taste’. In this sense ‘Taste’ becomes subject to ‘Reason’.

Laugier's search for an *arche* of architecture was framed by several factors derived from his observations of architecture and his understanding of taste. First he believed in a *beau essential,* an absolute beauty in architecture. Second, the first principle of taste was the imitation of nature's efficiency, or *Delicatesse*. Third his belief in the need to return to the origins of architecture, in order to remove the trappings of what had come to be seen as a degenerate culture. This issue had been derived from the writings of the *philosophes,* in particular Rousseau and Condillac. And fourth, owing to his Rationalism, his conclusion had to reflect fixed and unchanging law, it had to be derived from a clear and distinct principle.

Laugier's solution was ingenious. He started with Rouseau's 'noble savage' and the condition of man in nature. This was the *ur* condition of man, culture and architecture, and it was here that, he believed, the *beau essential* would be found. He then turned to Vitruvius, Filarate, Frezier and others, and the historical discourse of the 'primitive hut'. He stated: "All the splendors of architecture ever conceived have been modeled on the little rustic hut . . . It is by approaching the simplicity of this first model that fundamental mistakes are avoided and true perfection is achieved."[xlii] Laugier posited the 'primitive hut' not as an evolutionary beginning, or as a counterfoil to the accomplishments of the day, but rather as a basic principle from which all rational judgment in architecture was to be derived.[xliii]

Fig. 10 Image of the 'Primitive hut' from Essai

The hut, as the basic principle of architecture, derived from nature at the dawn of civilization allowed him to use it as the loci between 'nature' and 'culture'. This meant he could avoid any question of custom and the corruption of judgment, but maintain the idea that architecture was a fine art due to its origins as an emulation of nature. Laugier successfully fused Rousseau and Condillac's critique of culture to the mechanistic definition of beauty as fitness of purpose, under the guise of 'la belle nature'.

Once established as the principle of judgment in architecture, the image of the hut became used as a basis for immutable fixed laws. It was transformed into a normative ideal type form, all those elements that adhere to the 'principle' of the hut are essential

truths and the cause of beauty, those admitted by necessity are licenses and those admitted by caprice are of fault.[xliv] Under the auspices of science's insistence on deduction from first principles any deviation from the 'principle' of the hut is called into doubt. Laugier's hut, like Descartes *cogito ergo sum*, became the basis of systematic doubt, wherein all parts of the building are questioned and in fact eliminated.

This is in fact just what Laugier did, all elements which are not the essential parts of the 'primitive hut' are eliminated as necessary parts of architecture or sources of beauty. "Let us never lose sight of our little rustic hut. I can only see columns, a ceiling or entablature and a pointed roof forming at both ends what is called a pediment. . . . I therefore come to this conclusion: in an architectural Order only the column, the entablature and the pediment may form an essential part of its composition."[xlv] Laugier's reduction of the building to 'almost nothing', meant the reduction of architectural signification and representation to the structural support system. According to Kruft: " He continually reduces all those concepts which have acquired a separate identity in earlier theory to their role in the totality of a building, structural justification being the deciding factor in each case."[xlvi]

By the first half of the 18th century, the orders had taken on a greater mechanical significance, representing, as in the Greco-gothic ideal, the rational exposition of structure. Laugier pushed this new mechanical understanding of the orders to their logical conclusion. Following the conception of fitness of use found in nature the orders, or columns, are here related to their fitness for structural use. According to him, The parts of the architectural orders were the parts of the building itself, and therefore demanded that they be understood and applied in such a way that ensured the actual solidity of the

building.[xlvii] Laugier replaced the metaphorical understanding of the orders as representations of a larger cosmological truth and replaced it with a technical, or functional, understanding of them derived from precepts found in nature.[xlviii] The orders are no longer viewed as mimetic of transcendental concerns, but as representations of their own solidity, or structure, understood from the point of view of statics. If de Cordemoy had integrated the functional signification of nature into architecture in the form of the functional relationships of the Mechanism of Structure Laugier reduced the entire discourse of architectural theory to that mechanism. While Laugier may not have subscribed to a completely mechanistic definition of beauty, or the concept of architecture as a self- referential language, his *Essai sur l'Architecture* opened the door to just such ideas.

Laugier's *Essai sur l'Architecture* managed to successfully provide a theoretical framework for De Cordemoy's Greco-gothic Ideal, which had failed to comprehensively address the issues of culture and taste and their relationship to nature. In anchoring taste and culture to nature Laugier believed he could make the claim that his 'first principle' was a permanent, fixed, objective and universal truth.

The 'Primitive Hut' embodied all the requirements of Rationalism and 'Objective' aesthetics. 1) It subjected architecture to the rigorous demands of reason by producing a rule designed to reject and overcome all arbitrary and conventional thinking. 2) Truth and Beauty, Reason and Nature are coexistent terms in Laugier's theory which derives its' 'truth' from a representation of nature in its simplicity and efficiency. 3) The 'Primitive Hut' reduced architecture to a series of pure relations of parts that can be analyzed in terms of an exact rule. And lastly 4) it reduced architecture to a general law. The diversity

of building form first raised by the discourse of 'Arbitrary' beauty was summed up in one immutable and constant form reducing all of architecture to a single genre or type: the 'Primitive Hut'.[xlix] The particularities of built form receded into an abstraction. The clear, simple and rational form of the hut, with its inherent clarity of relationship between part and whole, became the guidepost for architectural judgment.

> "May at last a bold and fearless genius arise, who will free our buildings of all these superfluous masses, and who will teach the workman, superstitious slaves of bad practice, that there was nothing done in the past that could not be done again."
>
> Abbe Laugier
> *Essai sur L'architecture*

Rationalism and the Greco-Gothic Tradition: Soufflot's Pantheon

The result of Laugier's theoretical work was the formulation of the Greco-gothic Ideal and the idea of type as first principle into a comprehensive theory of architecture. That theory was immediately and perhaps best exemplified in Jean Jacques Soufflot's (1713-1780) St. Genevieve. Laugier himself would claim; "Sainte Genevieve was to be the premier model of perfect architecture, the masterpiece of French architecture."[l] Soufflot had become a member of the academy in Lyons where he gave several papers, or *Memoire*, on architecture among them one entitled *De l'architecture Gothique* delivered on April 12, 1741. In it he discussed the arrangement, planning, construction and proportions of Gothic structures remarking that their effect was more moving than that of modern structures. Soufflot sought to find a means of introducing the effects of Gothic

into contemporary building, drawing much of his ideas from Fremin and de Cordemoy. The paper remained unpublished and in many ways was not influential, at least in the Lyon circle to which it was first presented. But the research that went into it would serve to frame his approach toward architecture and building for the rest of his life.

While receiving many commissions in Lyon, it would not be until 1754 that he would be given the commission that would provide the opportunity to explore the thesis put forward in the *Memoire*. Saint Genevieve in Paris would not only make Soufflot one of France's most influential architects, but it would come to be seen as one of the most significant structures of the eighteenth century. It was revolutionary on two fronts. First it was the example *par excellence* of both de Cordemoy and Laugier's theories; successfully creating a new spatial unity through the combination of vaulting and trabeated construction. In this sense it fulfilled the rationalist mission of the Greco-gothic Ideal. Secondly, it pushed the limits of reinforced masonry construction. It did so aided by the application of new rational means of analysis of stone strength derived from the development of infinitesimal calculus. It also extended the application of iron rods to reinforce the tensile strength of masonry construction, a technique used by Perrault on the East faced of the Louvre. Ste. Genevieve would undergo a series of design modifications over the course of its construction, but from the beginning it was clear that Soufflot had in mind a very different conception of the church form, one that pushed the ideas of de Cordemoy and Laugier to their ultimate manifestation.

Proceeded by the massive front portico of Corinthian columns designed to recall the splendor of Ancient Roman architecture, Ste. Genevieve was an attempt to develop to its fullest the cross shaped plan with dome on drum typology. Following the dictates of de

Cordemoy and Laugier the freestanding column was given undisputable significance. On the interior the nave is separated from the side aisles by Corinthian columns that support a continuous entablature. In its original design even the lantern was designed to appear as if supported by the freestanding columns. Inspired in part by the work of Piranesi,[li] the side aisles are raised above the floor of the nave. The spatial effect is that of a Greek temple turned inside out. It was the manifestation of his goal set forth in the *Memoire*.

Fig. 11 Image of interior nave of Ste. Genevieve

The structure was composed of a series of cluster vaults and flat domes set on transverse ribs and intersecting arches that create a supporting scaffold of piers that sprang from a continuous entablature supported by the nave columns. The visual result is the clear articulation of the statical forces of the vaulting in linear succession from vault

to floor. But unlike the linear effect of Gothic architecture in which the rib springs from the floor and continues unimpeded to the center boss of the quadripartite vault, at Ste. Genevieve the line of force moves continuously through a series of visual devices- the domes, transverse arches, piers, entablature and column- that not only distinguish the lines of force but also the various spatial zones and structural vocabulary. What is so revolutionary about the effect is that at each transition of force there exists a shift in architectural vocabulary which clearly articulates each member of the structural system. Thus the roof supported by the dome expressed on the interior as vault is transitioned to the transverse arch which carries the force diagonally down the arch to a vertical point expressed in the way in which the transverse arches come together to form piers above the entablature. All loads from the vaulting are transferred into pure vertical force along the continuous line of entablature marking the transition from roof structure to vertical support in the form of the columns supporting the entablature. This provides the clear demarcation of components contained in Laugier's little rustic hut; the vertical supports and the roof. According to his pupil Brebion; "The principle object of Mr. Soufflot in building the church was the union of the most beautiful forms, the *legerete* of the construction of the Gothic structures with the purity and magnificence of Greek architecture."[lii]

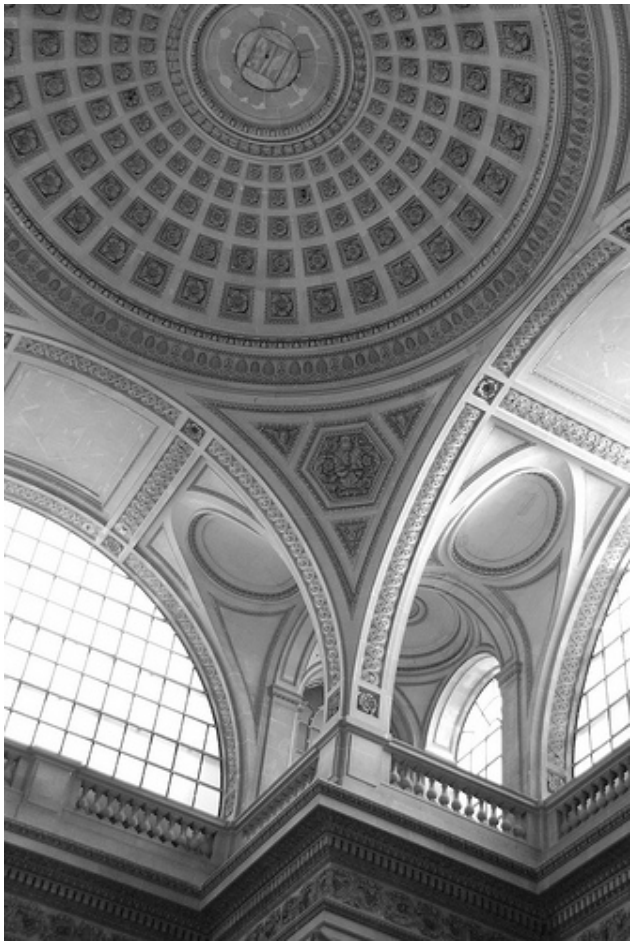

Fig.12 Image of the interior vaulting of Ste. Genevieve

If Ste. Genevieve served as a model for the Greco-gothic Ideal as design strategy it also served as testing ground for a new means of approaching building construction, revolutionizing the building industry by introducing rational methods of material analysis. In the early 1760's after the foundation stones were laid it was discovered that the site was an old clay pit, causing concern that the stability of the soil would not support the audacious structure Soufflot proposed. What resulted was a mobilization of Soufflot's inner circle to demonstrate not only the structural logic of the work, but also the presentation of Gothic precedents for it. As Middleton rightly noted; "it embodied in

an extraordinary way another aspect of contemporary French thought- that belief in economy and structural refinement which had made the study of Gothic techniques so vital and engaging a part of the early eighteenth century architectural thought. Ste. Genevieve became the catalyst of all activity and discussion on building construction and inevitably, on Gothic building construction in late eighteenth century France."[liii]

While Ste. Genevieve was purported to be based upon Gothic structural principles it was evident that the major supporting device for the roof was in fact the entablature above the interior columns. Gothic structures relied on the equilibrium and counterbalancing of the statical forces carried via the ribs and arches to the columns. At Ste. Genevieve that counterbalancing is not contiguous to the floor. While some within Soufflot's inner circle would certainly have noticed this inconsistency, those outside it were not always as forgiving in particular Pierre Patte (1723-1814).[liv]

Relying on empirical observation of the structure of St. Paul's in London, Patte argued that the structural system proposed by Soufflot was insufficient. His argument had weight because of where it was presented; in the last two volumes of Blondel's *Cours d'architecture* mainly written and published by Patte in 1777 and 1778. They established him as the leading authority on construction and an expert on the Gothic. Like most of his age, he saw Gothic architecture as a tasteless affair to be appreciated predominantly on the *legerete* and *delicatesse* of its structure. In line with de l'Orme, Derand and Frezier he conceived of Gothic as a structural scaffold whose statical forces were made visible via the linear patterns of ribs. It was Patte who would note that every element in the Gothic system served a vital role in the total equilibrium of the structure, including the pinnacles which until this time have been thought of as decorative. He realized they were cleaver

counterweights designed to redirect the lateral forces coming from the flying buttresses down into the outer buttress. Gothic had become an economical solution to the problem of equilibrium, a technical ‘tour de force’, and every element and feature had to be looked at through that filter.

What ensued was yet again another flurry of debates over the construction of Ste. Genevieve. The result this time was the demonstration of sound rational principles of analysis of building materials and structural systems, based upon the scientific method. This was achieved with the support of the engineers from the Corps des Ponts et Chaussees; Charles- Augustin de Coulomb (1736-1806), who invented the modern statical theory and Emiland- Marie Gauthey (1732-1806). Founded in 1715 the Corps was not an exclusively engineering body. Boffrand, for example, served as ‘ingenieur en chef’. By 1747 the Academie des Ponts et Chaussees was founded, providing specialized training in engineering laying the foundation for economy and precision in building construction and a more rational architectural doctrine. What Soufflot and his circle did was to develop and build machines to measure the compressive strengths of the stones used. Using mathematical calculation and experiment they were able to coordinate and interpret their results developing formula and equations that formed the basis of modern structural analysis. This was facilitated by Gauthey who invented the first machines to analyze and test the compressive strength of the stones used. Jean-Baptiste Rondelet a pupil of Soufflot’s who served as mason on the project would later refine the device.

Work on Ste. Genevieve resumed in 1774 with the construction of the dome, but only two years later in 1776 the supporting piers were found to contain cracks. The resulting inquiry found the fault to be poor workmanship. The piers were constructed with an inner

core and an outer facing. The stones used on the outer facing were harder, denser and stronger than those of the core resulting in unequal transfers of stress. Additionally the joints of the outer face were finer than those of the inner core aggravating the problem. Vindicated, Soufflot returned to construction this time with a more audacious dome design.

Soufflot did not live to see the completion of Ste. Genevieve he died in 1780. The completion of the church was left his students M. Brebion, Soufflot-le-Romain and J.B. Rondelet. It was Rondelet who took over completing the main portico, the vaults of the nave and the transepts and the supervision of the dome construction.

In 1791 with the building almost complete yet another design change took place this time instigated by Quatremere de Quincy (1755- 1849). Asserting the purity of the Neo-classical style he had the towers and sacristies on the east end of the church, added reluctantly by Soufflot to satisfy the clergy, removed. He also had the pediment sculptures replaced. It was Quatremere de Quincy who was also responsible for perhaps the most controversial alteration; filling in the large windows that lined the aisles. The result was a more sever Neo-Classical structure; the radically innovative sense of light and space engendered by the freestanding columns and transparency of the outer walls was compromised. In 1806 Rondelet was appointed to restructure the main piers that supported the dome which once again had shown structural problems. Under his guidance the piers were enlarged with great care.

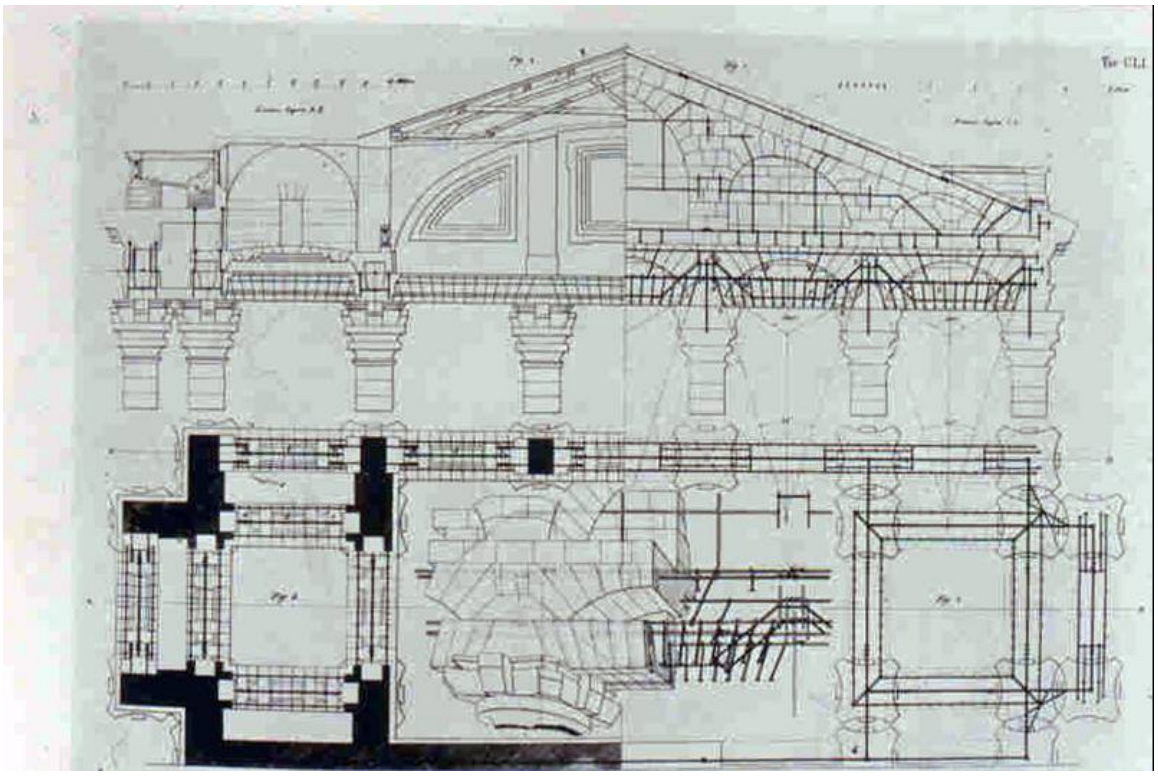

Fig. 13 Image of Rondelet's cutaway elevation from his Traite Theorique et practique de l'art de batir

The extent of Soufflot's structural innovation on Ste. Genevieve, as well as the technical limits of pursuing the trabeated aesthetic of the Greco-gothic Ideal in large scale construction can be found in the 1770 iron clamping of the pronaos documented in the construction drawings published in Rondelet's *Traite Theorique et practique de l'art de batir* dated between 1802 and 1817. While iron clamping in masonry construction dates as far back as ancient Greek construction and was certainly used by Perrault in the east façade of the Louvre, at Ste. Genevieve the iron rods are more elaborate and complex serving more as reinforcing in the modern sense of its use in ferro-concrete then as clamps. As Frampton has noted it is to the extent as to literally anticipate Francois Hennebique's development of the reinforced concrete frame in 1897.[lv]

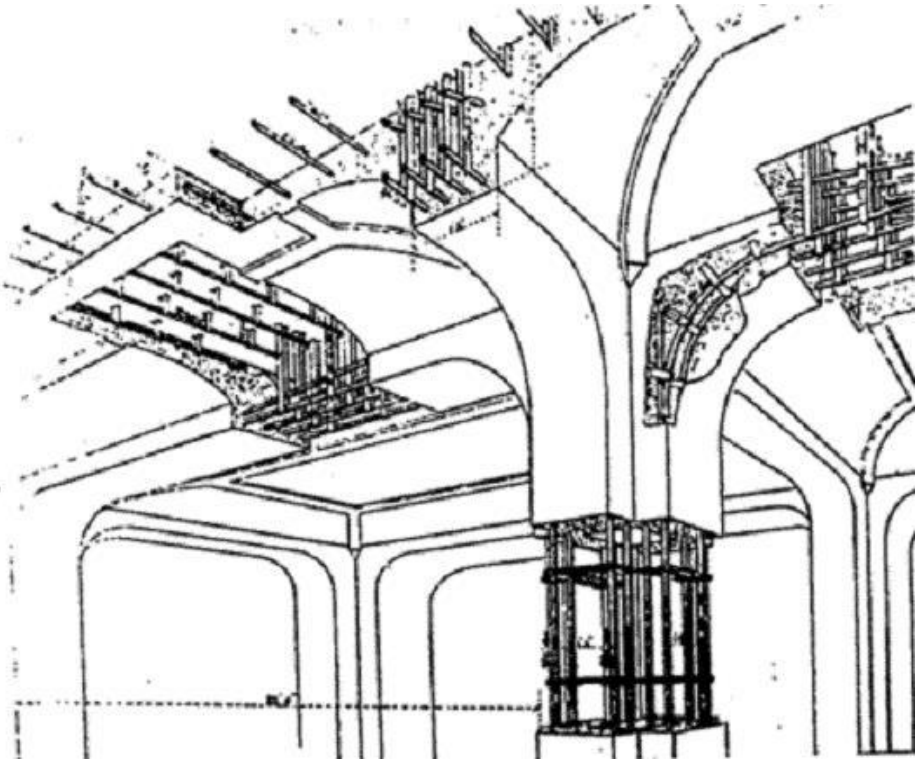

Fig. 14 Image of Hennebique's Ferro-concrete Frame construction System

Additionally it should be noted that the crossing contains some relieving arches such that not all of the forces have visual expression on the interior. While a technological achievement it is clear that the structural integrity of the construction of Ste. Genevieve was in these matters suppressed in favor of the aesthetic preference for simplicity and clarity of form. The pivotal role that Ste. Genevieve played in the history of architecture should not be underestimated. As Middleton has noted; "Soufflot's rational Gothic aesthetic so dominated architecture in the late eighteenth century France that no architect however retiring, however reactionary, can have been unaware of the problems with which he was coping and the solutions which he proposed."[lvi]

Utilitas and the Mechanism of Disposition

The Greco-gothic Ideal was the result of 'Objective' aesthetics and 'la belle nature'; based upon the idea of nature as the mechanistic expression of function. All forms of nature clearly express their purpose and function and it was this principle that was to be emulated in art, an idea that is clearly evident in the writings of theorists like Hutcheson.

The expression of the functional relationships of the Mechanism of Structure in the Greco-gothic Ideal was in line with the mechanistic theory of the universe as it was developed by the epistemology of science. The scientific method approaches the objects of the natural world by first dissecting the 'thing-in-itself'; breaking it down into its component parts and analyzing them; identifying their properties, assigning functions and then reassembling those component parts, mapping their functional relationships in the process. The cognitive processes behind the aesthetic of the Greco-gothic Ideal operate in much the same way. Architecture is dissected into its constituent structural elements, whose functions are determined clarified, expressed and then reassembled in such a way as to make the functional mapping readable and intelligible. While it emphasized the importance of the clear readability of the Mechanism of Structure, it still did so within a symbolic structure that validated that rationality in terms of an extrinsic value structure, nature's efficient beauty.

The Greco-gothic Ideal was also concerned with the idea of form and type. Laugier's 'Primitive Hut' was an attempt to reconcile Reason and Nature through recourse to origins. But the history of architectural form revealed a diversity that could not be totally

subsumed within the type proposed. There had to be some other rational means to extrapolate universal truths inherent in the particularities of history.

In analytic geometry the nature of form is not presented in its diverse manifestations but in its formative law and developments in the natural sciences sought to classify and categorize the 'thing-in –itself' in terms of the functional relationship of use to organic form. Increasingly in architecture there was a desire to see the functional relationships expressed in the physiognomy of built form. To do that the architectural concept of *utilitas* would have to be elevated to the status of formative law. The rational analysis of type would concentrate on the functional relationships of the Mechanism of Disposition. This would first appear as the concept of '*charactere'* and then manifest itself in the general discourse on typology; an analogical expression of function and use in the development of form, as it emerged in the latter half of the eighteenth century. According to Anthony Vidler the idea of type informed the development of architectural theory in two distinct ways. [lvii] As he claims "First by rooting architecture in a notion of first principles, either in nature or industrial production, it has provided an ontology, so to speak, for the legitimacy of design . . . Second, when assimilated to the emerging theories of typology in the natural sciences it has provided a ready basis for the generation of entirely new species of building demanded insistently by the rising consumption and production society. Thus, the elements of architecture, their rules of combination, and the characteristic form of the resulting building type were, in some way, seen as similar to the generation of type in nature."[lviii] How did *utilitas* become elevated to formative law? How did the notion of type enter architectural theory? And how was it developed in relation to the aesthetic theory of the time?

". . . all the different kinds of production which belong to architecture should carry the imprint of the particular intention of each building, each should possess a character which determines the general form and which declares the building for what it is."

Jacques Francois Blondel
Cours d'architecture

Character and Composition: the Taxonomy of Function

Utilitas had long played a major role in French theory, beginning as early as 1520 with the organization of a suite of rooms into apartments or 'donjon' at Chambord. It was in the work of Salomon de Brosse and Francois Mansart that utility and use in the organization of the plan had begun to take center stage as a design issue. In their work it was the internal organization of spaces according to necessary use and adjacencies and the subsequent expression of that organization in the massing of the building that served as their key contributions to architectural history.[lix]

The application of utilitarian concerns to plan organization would be transformed into a concern with form and type by the introduction in French theory of the concept of 'character'. This first occurred with Germaine Boffrand (1667- 1754) who introduced the term *caractere* into architectural theory, arguing in 1745 that "each part of a building should have a form appropriate to its use."[lx] It was in so doing that one could resist the temptation of fashion in order to produce architecture of 'noble simplicity'.[lxi] Others had of course been concerned with the character or expressiveness of a building, but Boffrand was the first to do so systematically. According to Boffrand "Different buildings should by their arrangement (disposition) their construction, and by the way that they are decorated, proclaim their destination to the observer."[lxii] This notion that architecture

must speak of its function, through its construction, form, composition, and detailing is what would come to be known as 'architecture parlante'.

This idea could also be seen in the writings of Etienne Briseux (1660- 1754) who argued for a rationalist aesthetic, claiming that over and above the understanding of architecture through the senses an intellectual comprehension of the underlying principles was necessary. According to him the objects with which one seeks to decorate a facade must not only be appropriate to its character but must appear useful and necessary and merit their place there. Following in the spirit of the episteme of the Enlightenment and of scientific reasoning what was useful and necessary could be defined as having a 'mechanistic' functionalism. Just as nature was being defined mechanistically in terms of its functions, architectural function was now being increasingly defined mechanistically: how it operated, its ordering systems, structural organization etc. The expression of such function was now seen as important.

Boffrand's concerns were then picked up by Jacques- Francois Blondel (1705- 1774) who argued that *caractere* is the expressive function of the building and that ornament is not an arbitrary matter; it must be determined by an expression of function. The key to Blondel's theory was his insistence on the massing of the building as the carrier of meaning with the orders reduced to a supplementary and even superfluous feature.

This tendency to render form as an expression of the function of a building had its parallel in the natural sciences. In 1735 Carolus Linnaeus (1701-1778) was able to develop a system of classification into class, order and genre for the natural sciences, published in his *Systema naturae*. [lxiii] J-F. Blondel sought to develop a similar taxonomy for architecture based upon use. It was the use that should impart a specific character

readily discernable in the built form. According to J-F. Blondel; “all the different kinds of production which belong to architecture should carry the imprint of the particular intention of each building, each should possess a character which determines the general form and which declares the building for what it is.”[lxiv] Blondel used the term genre or species here to refer to building functions such as theaters, colleges, hotels, libraries, factories, etc.

The idea is a system of taxonomy, or classification, taken from the natural sciences in the classification of both plants and animals and based, as it was in Linnaeus’ *Systema naturae*, on the outward signs of the physiognomies. The idea of an architectural taxonomy transformed the mechanistic theory of *le belle nature* into a system of architectural classification in which the adherence to type was related to the clarity of expression of use.

One can argue that architecture was always expressive of something, the heraldic insignia of the builder, religious iconography, mythology, etc.[lxv] these are all extraneous to architecture in that they refer to the external world, religion, politics, cosmology or history. But it is important to understand the distinction. The French theorists are linking this form of expression to utility- that is the function defined or conceptualized in mechanistic terms, serving, as Vidler has noted, to provide ontological legitimacy.[lxvi] In this sense French theory of the 1700’s became increasingly self- referential or autonomous. It is this distinction that makes it unique and revolutionary.

Character and Visionary Architecture

In the work of the French Visionary architects Etienne- Louis Boullee and Claude Nicholas Ledoux the idea of character was largely informed by this approach to design. At the time, Character was understood in two complimentary ways: 1) The exterior aspect of an edifice was supposed to inform the viewer about its destination; that is its function. 2) The appropriateness of visual expression once the destination was known.

Boullee transformed Blondel's emphasis on merely identifying a building's purpose when considering character to evoking an appropriate feeling,[lxvii] believing that simple prismatic volumes could occasion an aesthetic experience. He went beyond the expressive role of character to add still another dimension what could be called metaphorical or allegorical character, designing each of his civic buildings according to an appropriate metaphor or allegory.[lxviii] To These two categories of character the expressive and the metaphorical Boullee then added a third, the symbolic.

In all of his buildings Boullee joined together expressive, metaphorical and symbolic character. For him it was the symbolic character that provided the raison d'etre of the other two. It is the symbolic expression of the form reflective of the function that serves as the chief communicatory vehicle. This can be seen in his various projects. The Royal Library project contained a temple like space consecrated to the idea of the institution it housed. Metaphorically it was a rendition of Raphael's School of Athens; symbolically the interior is transformed into a giant amphitheater of books where the shades of the past's great minds would commune among themselves and with the readers.

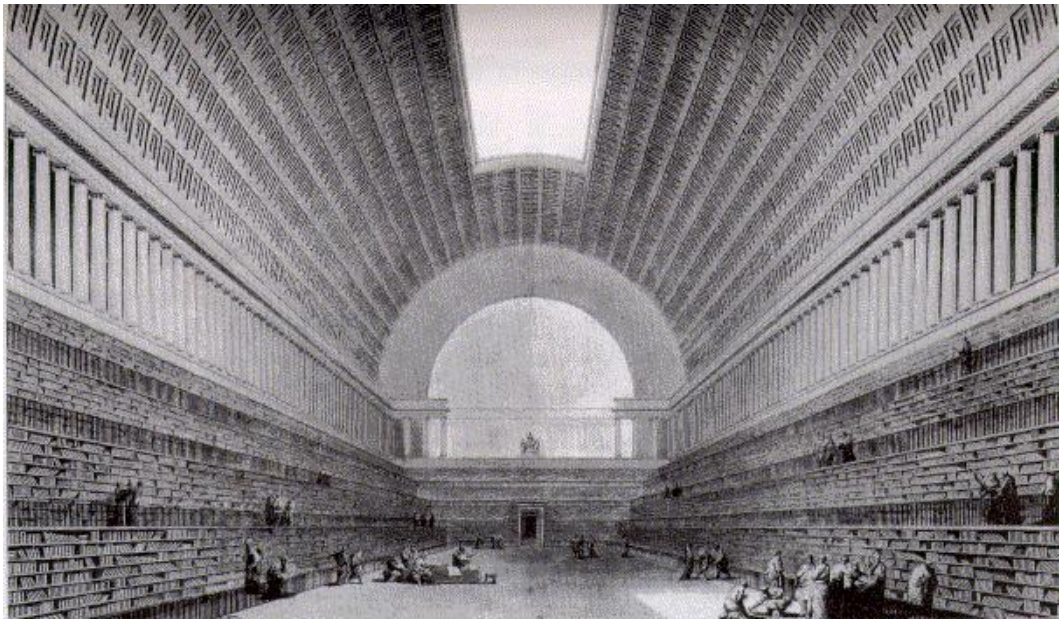

Fig. 15 Image of the Royal Library

Likewise in his famous Cenotaph for Sir Isaac Newton[lxix] the sarcophagus is placed at the center of a spherical cavity, symbolic of the globe on the exterior and of the universe on the interior. Newton's tomb achieves expressive character on the outside through the combination of horizontal and spherical forms with vertical massing and on the inside by using the vast spherical cavity to convey the sensation of the immensity of Nature. It exhibits metaphorical character by depicting the earth to the exterior and the universe inside. And it achieves symbolic character through the temple like space of its interior, and eighteenth century pantheistic reinterpretation of the ancient Roman Pantheon.

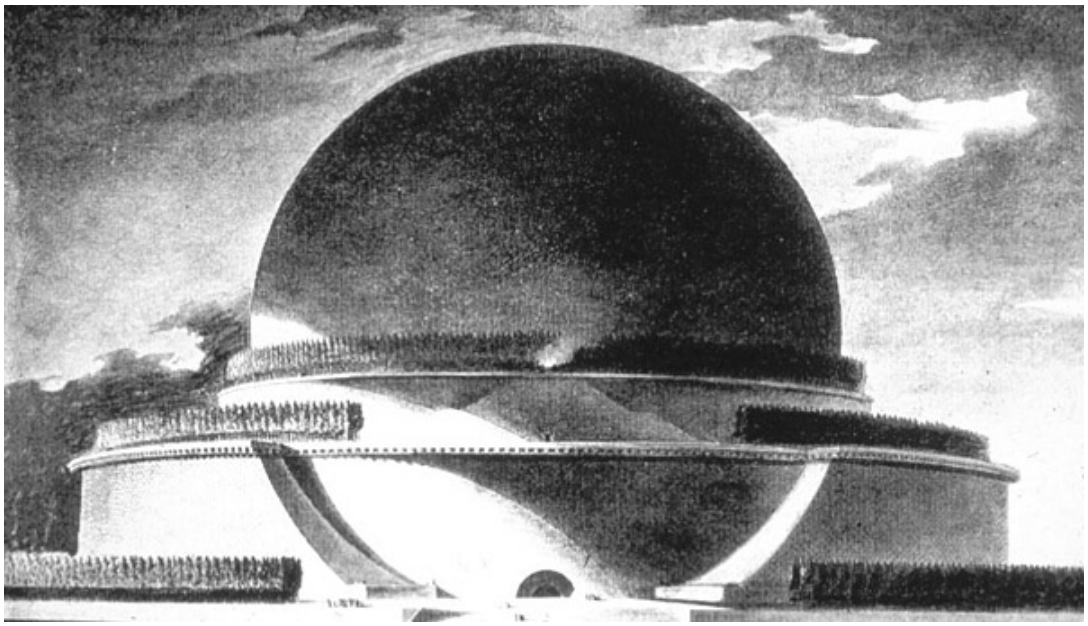

Fig. 16 Image of Cenotaph of Newton

Claude Nicholas Ledoux took the notion of metaphorical character to such an extreme that it was dubbed l'Architecture Parlante: speaking architecture. If we consider the salt works at Chaux we find two stages in the development of his application of character and type. The first corresponds to the actual constructions; the second belongs to the ideal city that Ledoux envisaged to complete his scheme.

In the salt works as built, Ledoux created an imaginative variation on the Renaissance theme of rusticated architecture as indicative of the world of Nature. After all the salt works were not only in the country, their manufacturing process involved evaporating salt from water coming from the earth. From the entrance building with its dramatic grotto porch to the director's house with its massive rustication extending even to its front portico to the manufacturing buildings belching smoke through their upper widows, the imagery of nature has been rendered as a type of nether world. The conceit is not only appropriate to the building type but more specifically to the saltwater issuing from the

underground caves of Salins and to the grotto source of the river Loue that irrigates the site.

This narrative theme of the nether world is subsumed into a larger schema in the ideal project that is dominated by the idea of humankind as the guardian of the earth. It is here that Ledoux designs his workers combined houses and workshops characterized according to profession through a typology of simple shapes based on the square, circle, and pyramid.

Thus the agricultural guards are housed in a spherical building, symbolic of the earth. The charcoal burners are housed in a pyramid building that echoes the wood piles burned to make charcoal. The coopers are given a dwelling whose facades display concentric circles recalling the metal hoops for barrels and perhaps the wooden staves themselves.

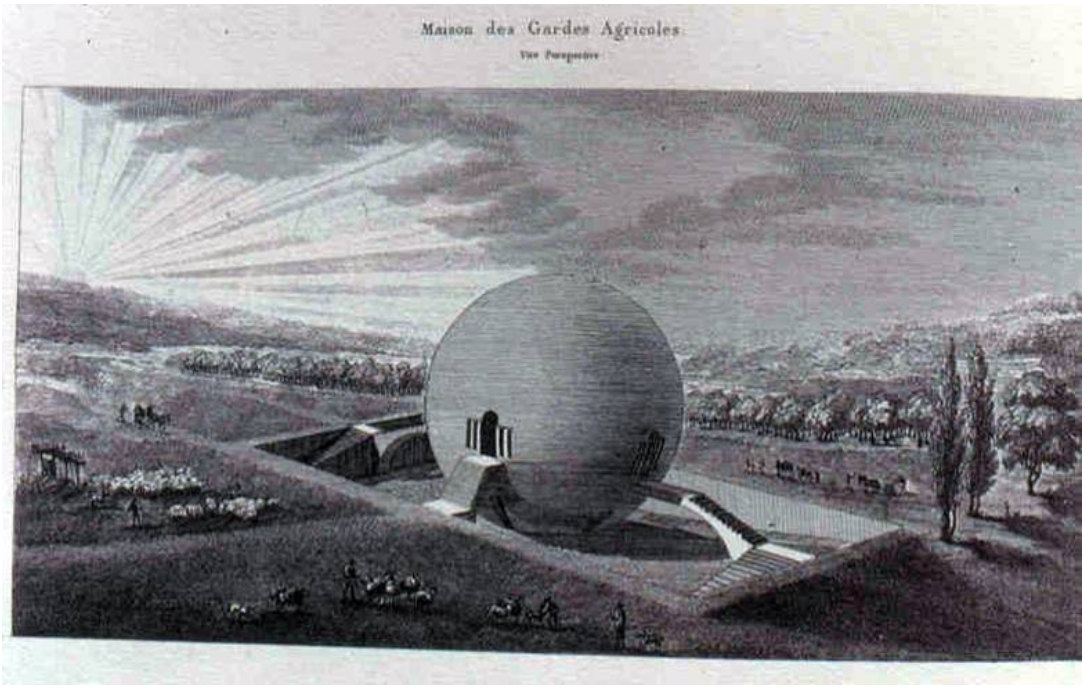

Fig. 17 Image of the Agricultural guards house from Ideal City of Chaux

The guards of the River Loue are given a house whose central form is a cylinder a double abstraction of conduits for water and of the overturned urns, the typical accompaniment of the river god in garden architecture and more specifically the primary source of decorative imagery in the salt works.

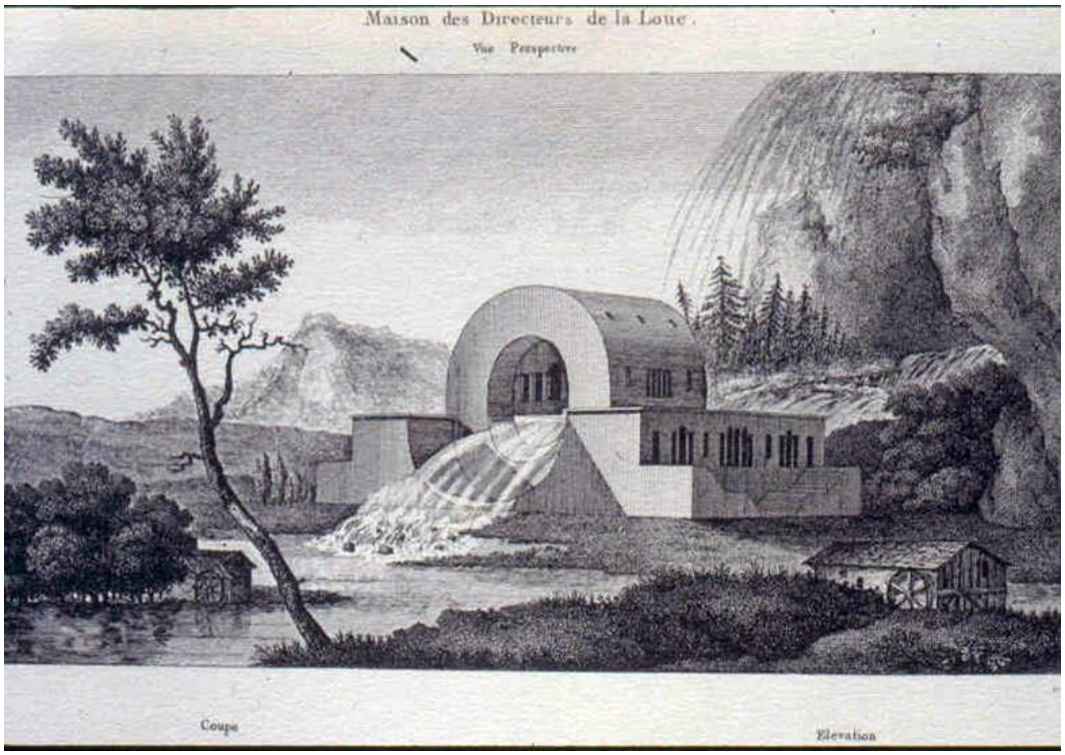

Fig. 18 Image of the Guards of the River house from Ideal City of Chaux

In the ideal city of the late French Enlightenment each building would tell its purpose through its expressive and possibly metaphorical character; each would move the viewer with an appropriate feeling prompted by its aspect. Whether one considers the ensemble of Boullee's unexecuted projects for civic buildings the collection of the Grands Prix and other competition designs by the students of the Academie Royal d'Architecture or the totality of buildings both real and ideal that Claude Nicholas Ledoux assembled for the salt works of Chaux, one finds the built world imbued with such a space of clarity.

As Vidler has noted it was in the work of Boullee and Ledoux that an inherent conflict between the idea of type- as model to be imitated- and the idea of character took place. At the heart of this conflict is the inherent individuality that eventually emerges when the idea of character is pushed to its conclusion as it was done by Ledoux in the houses of the Ideal City of Chaux. There the individual character of each housing form literally obliterates the type 'house' in favor of a multiplicity of particular forms, one for each worker. This is so owing to the fact that the individualization of housing type according to specific workers loses sight of the universal principle, or formative law, for the type 'house', a necessary step if the system is to conform to 'Objective' aesthetics and the epistemology of science.

Colin Rowe has pointed out that the inherent individualization in their work shows the influence of the emerging theories of the picturesque.[lxx] It must be remembered that Piranesi was the major influence on them, Boullee in particular. But we must also acknowledge that such theories are derived from 'Subjective' aesthetics and thus the use of character found in Boullee and Ledoux still bears the stamp of the epistemology of science even if, as Boullee attempted to assert, architecture was a poetic art.

But a central metaphysical issue that surrounds the epistemology of science was the relationship between the particular and the universal. The methodology of science seeks to find the universal truths underlying the diversity of particularities in nature. As Bacon had noted it was our collective experience of the particulars that allow us to glimpse a universal truth. Character as it was developed by Boullee and Ledoux served only to increase the diversity and relativity of the built form akin to that of Perrault's 'Arbitrary' beauty of the orders and their proportions. According to Vidler "Boullee and Ledoux in

elevating character to a primary formative role and in postulating the endless play of abstract geometrical permutation as its instrument were undermining a truly rational system of types."[lxxi] As Vidler asserts their work is less rational, in the Cartesian sense then Laugier's type of the 'Primitive hut'. Like Perrault's 'Arbitrary' beauties a new mechanism was needed to rationalize the diversity of built form.

> "We must return to the source, to the principles, and to the type."
>
> Ribard de Chamoust
> *L'ordre Francois Trouve dans la Nature*

The Search for a Universal Grammar of Construction: Typology

It was to the sense of individuality found in the work Boullee and Ledoux that Antoine- Chrysostome Quatremere de Quincy (1755- 1848) would in 1832 decry abuse. According to him "No longer do they see in a pediment the representation of a roof, but because of the fortuitous relation of the form of necessity with a geometrical figure, the roof is to their eyes only a mysterious triangle, emblem of the divinity."[lxxii] On the development of character in architecture he would claim ". . . this art, I say, is perhaps, of all secrets of architecture, the finest and most difficult to develop and to understand; this happy talent of feeling and making felt the physiognomy proper to each monument . . ."[lxxiii]

For Quatremere de Quincy character might take on several levels or genres but they were tied to more fixed principles; an essential character- expressive of moral and physical greatness common to all civilizations and eras, a general character- based on national character a product of climate, mores and levels of civilization, and an imitative

character- the expression of use. It is important to note that general character is essentially defined in the same manner as Hume's 'taste' and thus identical and derived from the same general concern with the establishment of a universal principle or formative law, likewise the imitative character, based as it is on use, is derived from function understood again mechanistically and therefore fully in line with the goals of 'Objective' aesthetics.

Vidler notes that Quatremere de Quincy would provide the means of characterization in architecture for another century: The gradation of richness and size derived from the function of the building and its rank in social importance in society; and indication of moral qualities; the use of elemental forms that express the nature of use; the type of construction; and the type of decoration.[lxxiv] Such means represented a turn away from the symbolic and metaphoric approaches to character of Boullee and Ledoux in favor of more coherent system of categorization. In many ways this was done through a reorientation back to the Enlightenment's concerns with origins.

It was Quatremere de Quincy who formally introduced the idea of 'Type' into architectural theory. According to Silvia Lavin; "his aim in doing so was to transform theoretical speculations about systems inherent in architecture into operative means for making architecture in the modern world."[lxxv] His explorations of primitive structures had convinced him that there was an originating principle in architecture, one that was essential and universal and could serve as an architectural metaphysic; a system of architecture.

In his studies of Greek and Egyptian architecture Quatremere de Quincy became increasingly convinced of both the universality of primitive architecture and the

fallaciousness of the idea of a single first structure as proposed in Laugier's mythology of the 'little rustic hut'. If Laugier's origin theory was correct then one only needed to establish an historical genealogy. But the lack of evidence of the single source for architecture challenged that assertion. Additionally he was increasingly convinced that different architectural styles produced by different cultures –in the case of his studies; Greece and Egypt- did not share common lineages. This led him to conceptualize the possibility of multiple origins for architecture and the necessity to find an alternative framework for understanding the historical development of architecture.

That alternative came in the form of recent linguistic theory and the concept of universal grammar. What Quatremere de Quincy sought to develop was a type grammar for architecture akin to the recent attempts to develop a universal grammar for language by men like De Pauw and Rousseau.[lxxvi] According to him both language and architecture contained unique operating systems. ". . . columns, cross beams, capitols, and other things that are the natural elements of the art of building are, consequently, and to all architectures throughout the world, the same as the elements of universal grammar are to diverse languages." It was the consistency of the universal grammar of construction elements that lead to the false assumption of an historical continuity between cultures. The true key therefore was to move beyond the grammar and identify the mother languages and their dialects, each of which acts as a system and that each architectural language has its own originating principle. He would claim that "The Theory of the originating principle from which this art is born . . . this idea of system is applicable to more than one kind of architecture and that each architecture can have its own."[lxxvii] As Quatremere de Quincy himself noted; "as with all languages there are many ways [in

architecture] to speak against the rules of grammar."[lxxviii] The trick was to find an appropriate methodology to determine the universal principles underlying the grammar that would establish a set of appropriate categories for architectural types.

At the time the fascination with all things Egyptian lead linguists to interpret the hieroglyph as a form of proto writing. For many it was seen as an image which conveyed a platonic ideal without conceptualization. By this was meant that the hieroglyph acted as an image of the idea, a thought/image. In this way the hieroglyph was seen as communicating its message directly without the necessity of either abstract intellectualization or conventionalized language.[lxxix] In doing so it conveyed philosophic truths directly, as an instrument of learning, by circumventing the deficiencies of nature, i.e. rational human intellect and sensory perception. The hieroglyph was seen as a form of figurative expression which emerged right at the moment when language and art came into being.

If hieroglyphs conveyed thoughts those thoughts were carried on buildings, giving them a social communicative function. "With all their surfaces destined to receive inscriptions in symbolic characters, they must be regarded as enormous books always open for the education of the public . . . All monuments were legends . . . these monuments were utterly unmetaphorically- the depositories of rites, dogmas, exploits, glory, in the end of the philosophical or political history of the nation."[lxxx] Previous theological interpretations of hieroglyphs had centered on the notion of them as 'the book of nature' that revealed divine law to those who could decipher them. Quatremere de Quincy instead followed contemporary theorists of the day, in particular Warburton, in seeing the hieroglyph not as revealing divine thought but rather human thought, not

through symbolism but through the figure.[lxxxi] As such they were not just a form of natural language but a human invention. Hence the hieroglyph was a social artifact. This meant that they communicated not the book of nature but the book of humanity they were not divine but manifestations of social structure. In this way Quatremere de Quincy could make the claim that architecture was synonymous with the creation of social structures.

Contemporary writers like Home, DePauw, Rousseau and Vico had divided social structure and development into three distinct states fishing, shepherding and farming. It was this concept of distinct social structures that found its way into Quatremere de Quincy's theory. He would state; "During their first stages, societies were necessarily divided between three ways of life. Nature, depending on the diversity of the countries in which these societies were located, presented each with one of these three states that today still distinguish different regions of the globe. Men were, depending on their various locations, either hunters, gatherers, or farmers. . . . Hunters or fisherman would have had no need to build any habitation for a long period of time. They would have found it simpler to dig dwellings out of the earth or to take advantage of excavations already prepared by nature. . . . Gatherers, who move constantly . . . needed mobile dwellings that could follow them: from this fact came, in all times, the use of tents. . . . Agriculture must have suggested to men that they build more solid and fixed shelters. . . . The wooden hut, with its roof, must have arisen quite soon."[lxxxii] This lead to his assertion that there were three principle types in architecture "the tent, underground [caverns] and the hut or carpentry."[lxxxiii] According to Quatremere de Quincy every form of architecture could be traced to one of these three models, the 'pre-existent germ' or origin, which served as the first principles of architecture underlying the universal

grammar. “This Elementary Principle is like a sort of nucleus around which are assembled, and with which are consequently coordinated, all the developments and the variations of form to which the object was susceptible. . . . This is what ought to be called type in architecture as in every other area of human invention.”[lxxxiv]

The significance of Quatremere de Quincy must not be lost. The establishment of a primary connection between society and type meant that architecture establishes its authority not in nature as it had with Laugier but in man- it was a human artifact. The rationality of building form was no longer validated in terms of the extrinsic value system of nature’s efficient beauty. The theory of type proffered by Quatremere de Quincy moved architecture one more step towards being an autonomous discipline. That meant that type was no longer a static universal principle of nature but an operative principle of creation. This allowed for two important transformations; first the idea of type was now secularized and second as a product of human invention (as opposed to an imitation of a fixed law of nature) it was possible to link type to systems of production.

The adherence to type, which was an essential aspect of architecture and one that prevented abuse, was not a slavish imitation of the essential model of hut, cave or tent. Between the individuality of Boullee and Ledoux and the mindless imitation of the rustic hut he would propose the notion of an *ideal* type. For him there was a difference between the imaginative model and the material idea of a positive model. In the *Dictionnaire* Quatremere de Quincy defined type in the following manner; “The word type presents less the image of a thing to copy or imitate completely, than the idea of an element which must itself serve as a rule for the model. . . . The model, understood in the sense of practical execution, is an object that should be repeated as it is, contrariwise, the type is

an object after which each artist can conceive works that bear no resemblance to each other. All is precise and given when it comes to the model, while all is more or less vague when it comes to the type."[lxxxv] Type was transformed from a model to be imitated into a formative law in much the same way as Descartes analytic geometry sought a formative law for the geometrical type.

Quatremere de Quincy's assertion that the origin of architectural types was a product of human invention meant that the new theory of type was an operative theory. According to Silvia Lavin "Quatremere's theory of type claimed an operative dimension because it determined not just the genesis of the world's first buildings but the genesis of every building: types became architecture in the same way that gestures became words."[lxxxvi] It was the type that regulated the transformation of the hut to the temple, and the type also regulates the transformation into any new contemporary work of architecture. Furthermore it moved the idea of type outside the limitations of the hut and the temple of classical architecture and made it applicable to all architecture as a universal principle both abstract and atemporal.

Quatremere de Quincy's theory of type allowed for the transformation of type forms through time in the same way as language develops dialects or absorbs words from another language. This meant that there is no need for a slavish imitation of the type as implied in Laugier's use of the 'little rustic hut' but that did not mean that architectural invention was not subject to rules nor did it mean that he rejected the theory of imitation. As Quatremere de Quincy would claim "One could generally say that there are few buildings that cannot by their very purpose direct the architect toward the more or less simple or more or less complicated path of ideas that the plan requires. The uniformity of

customs will therefore produce a certain uniformity of distribution in a school or in a hospice, for example, and this effect must be correlated with the elevation, whose simplicity of line will become the obligatory character. One could generally say, as the plan goes, so does the elevation. A great diversity of uses, functions, residents of varied social standing, all necessitating numerous varieties in plan, as in the large public establishment, will therefore allow the architect to reflect this state of affairs in the exterior combinations of forms and lines that will influence the aspects of the elevation."[lxxxvii]

Architecture as he defined it adheres to its generative principles in its expression of basic construction typologies found in the primitive hut, tent and cave. But it is transformed via use into a myriad of building types. "The word type is also used in architecture to designate certain general forms which are characteristic of the building that receives them."[lxxxviii] And again ". . . there is enough material to suggest to the intelligent architect a characteristic motif of plan or elevation that distinguishes and reveals the monument for what it is."[lxxxix] It is the uniformity of custom that maintains the type categories based as they are in the functional expression of use and allows for their classification and categorization.

What Quatremere de Quincy did was transform the concern over the expression of function in built form from one based on physiognomy to one based on the Mechanism of Disposition, as an operative principle, bringing it in line with the epistemology of science as found in the natural sciences and analytic geometry. It is this understanding of type that allowed for both its assimilation to systems of production and the permutations of programmatic development.

Scientific influences in the work of Cuvier would eventually overturn the basis of imitative expression in the theory of type and complete the transformation into the second form of type Vidler identifies. These changes would bring the theory of type in line with the simultaneous development of engineering allowing for its transformation into a more instrumentalized definition of production and technique. This transformation would occur in the work of Jean- Baptiste Rondelet and at the new Ecole Polytechnique with the theory and pedagogy of J.N.L. Durand.

> "The essential objective [of architecture] was, above all, the construction of solid buildings, using a just amount of selected material with art and economy."
>
> Jean-Baptiste Rondelet
> *Traite*

Jean- Baptiste Rondelet and the Practique of Building

Jean- Baptiste Rondelet (1734- 1829) first became known while working with Soufflot on Ste. Genevieve. As previously noted he had been responsible for calculating the stresses of the stones used and had in fact, refined the devices Gauthey designed to do so. When stress cracks emerged under the dome it was Rondelet who shored up the piers by adding stone and iron around them and it was he who actually finished the structure after Soufflot's death. He was also one of the first to undertake a systematic analysis of iron and its static potential, an interest he developed while working with Soufflot. In 1799 he took a position teaching at the Ecole des Beaux- Arts, where in 1806 he assumed the Chair of Stereotonomy and Building Construction.

Given his experience on Ste. Genevieve it is not surprising to find that for Rondelet architecture was not an imaginative art, but rather a science controlled by need and necessity. His *Trait theorique et pratique de l'art de batir* (1802- 17, published in 5 vol.) concerned itself predominantly with building materials and their strengths and properties, advocating the teaching of mathematical calculation in the determining of stresses in building members and calculating their size. The Book was the first effective textbook on building science, proving very successful and going into many editions.

Conceiving of building from the perspective of *Firmitas*- the solidity, stability and durability of the building- Rondelet understood architectural history as a history of rational building techniques. He was of the opinion that "the essential objective [of architecture] was, above all, the construction of solid buildings, using a just amount of selected material with art and economy."[xc] In his *Discours pour l'ouverture du cours de construction a l'Ecole speciale d' architecture* (1816) he claimed the character of the design should show a greater influence of the methods of construction. For Rondelet it was in the art of construction that the beauty of a building lay. Construction becomes an art once theoretical knowledge is joined with that of practice to regulate equally all its operations.[xci] For Rondelet, theory was the result of experience and reasoning, it was founded on the principles of physics, mathematics and statics, and the physical application of different artistic operations. The proper result was perfect solidity and economy.[xcii] The *Traite* subjected the building craft itself to a form of rationalism.

Quatremere de Quincy had transformed the theory of type into an operative theory allowing for the creation of new types derived from the ever changing Mechanism of Disposition. Rondelet's *Traite* did the same for the Mechanism of Structure; creating an

operative theory for the design and detailing of structural members based upon the rational determination of material properties. It was the mechanics and the strength of materials that allowed the builder to arrive at the determination of correct forms and dimensions of any given part of a building in a given structural situation.

There is an abstraction about Rondelet's practique, one that renders his art of building more a technology than a techne; a rational application of science derived from the operations of practice and less an issue of craft, or practical know how, in terms of working the material. According to Rondelet the best means of expression was the expression of an economy of means. He was the forerunner of a kind of instrumental determinism in architecture. As Perez- Gomez has pointed out Rondelet's *Traite*: "put forward a theory conceived as a powerful and universal instrument for the thorough domination of the building craft. Within a positivistic framework, myth and nonscientific speculation were unacceptable. For the first time in a book on building the transcendental justification of architecture no longer mattered."[xciii] In this sense, he should be seen as a key proponent of the emerging rational tectonic in architecture.

Architecture and the Origins of Engineering

Rondelet's approach to architecture was reflective of the larger developing trend in the eighteenth century. The increased influence of the epistemology of science in formulating the Mechanism of Structure had opened the door to a rational science of construction. Simultaneously, several components of what had been the traditional purview of architecture and architectural practice were being systematically fabricated

into a whole new discipline; engineering, the creative application of scientific principles to design.

During the 16th century fortification had developed as a distinct discipline within architecture. By the late 17th century under the direction of the Marquis de Vauban, the design of military architecture in France was taken over by a special corps of military engineers, who were part of the French army. In 1715, the first official corps of civil engineers was formed known as the Departement des Ponts-et-Chaussees.

Owing to the fact that the work assigned to this department was previously done by architects, interaction between architecture and civil engineering at this early date was evident from the start. It was therefore not unusual that the first directors of the Departement des Ponts-et-Chaussees, Jacques Gabriel and Germain Boffrand, were famous architects associated with the Academie Royal d'Architecture. Additionally, it should be no surprise to learn that, as early as 1750, its students were expected to study architecture there under J.- F. Blondel. In 1747, under the direction of Jean- Rodolphe Perronet (1708-1794), the department was formally turned into an academy and in 1775 was given the official title of the Ecole des Ponts-et-Chaussees, and whose aim was to provide rational, analytical and technical training.

During the French Revolution the new government began to promote the development of engineering, and by 1789 Rondelet proposed a formal academy of engineering. That vision would be realized in 1794, with the founding of the Ecole Centrale des Travaux Publics, which was renamed the Ecole Polytechnique in 1795. It was the first official school of engineering, training surveyors and engineers, from civil to structural. While close connections between the Ecole Polytechnique and the tradition of

architectural training existed for some time, the emphasis in design at the Ecole Polytechnique was geared toward the needs of its engineering students, and reflected the attitudes of Rondelet. As Egbert points out, the Ecole Polytechnique placed increasing emphasis on the efficiency of structure as an end in itself, as opposed to a means to end: formal beauty.[xciv] This tendency found its ultimate manifestation in the writings and teaching of J.N.L. Durand, by far the most important and influential man associated with the Ecole Polytechnique and the man most responsible for the final development of a rational tectonic and the instrumentalization of architectural theory.

> "The source of beauty in Architecture is Economy joined to Convenience"
>
> Attributed to J.N.L. Durand
> *H. Rohault, Projet d'hopital pour 1,500 malades*

J.N.L. Durand and the Autonomy of Architecture

Jean Nicolas Durand (1760-1834), a close friend of Rondelet, was professor of architecture at the Ecole Polytechnique from 1795 to 1830 and essentially shaped its form and direction. Trained at the Academie Royal d'Architecture he first came to recognition when, in the atelier of Etienne- Louis Boullee (1728- 99), he placed second in the Grand Prix of 1779 and 1780.[xcv] Durand's work and theory was by any standard revolutionary, and in that sense one could claim he followed in his master's footsteps. But Durand's work, while showing a certain allegiance to Boullee, in many ways moved in a fundamentally different direction.[xcvi]

Durand saw architecture as both a science and an art, but it is clear that by art he meant talent and by science he meant its reduction to scientific methodology. He brought this attitude to his teaching, establishing a pedagogical structure at the Ecole Polytechnique derived from the *elements d'ideologie* that Destutt de Tracy (1754- 1836) had elaborated several years earlier.[xcvii] Durand would claim: "inasmuch as reason indicates to us, following the method used in scientific schools . . . where students are taught the progression from the simple to the complex, from the known to the unknown, so that one idea paves the way for another and recalls its predecessor, we shall increasingly support this plan of study."[xcviii] Thus his teaching method and pedagogy was taken straight from that of science and this also carried over into the way in which he defined architecture and conceived of design. It is true that Durand taught architecture to surveyors and engineers at the Ecole Polytechnique, but his teachings proved to be inspiring to a whole generation of progressive students at the Ecole Ecole des Beaux-Arts as well. In this way he exerted a greater direct impact on the development of architecture than might first be expected.[xcix]

Durand's writings also proved particularly influential, carrying his ideas farther than just the two French schools. Three in all, they sum up his theory and teaching pedagogy, as well as his design methodology, taught at the Ecole Polytechnique. His first text was the *Recueil et parallele des edifices de tout genre, anciens et modernes* first published in 1799 in France, translated into Italian in 1833, republished in Belgium in 1839, and issued in an American edition in 1915. His *Precis des lecons d'architecture* first appeared in 1802 and then again in 1805 in a revised edition, it was translated into German in

1831, and republished in Belgium in 1840- 41. His last book the *Partie graphic des cours d'architecture* was published in 1821.

It was in the *Recueil et parallele* that Durand would transform the operative theory of type developed by Quatremere de Quincy into a fully instrumentalized Mechanism of Disposition. Durand must have known Charles Perrault's *Parrallele* (1687-97)[c] and one might assume that the similar title was intended by Durand to indicate his intentions and desire to bring the study of architectural typology into the sphere of the epistemology of science in much the same way as Charles Perrault sought to bring the arts and letters in line with Bacon's *Novum Organum*.

Perrault's *Parallele* called for the development of a cannon of modern work. But its significance was in its teleological view of history, one in which perfectability was not found in a past golden age but was achieved through progression to the future. Perrault was following Bacon's *Novum Organum* in which science was seen as progressive, based on learned experience, accumulated over time and added to by each successive generation, a collective task of humanity moving toward greater perfectibility with time.

Durand's *Parallele* produced a cannon of work presenting the history of architecture in a comparative manner. [ci] According to Vidler "The comparative method allowed Durand to arrange his specimens on the page as if in natural progression from the most primitive type to the refined versions of the present. The plans 'perfected' themselves, as it were, graphically on each page, crystallizing in ever higher forms."[cii] This teleological view of history was not unlike Durand's stated understanding of scientific progress taken from Destutt de Tracy and applied to his pedagogical theory. In that manner it presented

the collective experience of architecture as a demonstration of the progress and prefectablity of the type forms through time.

In many of the cases the designs presented were well known reconstructions of major works that, more often then not, were then simplified by Durand in terms of their composition and details. He shows little concern with historical accuracy in either an archaeological or academic sense. They become abstractions; idealized versions of historical types. The systematic simplification of the plans and types while seemingly un-scientific in terms of empirical observation was also not surprising. Charles' brother Claude Perrault's system of proportions from the *Ordonnance* was a simplification of the empirically observed ratios of the orders; itself a reflection of the aesthetic prerogative present in science from Copernicus forward that the simpler the mathematical equation the more beautiful the solution. The orders, the primary 'Arbitrary' beauty, were for Perrault evidence of the accumulated knowledge of the discourse of architecture one that was in his mind ever growing and moving toward perfectability. According to Bacon our collective experience of particulars allows us to glimpse a universal truth. For Claude Perrault the only thing to do was to rationalize the particulars and extrapolate that universal truth. Claude Perrault rationalized architectural theory along Cartesian lines by implying an epistemological framework wherein the evolution of the rationalization process replaced traditional metaphysics. In his case the proportional system could become fixed and then altered only for the case of its own increased rationalization. It set in motion the potential for the instrumentalization of architecture. It was not fully successful in that project owing to the fact that most architects failed to use his system of proportion.

The study of building typology revealed an equal diversity of disposition and form as that found in the orders. Type, like the orders, runs the risk of radical individuality and absolute licentiousness, qualities of which Quatremere de Quincy had accused Ledoux and Boullee, Durand's teacher. But as Claude Perrault's work implied it could also be a means of establishing the rule of production.

Durand arranged the comparisons according to functional typologies drawn to the same scale and arranged in order of degree of likeness. But he provided a classification system of buildings along the lines of the natural science's classification of genera and species as it was redeveloping at the time. In a series of lectures on Comparative Anatomy at the Museum of Natural History in Paris in 1795 Baron Georges Cuvier (1769-1832) revolutionized the taxonomy of natural forms established by Linnaeus by dividing the animal world into four basic branches characterized by different types of anatomical structure.[ciii] Linnaeus' system had been based upon an analysis of external form; Cuvier based his analysis on the organization of the skeleton in response to functional demand.

Following Cuvier, the *Parallele* approached the comparative method based on an analysis of the organization of the building as a response to the demands of the Mechanism of Disposition. Durand reduced typology to a rational system of criteria from which to study the collective empirical knowledge of architecture. Implying an epistemological framework wherein the evolution of the rationalization process replaces traditional metaphysics, it contains no attempt to validate its rationality in terms of an extrinsic value structure; nature's efficient beauty, it contains no doctrine of origins, or

reconciliation or universal grammar. It established a formative law for typology one whose alteration is only for the purposes of increasing its own rationality.

The decision to present the buildings according the a priori classification by function instead of by style or culture, reveals a modern scientific attitude toward history and time. In the Words of Joseph Rykwert: ". . . Durand had made a break with the past, a break perhaps more radical than that which Brunelleschi and Alberti had . . . And from that time on, in spite of various exceptions, the attitude propounded by Durand dominates architectural thinking to the exclusion of all others, since it proposes a wholly unhistorical, wholly a-prioristic approach to design, in which the procedure of the architect is wholly autonomous, and the past a mere repository of conventions."[civ] Such an approach allowed Durand to conceive of design composition as an autonomous language of form, one that could be freely manipulated according to rationalist precepts.

It is important to note here that this was merely the logical continuation of the rational project of architectural theory as it was proffered in the analysis of Gothic architecture. The cognitive process is the same; the object is dissected into its constituent elements, whose functions are determined, clarified, expressed and then reassembled in such a way as to make the functional mapping readable and intelligible. Only in this case the methodology is applied to the Mechanism of Disposition. Architectural beauty moved beyond the mere imitation of origins, or the imitation of the mechanistic order of structural function, into a broader rationalist theory that included both the Mechanism of Structure and the Mechanism of Disposition. For Durand the *Parallele* served to establish a formative law for typology, having done so he then set out to do the same for the design process.

For Durand, design had to conform to the rigors of geometry; drawing was, in the words of Sergio Villari, a' technographic transcription', designed to "affirm a radical principle of the autonomy of architectural language. The lack of rigor in the choice and verification of sources is evidence that Durand did not wish to sacrifice the variety of that language to the simplifications of an overly deterministic scientific criterion, . . . "[cv]

Durand's theory of architecture, found in the *Précis,* was a radical departure from the Vitruvian tradition, and classical mimesis. For him it was necessary to know the purpose of the art of architecture. Because architecture was the most advantageous of the arts and the most costly its objective was, and should be, its public and private usefulness. Such concerns and issues he believed were isolated from the metaphysical and transcendental concerns postulated by previous mimetic theories of architecture. Previous theories that relied on *mimesis* held to a conception of nature as a reflection of a divinely inspired ideal. Such ideals carried with them transcendental values that provided a rational justification for architectural praxis along metaphysical lines. The anthropomorphic theories of the orders from Vitruvius onwards adhered to this metaphysical justification by relating the dimensions of the orders to the human body that in turn was seen as a microcosm of the macrocosm. In the *Precis* Durand claimed that architecture was not an imitative art form. He challenged those theories that advocated an anthropomorphic understanding of the orders, as well as those theories that promoted architecture as imitative of nature, claiming that no such model existed.

The orders for him were in no way linked to imitation, and Laugier's 'Primitive Hut' as type, based as it was on such as position, was also rejected.[cvi] By associating the orders with trees the 'Primitive Hut', as type, embodied the values of an ideal nature as defined

by Rousseau. It was an attempt at reconciliation between nature and culture. In fact all the theories of type in the 18th century relied on just such a justification and subscribed to the notion of reconciliation. The use of ideal type forms found in the 'Revolutionary Architects' Ledoux and Boullee were based on the symbolic use of geometric forms as reflections of ideal transcendental values. Quatremere de Quincy's definition of type whilst a major step in the transformation of the theory of type into an operative theory nevertheless relied on the same values to form its core principles underlying the universal grammar; the 'Primitive Hut, Cave and Tent' were merely extensions of Laugier's attempt at reconciliation. By resorting to external a priori values, architecture maintained its place as a physical manifestation of philosophy, theology and or cosmology; it was in no way autonomous as a discourse.

With Durand however this essentially changed. He had no interest in such reconciliation; he simply rejected the issue as a concern. Durand no longer viewed the relationship between architecture and nature as analogy, or as metaphoric symbolism, but rather in a normative fashion. Newtonian nature was a collection of atomic particles governed by mathematical relationships in an efficient economy of means. It is this image of nature that underlies the new truth of architecture, as outlined in the *Precis*. There architecture is subdivided into its constituent elements- walls, columns, openings etc- only to be built up into intermediate assemblages- porches, stairs, halls and so on- and then again into building types and then on to urban morphologies. Once again the cognitive approach to architectural analysis is via the methodology of science.

This image of nature is most evident in Durand's own description of the kinds of proportions to be found in architecture. Those 1) derived from the nature of the materials

and from the use of the final object 2) the forms dictated by custom 3) the clear and simple geometric forms that would be easily comprehended. For Durand, only the first was an essential element in the determination of architecture, due to its ability to be defined through the laws of mechanics and utility.

In arguing that architecture was not a mimetic art, Durand furthered the trend toward divorcing architecture from any transcendental value, leaving architecture open to the vicissitude of means and ends, bourgeois values, and the effects of late capitalist ways. As extreme as such a comment might sound, it is in many ways valid. As Serio Villari has noted: "Such a notion, denying all mimetic origin to architecture, allowed him to remove the symbolic value from the orders; it allowed him, that is, to submit the orders, essential as they are to architecture, to the grammatical or – better- the normative laws of composition."[cvii]

Villari argues that this opened the door to a neutralizing of values and reduced the elements of architecture to their linguistic functions. What occurred was that, without transcendental value and verification, the only means of assessing value, hierarchy and judgment, became economy and use. According to Perez- Gomez: "In the area of architectural theory and design, the stage at which *theoria* was transformed into a self-referential instrument for the control of a *praxis* is best exemplified by the writings of Jacques Nicolas- Louis Durand."[cviii]

Durand claimed that: "the purpose of architecture has never been only pleasure, nor architectural decoration its object. Public and private utility, the happiness and preservation of individuals and society are . . . the purpose of architecture."[cix] The concern for utility, happiness and preservation led him to base his theory on two classical

principles: *'Convenance'* ('Propriety') and *'Economie'* (Economy). *Convenance* accounted for *the 'Solidity', 'Salubrity'* and *'Commodite'* of the building, while *'Economie'* was accounted for by the concepts of *'Symetrie', 'Regularite'* and *'Simplicite'*. With Durand economy and efficiency became the dominant, if not the only acceptable, values in architectural judgment. This can be seen in his approach toward composition, plan distribution, construction and detailing.

While Durand claimed that social demands, economy and convenience should guide architecture, he nevertheless used symmetry and simple geometries as design criteria. But such design criteria still reveal his primary interest in economy of means to ends, particularly when he argues in favor of the use of circles and spheres because of their ability to enclose the maximum amount of space with the least perimeter area.[cx] The obvious difficulty in terms of spatial distribution in the use of such geometries led him to advocate as more practical the square and cube.

A concern for *Disposition*, or plan distribution, had dominated French architectural theory since the beginning of the 18th century. For Durand good architecture was a reflection of the most fitting and most economical *disposition*. In the words of Vidler "Durand, in describing the ends of architectural activity- the social needs- began the nineteenth century project of typological construction on the basis of the inner structure or programmatic functioning of things. . . . This art of combination or disposition of each type was guided by a program derived from a study of all previous programs of the same kind, and subjected to the overriding law of economy. In a stroke, Durand substituted for the Vitruvian trinity of commodity, firmness and delight, an entirely modern criterion- means and ends judged by their economic coming together."[cxi] The disposition of the

plan and the economy of its construction became the prototypical problems in architecture. It is the design and construction of the most convenient building, using the most economical means that becomes the central goal of all architecture, according to Durand.

Reducing architectural composition to the combination of standardized elements and forms that make up a repetitive pattern of basic units, consisting of circles and squares he then arranged them on his famous *mecanisme* [his term], a graphic formula derived from the grid.[cxii] Starting in plan, he would transform the grid, identifying the major axes of circulation and then the key structural elements of wall and column along its lines. The *mecanisme*, he believed, contained "The general principles that at all times in all places . . ." were universally valid. [cxiii]

Durand's *mecanisme* reduced architectural composition to horizontal and vertical lines and their combinations. Each project was conceived of in plan, and extruded into volume. The *mecanisme* had two fundamental advantages according to Durand: its reliance on axiality and the underlying grid and its ability to produce an infinite variety of projects. "Dealing with the basic combinations we have seen that, following the general principles of architecture, the walls and the columns, the doors and the windows . . . must each be placed on common axes. It follows naturally that rooms formed by these walls and columns and served by these doors and windows must, too, share common axes. These new axes may be combined in a thousand different ways and give birth, by their combinations, to an infinite number of different general dispositions."[cxiv] Durand's methodology of composition was essentially a technographic *ars combinatoria*.

Durand's *mecanisme,* transformed the grid from a symbolic device, a reflection of divine truth, into a technical one. Here the grid presented space as an abstract concept devoid of transcendental value. It contains no qualitative aspect. Space was reduced to its quantitative components alone, becoming the full realization of analytic geometry and the Cartesian coordinates applied to architectural composition.

His *Precis* contains no perspective drawings, only elevations, and he specifically prohibited the use of rendering in watercolor. All is reducible to *disposition,* in doing so, space, as habitable and lived, as well as the classical concept of proportion, were factored out of the composition strategy. Architecture was reduced to the discourse of surface, volume and plane.

Elements are manipulated according to the rules of the geometric grid. They are also reducible to standardization according to the same rules. While Durand himself never theorized the potentiality of his system in terms of opening the door to industrialization, a project such as Paxton's Crystal Palace is conceptually dependent upon this systematized way of conceiving a building. According to Leonardo Benevolo: "The figures from Durand's treatise can be dated by their style, which conforms to the taste of the time, but they predate the work of the nineteenth- century engineers, all of whose typical features are already clearly delineated: the compositional method based on mechanical progression, the independence of the structural mechanism from the decorative refinements, the preference for citing measurements in round numbers and for elementary forms, which reduce the designer's authority to a minimum. These features are to be found in the work of Paxton, Eiffel, Contamin, Le Baron Jenny, and Hennebique."[cxv]

Durand's compositional method was widely received as revolutionary and had a broad impact on architecture in France, Germany and England. It is widely debated that both Leo Von Klenze and Carl Freidrick Schinkel both were influenced by his designs and used them as starting points for their own.[cxvi] His method also became the basis for the first university course in architecture in England.[cxvii]

His notion of economy extended to ornament and detailing as well, believing that all unnecessary extravagances and decoration should be removed from the building advocating instead that the style of the building should be a direct expression of its functioning parts. Ornament was for him superfluous in many ways and an unnecessary expense. Durand went further in emphasizing that he believed that form was a reflection of the nature of the materials used.[cxviii] Durand co-opted the term *Charactere* arguing that "If a building lends itself conveniently to the use for which it was destined, will it not naturally have a character and, more importantly, a character all its own?"[cxix]

The pragmatic concerns of use and convenience postulated a new approach toward theory driven by practical application. The symbolic content, and in many ways content itself, understood in a classic manner, played little if any role. Architecture now became, at least as proposed by Durand, an autonomous discipline, a specialized task beholden to the material and formal causality. As we have noted earlier (Chapter One), these concerns were reducible to mathematical quantification and proofs. Architecture as an autonomous language as taught in the engineering school of the Ecole Polytechnique by Durand was now brought in line with all the objectives of science.

Villari argues, following Kaufmann, that the idea of economy plays a specific and absolute role in the theory of Durand.[cxx] But Villari argues his use of economy should not

be seen as an external force, that is to say, solely a concern with economy of materials, costs and funding. While these do play a role in Durand's theory the notion of 'economy' goes further embodying the very essence of architecture itself, and most specifically its system of aesthetic judgment. According to Villari: "The idea of economy gathers and organizes the internal grammatical laws of the architectural language; hence, arbitrariness of the sign, composition as the entirety of the language of architecture, and the structural relation of the part to the whole must necessarily realize, at least formally, the idea of economy."[cxxi] Durand translated economy of means into an aesthetic prerogative. Any superfluous detailing or ornament was not only unnecessary but also uneconomical. Architecture and the detail were thus opened to a reduction to the most economical and rational expression of means to ends. The result was the actual instrumentalization of architectural theory.

Summation

The eighteenth century saw the reorganization of architectural theory as it incorporated the epistemology of science, adopting its rational project and in the process opening the door to its eventual instrumentalization. That project was based on the redefinition of three key metaphysical categories; causality, reality and mind, each would play a part in the establishment of a rational tectonic.

Understood through mathematical axioms increasingly divorced from transcendental values, reality was seen as composed of primary causes of extension, mass and *vis inertia* as a greater and greater emphasis was placed the quantitative characteristics of the 'thing-

in-itself'. The discourse of knowledge was, if not completely, to a large part reduced to a concern for the formal and material causality; 'what is it?' and 'what are its constitutive materials?'. With the doctrine of primary and secondary causes came a new theory of mind defined no longer by its faculties, but as a collection of images and sensations caused by external mechanical motions. Human consciousness became a passive spectator in a world of infinite extension. The resulting duality of mind became the hallmark of the epistemology of science and the modern era. The discourses of aesthetics and architecture mirrored this new emerging epistemology, embodying not only its new causality, but its definitions of reality, and the human mind as well.

Mirroring the Cartesian duality of mind and the duality of method- deductive and empirical- was the division of aesthetics into 'Objective' and 'Subjective' that served to bring the new aesthetic doctrine in line with the epistemology of science. This duality manifested itself most profoundly in the architectural texts of Chaude Perrault, Christopher Wren and Guarino Guarini. Trained in the sciences and the scientific method their architectural theories were permeated by the epistemology of science. The aesthetic duality served to maintain the absolute value of art in the face of its loss of transcendental value and the growing realization of the relativity and diversity of 'taste'.

Developed along the lines of Newtonian empiricism, 'Subjective' aesthetics sought to define the subject/object relationship, emphasizing the intellection and process whereby the object is brought before the mind. This was done through an appeal to the collective unconscious as authority and as an indicator of the principles and laws inherent within the human mind. In juxtaposition 'Objective' aesthetics sought to identify the clear and fixed principles of art along the lines of Cartesian rationalism. Here the work of art is an object

not of perception but of pure relations expressed in terms of rules. Art derives its truth from a representation of the mechanistic structure of nature understood as functional significance. As the writings of Perrault, Wren and Guarini were more broadly accepted the full impact of the restructuring of aesthetic and architecture theory along the lines of 'Objective' and 'Subjective' lines began to emerge.

The Cartesian influence in the academies resulted in the gradual dissolution of the classical notion of *mimesis* and the Vitruvian tradition. Classical aesthetics operated on two fundamental premises 1) the hierarchical set of transcendental values present as the underlying ordering system of all things and 2) the theory of *mathmesis*; the belief that the fundamental structure of the ordering system was essentially geometrical providing proof of the clear relationship between macrocosm and microcosm. The use of geometry and mathematical structures, the application of the *sophron eros*, provided an absolute value for art grounding it in metaphysical foundations.

With the increased removal of transcendental values from the discourse of mathematics, aesthetics and architecture had to find another ground for its legitimization. That ground would come from an appeal to nature in the form of 'la belle nature'; the view that nature operated according to clear, rational principles and that form was a response to the necessities of function. Beauty, whose essence was the imitation of nature, became the representation of the 'fitness for purpose' of the thing. This would take the form of two mechanisms as architecture sought to embody nature's functional significance.

The first, the Mechanism of Structure, emerged out of the desire of 'Objective' aesthetics to identify clear and fixed principles along the lines of Cartesian rationalism.

The solution, first proposed in the Greco-gothic Ideal, embodied all of the aesthetic categories of judgment found in ‘Objective’ beauty; its’ representation of a mechanistic understanding of beauty defined as ‘fitness of purpose’, and its’ desire for simplicity of form and composition as ideal type. It understood architectural form as the rational exposition of structure, the exercise of forces understood intellectually, as an object of pure relations expressed in terms of the rationally understood principles of statics. In transforming the Vitruvian concept of *firmitas* into a formative law it translated the functional signification of nature into the Mechanism of Structure; architecture is dissected into its constituent structural elements, whose functions are determined clarified, represented and then reassembled in such a way as to make the functional mapping readable and intelligible. While it emphasized the importance of the clear readability of the Mechanism of Structure, it still did so within a representational structure that validated that rationality in terms of an extrinsic value structure; ‘nature’s efficient beauty’.

With the continued elimination of transcendental value structures came the eventual rejection of the orders and all systems of proportion as ‘rules’ for architecture leaving only the formative law of the Mechanism of Structur. As architecture increasingly sought legitimacy in its own materials and methods it was transformed from a normative tool for architectural analysis and judgment to an operative tool for building construction. The development of the first means of analysis of statics and material strength provided a rational means of material selection and the determination of proportion and size of structural components. The Mechanism of Structure opened the door to a rational science of construction. A greater interest in rational building techniques and a greater influence

of the methods of construction led to a theory of design and detailing of structural members based upon the rational determination of material properties. It was the mechanics and the strength of materials that allowed the builder to arrive at the determination of correct forms and dimensions of any given part of the building in a given structural situation. This would eventually lead to the development of engineering as a distinct profession separate from architecture and by the middle of the nineteenth century its own style- the Engineer's Aesthetic.

The second, the Mechanism of Disposition, incorporating nature's functional significance, was derived from the desire of 'Subjective' aesthetics' to provide a rational explanation for the empirically observed diversity of form engendered by cultural prejudice. The end results were a search for origins in an attempt at reconciliation with nature and the introduction of ideal type forms. Clear, simple and rational, the inherent clarity of the relationship between part and whole once again became the guidepost for architectural judgment. As normative models the ideal type forms were based on a set of fixed a priori principles derived conceptually from nature- and hence sought legitimacy from their theoretical proximity to her virtues.

By the late eighteenth century, questions regarding the legitimacy of the imitation theory and an increased concern over the diversity of building types led to the desire to find other rational means of providing such legitimacy. This would eventually be achieved through an appeal once again to the source of nature's validity; function.

Maintaining the normative model, architectural theorists developed formative laws to explain the development of form and type. They did so by subordinating the architectural principle of *disposition*, i.e. plan arrangement and organization, to the Vitruvian

theoretical category of *utilitas*. The result was the Mechanism of Disposition that applied the same rational tactic as the Mechanism of Structure. Derived from the methodology of science it analyzed form in terms of its internal spatial components and their utilitarian adjacencies. Type was defined by its utilitarian function; the by-product of the rational internal organization of its component parts so that they became clearly represented and readable in its final form.

The continued desire to eliminate transcendental value structures lead to the eventual rejection of the normative model leaving only the formative law of the transformative model; the Mechanism of Disposition. It postulated a new approach toward theory driven by practical application. Design composition could be freely manipulated according to rationalist precepts. Good Architecture was a reflection of the most fitting and most economical disposition. Under the precepts of the Mechanism of Disposition architecture became an autonomous discourse; the direct expression of its functioning parts and space an assemblage of quantitative components devoid of qualitative aspects, at least in terms of design precepts. The disposition of the plan and the economy of its construction now became the prototypical problems in architecture.

The Mechanisms of Structure and Disposition brought architecture in line with the epistemology of science by creating theoretical frameworks that limited the discourse of architecture to formal and material causes reducible to rational precepts. Transformed into an autonomous discourse, architecture was now open to a reduction to the most economical and rational expression of means to ends. This rationalist tectonic opened the door to the ‘instrumentalization’ of architectural theory. It was now possible to view design as a combination of standardized elements and forms whose proportions were

derived from the nature of the materials and from functional efficiency. Without the transcendental grounding in the ethical structure of *sophrosyne* architecture as a system of production could be transformed from a discourse of *phronetic- techne* to a rational discourse. It was the complete antithesis of Classical Tectonics.

ENDNOTES

[i] The reference to the Caribbean Hut as an ideal reference immediately brings to mind Semper's use of the same image as the basis of his tectonic theory but they are selected for different reasons. Frezier because it is seen as primitive and therefore closer to nature and free from the corruption of custom and culture. Semper as the manifestation of four elements of architecture.

[ii] Frezier's theories were published in a series of articles between the years of 1709 and 1712 in the Jesuit journal *Memoires de Trevoux.*

[iii] Kruft, A History of Architectural Theory from Vitruvius to the Present, trans. Taylor, Callander and Wood, Zwemmer Princeton Architectural Press, New York, 1994, pg. 144.

[iv] Boffrand, *Livre d'architecture contenant les principes generauxde cet art,* Paris 1745,facs. Repr. 1969, pg. 10.

[v] The Term Greco- gothic was coined by the Abbe Jean- Louis De Cordemoy in his *Nouveau traite de toute l'architecture* of 1706, and popularized in the 20th century by Robin Middleton. For a more complete analysis of the Greco- Gothic Ideal see, Robin Middleton, "The Abbe de Cordemoy and the Geaco-Gothic Ideal: a Prelude to Romantic Classicism", *Journal of the Warburg and Courtauld Institutes* 25, 1962, pg. 23, 26, 1963, pp. 90- 123. and Kenneth Frampton, *Studies in Tectonic Culture The Poetics of Construction in Nineteenth and Twentieth Century Architecture*, The MIT Press, Cambridge, 1996, pp. 29- 59.

[vi] There are no dates for J.L. de Cordemoy as history has shown those previously recorded were those of his aunt. He was the fifth son of Gerauld de Cordemoy (1626-1684) which places his birth in the mid seventeenth century making him a contemporary of Claude Perrault, the date of his influential work *Nouveau Traite de toute l'Architecture,* 1706 indicates he was of a younger generation than Perrault.

[vii] Middleton has done much to document this trend in thinking in architectural theory. His research is presented in the seminal essay The Abbe de Cordemoy and the Graeco-Gothic Ideal, published in two consecutive volumes of the Journal of the Warburg and Courtauld Institute and in the book, *Neoclassical and 19th Century Architecture vol. I*, written and edited by Middleton & Watkin. See notes below.

[viii] See Robin Middleton, The Abbe de Cordemoy and the Graeco-Gothic Ideal, Journal of the Warburg and Courtauld Institute, vol. 25 no. 3/4 July- Dec. 1962 pp. 278-320 and vol. 26 no. 1/2 1963, pp. 90-123.

[ix] Ibid.,

[x] This point is made by Middleton who quotes De l'Orme's text. "Monstrant netre plusieurs autres choses, come l'on peult autant bien faire les branches d'ogives de charpenterier ou menuyserie, come de Pierre de taille." Continuing "la facon du pendentif de pierre de taile estant par dessus les ogives, tiercerones et liernes." De l'Orme op. crit. Pg. 110. Preprinted in Middleton, The Abbe de Cordemoy and the Graeco-Gothic Ideal, Journal of the Warburg and Courtauld Institute, vol. 25 no. 3/4 July- Dec. 1962. pg. 292.

[xi] On the buttress Derand states "Il est a propos que vous soyez averty que ces voutes, comme les autres, ayans beaucoup de pussee ont aussi besion de bons arcs-boutans pour les contre-buter et amintenir en estat." In reference to the rib he states "Ces voutes usitees particulierement en France, et autres pais septentrionaux, sont composees de nerfs et pendentifs. Les nerfs d'ogives, sont des corps saillans ornez de diverses moulures, qui portent et soutiennent les pendentifs." Derand op crit. 392. reprinted by Middleton pg. 293.

[xii] Ibid. vol. 1. pg. 290.

[xiii] Much of their research and work in this area was a direct result of the construction of numerous Hotel de Villes in and around Paris at the end of the 17th and beginning of the 18th centuries. Clients were concerned with the flow of space that facilitated their daily routine. Ease of use and functional relationships became central themes in composing plans.

[xiv] De Cordemoy, *Nouveau Traite de toute l' Architecture ou l'art de Bastir*, Paris, 2nd edit. 1714 facsimile reproduction 1966, pg. 3.

[xv] It is important to note that the rational interpretation of Gothic architecture in France can be traced back, as far as Philibert De l'Orme's *Architecture* of 1567. He had conceived of the Gothic columns and ribs as an independent, clearly expressed structural scaffold, distinct form the enclosing wall surfaces. It is with De l'Orme than that we see the origins of a separation of the structure and enclosure systems. This separation was also evident in the 1643 *L'architecture des voutes; ou, l'art des traites et coupe des voutes,* written by Francois Derand, the Jesuit mathematician and architect, the same man so influential on Guarini. He had

seen Gothic architecture with its columns, ribs and flying and outer buttresses, as a solution to the problem of structural equilibrium. Gothic was a style of structural elegance.

[xvi] Frezier's opposition to de Cordemoy is recorded in his *Memoires de Trevoux* (1709) and his *Triate des feux d'artifices* (1706). His argument was based upon his disagreement that the use of freestanding columns would produce an open spacious effect. Instead he believed the effect would be overcrowding.

[xvii] Robin Middleton claims the real source of De Cordemoy's model are the Perrault brothers. Middleton & Watkin, *Neoclassical and 19th Century Architecture vol. I*, Electra/Rizzoli Milan, 1980, pg. 15.

[xviii] Ibid. see Middleton

[xix] Perrault had defended 'Arbitrary' beauty as the source of development and creativity in architecture and there is a sense that he saw it as the more significant of the two. But in many ways the criticism of Perrault was unfounded, spurred on perhaps more by the growing influence of rationalism and its epistemology that sought clear, absolutist principles that conformed to the methodology of science. This can be seen in the criticism of Borromini, held up as one of the chief sources of this problem. Ironically his plans are perhaps some of the most rational and organized of the Baroque era. While the plans are rational constructs of complex geometries, visually they often appear highly enigmatic. It was the perception of simplicity, clarity and order, as aesthetic categories of taste that came into play.

[xx] Rousseau occupies a curious position in the history of Western thought both a founder and critic of the Enlightenment his writings raised issues and questions that helped to frame the nature of the modern era. His *First Discourse*, in many ways represents the final culmination of the *Querelle*. Presented in 1750, to the Academy of Dijon in response to the question 'Has the restoration of the sciences and arts tended to purify morals?', Rousseau's answer was a resounding no. In that sense he was an advocate of the ancients. But the *First Discourse*, and particularly the *Second Discourse* (1754), showed that Rousseau was not advocating a return to classical precedence, but the advancement of reason through a return to origins and nature as a means of circumventing the confusion of custom and tradition.

[xxi] Rousseau, *The First and Second Discourses Jean- Jacques Rousseau*, edit. Masters, trans. Masters, St Martin's Press New York, 1964, pg. 37.

[xxii] Ibid., pg. 37- 38.

[xxiii] Ibid., pg. 37.

[xxiv] Laugier, *An Essay on Architecture*, Trans. Herrmann, Hennessey and Ingalls, Inc. Los Angeles 1977, pg. 3.

[xxv] Perez-Gomez claims the contradictions between taste and reason had been previously pointed out by De Cordemoy, Briseux and Dubos. He views Laugier as making a conscious attempt to reconcile the two by recourse to nature. Perez-Gomez, *Architecture and the Crisis of Modern Science*, The MIT Press, Cambridge, Mass., 1992, pg. 65

[xxvi] Kruft refers to Laugier was a follower of the Rousseau school of thought, "The most important representative of Rousseauism in architectural theory is the Abbe Marc- Antoine Laugier."(Kruft, *A History of Architectural Theory*, pg. 152). But it would be a mistake to see Rousseau as his only source, Herrmann notes his reliance on the theories of Newton as commonly understood at the time, (Herrmann, *Laugier and 18th Century French Theory*, pg. 36). As I hope to show, in addition to these two influences, his roots in Cartesian philosophy also played a significant role in the development of his approach to architecture.

[xxvii] Laugier, *An Essay on Architecture*, Trans. Herrmann, Hennessey and Ingalls, Inc. Los Angeles 1977, pg. 64, & *Avertissement* to the second edition, pg. 156.

[xxviii] "The idea held by many people that in matters of taste there is no need for the application of a severe rational test is the most fatal of all prejudices." Laugier, *An Essay on Architecture*, Trans. Herrmann Hennessey and Ingalls, Inc. Los Angeles 1977, pg. 25.

[xxix] Laugier, *An Essay on Architecture*, Trans. Herrmann, Hennessey and Ingalls, Inc. Los Angeles 1977, pg. 22.

[xxx] Ibid., pg. 19.

[xxxi] Ibid., pp. 11- 12.

[xxxii] As Wolfgang Herrmann has pointed out, Laugier hardly applied Newton's method in a scientific way, rather he associated his theory with that of Newton, as it was commonly understood in Cartesian France at the time. His method was therefore a populist form of Newtonianism, as opposed to a true scientific application of the metaphysics of the great scientist. See Herrmann, *Laugier and 18th Century French Theory*, A. Zwemmer Ltd., London 1962, pg. 36.

[xxxiii] Laugier, *An Essay on Architecture*, Trans. Herrmann, Hennessey and Ingalls, Inc. Los Angeles 1977, pg. 4.
[xxxiv] It is important to note that extensive studies of Greek architecture were not available to Laugier and were in fact not undertaken until some 20 years after the publication of the *Essai*. Laugier's praise of Greek architecture in the 'Introduction' is based more on an appreciation of Greek sculpture and the growing awareness that the principles of Vitruvius were derived from Greek and early Roman architecture and not from the Roman masterpieces documented since the Renaissance. In this sense he is not advocating the imitation of the classical canon but of its origins.
[xxxv] On this issue see Fenelon, *Lettre sur les occupations a l'Academie Francoise*, (1st ed. 1714) Glasgow edit. 1750. pp. 100, 106. and Voltaire, *Temple du Gout*, 1733 , Oeuvres, ed. Granier, VIII, p. 561.
[xxxvi] Cassirer notes that the concept of *Delicatesse* expressed lightness and flexibility of thought and the ability to understand fine shades of meaning. In aesthetic terms the word referred less to the content of thought but to the process of thinking itself. Thus for Laugier the Corinthian column possesses a gentleness, harmony, natural ease and grace of design that is understood, by the connoisseur of architecture, as a result of the *Delicatesse* of its creator. Ernst Cassirer, *The Philosophy of the Enlightenment*, Princeton University Press, Princeton, 1951, pp. 300- 301.
[xxxvii] Domonique Bouhours (1632-1702) a Jesuit priest and critic who wrote widely on many subjects both religious and secular including art.
[xxxviii] Laugier had of course been criticized on just this issue. Many believed that Laugier was simply providing a posteriori rationalization for his own subjective taste. The charge is grounded. His application of the Empirical method is loose and unscientific at best.
[xxxix] Laugier, *An Essay on Architecture*, Trans. Herrmann, Hennessey and Ingalls, Inc. Los Angeles 1977, pg. 1.
[xl] Ibid., pg. 3.
[xli] Ibid., pg. 3.
[xlii] Ibid., pg. 12.
[xliii] That Laugier consciously conceived of the 'Primitive Hut' as a rational principle and not as a past origin is evidenced in his consistent use of the term 'principle' when referring to the hut throughout the Essai.
[xliv] Laugier provides this analysis. "The parts that are essential are the cause of beauty, the parts introduced by necessity cause every license, the parts added by caprice cause every fault." *An Essay on Architecture*, *Avertissement* to the second edition, Trans. Herrmann, Hennessey and Ingalls, Inc. Los Angeles 1977, pg. 12.
[xlv] Ibid.
[xlvi] Kruft, *A History of Architectural Theory*, Zwemmer, Princeton Architectural Press, New York, 1994, pg. 152.
[xlvii] Laugier, *An Essay on Architecture*, *Avertissement* to the second edition, Trans. Herrmann, Hennessey and Ingalls, Inc. Los Angeles 1977, pg. 152.
[xlviii] The term functionalism has been applied in many ways over the years. Early 18th century architects, such as Mansart, showed a concern with plan distribution and organization that has been called functionalism. This is derived from use or utility. Italian theorist of the same period, often considered the originators of functionalist theory, interpreted function in a slightly different way See Lodoli below in part two. Laugier though is referring to the function of a given architectural element, its structural function. According to Kruft: "In the proposition that truth of architecture lies in its structural logic, Laugier formulates a new concept of functionalism superseding that which had been current at the beginning of the century and had been orientated towards usage. (functionalism understood in terms of use). Laugier thus becomes one of the initiators of the nineteenth and twentieth century debate about functionalism." *A History of Architectural Theory*, Zwemmer, Princeton Architectural Press, New York, 1994, pg. 153.
[xlix] While Laugier provides a single type form from which all architecture is to be deduced later theorists found this image to reductivist. The theory of type was greatly explored in the latter half of the 18th century. Quatremere de Quincy would expand the idea into three origin type forms, the hut, the cave and the tent.
[l] Laugier *Discours sur le retablissemeut de l'architecture antique*; Paris 1760, quoted Mondain Monval, *Soufflot, sa vie*, pg. 506. Cf. also Laugier, *Observations*, pp. 120, 122, 159, 180-185, 288. Translation Rizzuto. Ste. Genevieve is widely recognized as a continuation of the Greco-gothic Ideal as manifested in Laugier's *Essai* most particularly in its typological format using Laugier's perfered Latin cross plan.

[li] Middleton asserts that the precedent for the portico was the temple of Balbek, and the change in level from the nave floor to the side aisles on the interior was inspired by Piranesi's Prima parte di architettura e prospettive (1743) pls 16c, d, as well as the chapel of the Communion at St. Jean-en-Greve.
[lii] Quoted Mondain Monval, Soufflot, sa vie, p. 423. Reprinted in Middlton, The Abbe de Cordemoy and the Greaco-gothic Ideal, The Journal of the Warburg and Cautauld Institute, vol 26. no 1/2. 1963, p. 106. trans. Tony Rizzuto. "Le principle objet de M. Soufflot en batissant son eglise a ete de reunir, sous une des plus belles formes, lagerete de la construction des edifices Gothiques avec la purete et la magnificence de l'architecture Greque."
[liii] Middlton, The Abbe de Cordemoy and the Greaco-gothic Ideal, The Journal of the Warburg and Cautauld Institute, vol 26. no 1/2. 1963, p. 108.
[liv] There is ample evidence to show that Patte's rebuke of Soufflot was motivated more by his personal issues with Soufflot then with any sound analysis and concern. Patte had gone up for a job as inspector on La Madeleine, as Controller of Royal Buildings in Paris it was Soufflot who would have to make the final recommendation. Believing that Patte had yet to garner enough experience for such a task he failed to recommend him. While Soufflot attempted to make amends with Patte he harbored a continued grudge. Ironically, Soufflot in an attempt to appease him sent him to London along with N.H. Jardin to study St. Paul's and to meet with Sir William Chambers as part of the structural research on Ste. Genevieve.
[lv] Kenneth Frampton, *Studies in Tectonic Culture: The Poetics of Construction in Nineteenth and Twentieth Century Architecture*, The MIT Press Cambridge & London, 1996, pg. 33.
[lvi] Middlton, The Abbe de Cordemoy and the Greaco-gothic Ideal, The Journal of the Warburg and Cautauld Institute, vol 26. no 1/2. 1963, p. 120.
[lvii] Anthony Vidler has done much to explore the idea and development of type in the eighteenth and nineteenth centuries. His argument is that the concept of type oscillated between mystic symbolism and rationality. In either case it is important to recognize that it is derived from the epistemology of sciences desire to ground all knowledge in what it defines as first principles. Science as it was espoused during the period between 1600 and 1800 continuously vacillated between the Cartesian notion of innate ideas- placed in the mind by God- and nature as the ultimate source of reason. In Vidler's case of mystic symbolism the ultimate image is that of Solomon's Temple, itself an innate idea planted in the mind by God. As such it is not out of step with Descartes notion of innate ideas imprinted on the mind as images in wax. See Descartes *Discourse on Method*. It is the clarity of the innate idea that is of importance to Descartes and in the case of architectural references to Solomon's Temple that mysticism is crouched in mathematical figures. While still beholden to the mysticism of the classical notion of *mathmesis* it is nonetheless grounded in mathematical reasoning and method. In either case the 'type' serves as origin point and is therefore closely associated with universal law or first principle. See Vidler, The Idea of Type: The transformation of the Academic Ideal, 1750- 1830, *Oppositions Reader*, edit. Eisenman, Frampton, Gandelsonas, Vidler, Forster, Agrest, Princeton Architectural Press, New York, 1989, pp. 439- 45.
[lviii] Anthony Vidler, The Production of Types, *Oppositions Reader*, edit. Eisenman, Frampton, Gandelsonas, Vidler, Forster, Agrest, Princeton Architectural Press, New York, 1989, pp. 437. Vidler notes the first is related to Neo-platonic notions of the *eidos* as a priori forms found in nature; the second is based upon a newer understanding of the production of type forms. But it must also be noted that Laugier's 'little rustic hut' -as origin and basic type form for architecture-has less the characteristic of the Platonic *eidos*-whose manifestation in reality is infinitely diverse- and more the characteristic of Descartes a priori innate idea whose clarity is its mark of truth and reason. In the *Discourse on Method* the more pure the manifestation of the innate idea- the more it is in possession of clarite- the closer to truth it is, and the more exemplary it is of absolute reason. In Laugier's systematic doubt the origins of architecture and its attendant form is reduced to the purest manifestation of the type in an attempt to achieve a more rational and true work from which to uncover the first principles of architecture.
[lix] This emphasis on internal disposition and its expression on the exterior of the building can be found in Salomon de Brosse' Luxemburg Palace in Paris (1614) and Francois Mansart's Chateau de Maisons (1642).
[lx] Boffrand, Germain, *Livre d'architecture contenant les principles generaux de cet art*, Paris 1745(facs reproduction with *La figure equestre de Louis XIV* [1743], Farnborough 1969) pg. 10.
[lxi] Ibid. pg. 8.
[lxii] Ibid. pg. 16.
[lxiii] Carolus Linnaeus (1707- 78) was a Swedish Botanist and considered the founder of the binomial system of nomenclature and the originator of modern scientific classification of plants and animals. His system of

classification was published in *Systema naturae* of 1735. Despite the artificiality of his system of classification it still remains the basis of modern taxonomy.

[lxiv] Jacques Francois Blondel, *Cours d'architecture*, Paris, 1771- 1777, vol. 2, p. 229.

[lxv] Late Renaissance theory in particular Mannerist theory was concerned with the expression of personality or qualities thus in the case of Serlio we have the development of systems of rustication designed to express the personality of the client, or the idea from his set designs where environment is an expression of social status and theatrical form; Rustic for Comedy, Gothic for Drama and Classical for Tragedy.

[lxvi] Vidler, Anthony, The Idea of Type: The transformation of the Academic Ideal, 1750- 1830, *Oppositions Reader*, edit. Eisenman, Frampton, Gandelsonas, Vidler, Forster, Agrest, Princeton Architectural Press, New York, 1989, pp. 437.

[lxvii] Boullee was a teacher originally trained as a painter. While he did not build he is most noted for a series of large scale drawings and projects and his theoretical work Architecture, *Essai sur L'Art*, an unpublished manuscript that he provided to his students. Influenced by the great Piranesi he maintained a painterly interest in the dramatic use of lighting and shade. In his teaching and writings he argued for character, grandeur, magic, poetry and the use of emotions rather than intellect in architecture. In this way his theories might be considered counter to the Enlightenment episteme. But his work is still characteristic of the age in that he limits the use of ornament and works toward a simple geometry.[lxvii] Boullee like Laugier kept the column as a pure form, freestanding and hence no engaged in the wall, composing facades essentially with two elements the uninterrupted row of columns and the un-modulated blank wall. He used the columnar screen as an honorific distinction.

[lxviii] Thus his project for the Ministry of Justice presents the allegory of virtue triumphing over vice with the courthouse placed on top of the prison, whose low, rusticated form appears to be sinking into the ground, a metaphor suggesting that incarceration is tantamount to death. His Palais National designed for the government of the revolution presented a blank façade inscribed with the Constitution after the manner of the biblical tablets brought down from Mt. Sinai by Moses.

[lxix] Boullee said of this project "Oh Newton! Since by the magnitude of your wisdom and sublimity of your genius, you have determined the shape of the earth as a perfect sphere, I in turn have conceived the project of enveloping you within your discovery . . . I wanted to characterize your sepulcher with the figure of the earth. . . The interior of this sepulcher is conceived in the same spirit. Utilizing your divine system of the unifying cosmic principle of gravity . . . the form of the monument is a vast sphere with the tomb at its center of gravity and the surface like a clear night, produced by the stars that ornament the dome of the sky."

[lxx] Rowe, Character and Composition, *Oppositions*, 2, January 1974.

[lxxi] Vidler, Anthony, The Idea of Type: The transformation of the Academic Ideal, 1750- 1830, *Oppositions Reader*, edit. Eisenman, Frampton, Gandelsonas, Vidler, Forster, Agrest, Princeton Architectural Press, New York, 1989, pp. 447.

[lxxii] Quatremere de Quincy, article "Allegory" in the *Dictionnaire historique d'architecture, comprenant dans son plan les notions historiques, descriptives, archaeologique, biographiques, théoriques, didactiques et pratiques de cet art*. 2 vol.s Paris, 1832, translation Samir Younes republished in *The True, the Fictive , and the Real The Historical Dictionary of Architecture of Quatremere de Quincy*, Samir Younes, Andreas Papadakis , London, 1989. pp. 61.

[lxxiii] Antoine Quatremere de Quincy, *Encyclopédie Méthodique d'Architecture*, vol. I (Paris, 1788) article 'caractere' pp. 477- 521.

[lxxiv] See Vidler, , The Idea of Type: The transformation of the Academic Ideal, 1750- 1830, *Oppositions Reader*, edit. Eisenman, Frampton, Gandelsonas, Vidler, Forster, Agrest, Princeton Architectural Press, New York, 1989, pp. 448.

[lxxv] Silvia Lavin, , *Quatremere de Quincy and the invention of a Modern Language of Architecture*, The MIT Press, Cambridge London, 1992, pg. 86.

[lxxvi] Laugier's 'primitive hut' had been an attempt to locate the origins of architecture in nature. In point of fact, the origin myth revealed the distinction between 'nature' and 'culture'; the moment when man ceased to be a part of nature and became a part of a civil society. In the eighteenth century writers like Home, De Pauw Rousseau and Vico attempted to find that moment at which man emerged from the primeval forest not as beast, but as man, and what aspects defined that moment. That quest for origins produced three defining aspects of civilization and its artifice; society, man had to form into social groups with some formal hierarchy; language, man needed some system of convention whereby he could

communicate and maintain the system of political hierarchy necessary to stabilize society; and architecture, the necessity of defining or making space.

Architecture qua architecture was not necessarily brought into the picture. Both Vico and Rousseau instead chose to refer to the marking of space for the purpose of agriculture or religious ritual as a unique period in that the concept of property ownership has (or rather was seen as having) no parallel in nature. The claim to space is then achieved through the marking, as a form of *memoria*, of a specific territory or plot of land. As such architecture comes into being.

In no way did the eighteenth century conceive of these as autonomous or a priori to civilization, but rather coterminous, that civilization occurs at the moment when all three come into being. Furthermore, none were seen as determinate in a direct causal way, rather that each of the three affects each other and the process of civilization affects each.

Theorists had begun to posit questions about the nature of the three; society language and architecture, what they had in common and how they might be related. Linguistics based in the traditions of etymology and philology had begun searching for the origins of speech acts themselves, as well as a universal grammar which might underlie all languages and point to a theory of mind. Vico's *New Science* and Rousseau's *1st and 2nd Discourses*, as well as his *On the Origin of Language* were important and influential works in certain circles at the time. In was in this way that the linguistic paradigm entered into the discourse of architecture, not as a direct correspondence but as an analogic comparison, motivated by the desire to find a universal grammar appropriate to architecture.

[lxxvii] Antoine Quatremere de Quincy, *Encyclopédie méthodique*, 3:424. "extracts from the Encyclopédie méthodique d'Architecture." Introduction by Tanis Hinchcliffe.9H, 7 1984, 25-40

[lxxviii] Ibid., vol. I (Paris, 1788) articles "abuse" and "allegorie."

[lxxix] In the Italian aesthetic discourse this had a long standing tradition in the theories of the impressa.

[lxxx] Quatremere de Quincy, De l'architecture egyptienne consideree dans son origin, ses principes et son gout, et compare sous les memes rapports a l'architecture greque. Le prix propose par l' Academie des Inscriptions et Belle- Lettres, Paris 1803. p. 59.

[lxxxi] For a complete interpretation of how contemporary linguistic theory shaped the architectural theory of Quatremere de Quincy see Sylvia Lavin, *Quatremere de Quincy and the invention of a Modern Language of Architecture*, The MIT Press, Cambridge London, 1992.

[lxxxii] Quatremere de Quincy, De l'architecture egyptienne consideree dans son origin, ses principes et son gout, et compare sous les memes rapports a l'architecture greque. Le prix propose par l' Academie des Inscriptions et Belle- Lettres, Paris 1803. p. 15-16.

[lxxxiii] Ibid. p. 239.

[lxxxiv] Quatremere de Quincy, in the *Dictionnaire historique d'architecture, comprenant dans son plan les notions historiques, descriptives, archaeologique, biographiques, théoriques, didactiques et pratiques de cet art*. 2 vol.s Paris, 1832, translation Samir Younes. Article "Type" republished in *The True, the Fictive , and the Real The Historical Dictionary of Architecture of Quatremere de Quincy*, Samir Younes, Andreas Papadakis , London, 1989. pp. 255.

[lxxxv] Ibid., article "Type". pp. 254-5.

[lxxxvi] Silvia Lavin, , *Quatremere de Quincy and the invention of a Modern Language of Architecture*, The MIT Press, Cambridge London, 1992, pg. 98.

[lxxxvii] Quatremere de Quincy, *Dictionnaire historique d'architecture, comprenant dans son plan les notions historiques, descriptives, archaeologique, biographiques, théoriques, didactiques et pratiques de cet art*. 2 vol.s Paris, 1832, translation Samir Younes. Article "Character" republished in *The True, the Fictive , and the Real The Historical Dictionary of Architecture of Quatremere de Quincy*, Samir Younes, Andreas Papadakis , London, 1989. pp. 108.

[lxxxviii] Ibid., Article "Type". pp. 256.

[lxxxix] Ibid., Article "Character" pp. 108.

[xc] Rondelet, *Traite*, intro. P. XXVI, Paris 1830,

[xci] Ibid., intro. P. XXVI, Paris 1830,

[xcii] "La Théorie, est une science qui dirige toutes les operations de la pratique. Cette science est le resultat de l'experience et du raisonnement fonde sur les principes de mathématique et le physique appliquées aux differentes operations de l'art. C'est par le moyen de la theorie qu'un habile constructeur parvient a determiner les formes et les justes dimensions qu'il faut donner a chaque partie d'un edifice en raison de sa

situation et des efforts qu'elle peut avoira soutenir, pur qu'il resulte perfection solidité et économie" Rondelet, *Traite Théorique et pratique de l'art de batir*. Paris 1802, Vol 1, p. v.

[xciii] Perez- Gomez, *Architecture and the Crisis of Modern Science*, The MIT Press, Cambridge, Mass., 1992, pg. 287.

[xciv] Donald Egbert, *The Beaux- Arts Tradition in French Architecture*, edit. D. Van Zanten, Princeton University Press, Princeton, 1980, pg. 47.

[xcv] Durand not only studied with Boullee he worked for him in 1776. There is in fact speculation that some of Boullee's designs might have even been drawn up by Durand.

[xcvi] Several historians have pointed out that many of Durand's designs are in fact variations on earlier designs of Boullee's, but where Boullee was concerned with the symbolic use of geometric form Durand pursued a technical and economical use of geometry in his work. His designs while inspired by his master show a fundamentally different character.

[xcvii] Antoine Louis Claude Comte Destutt de Tracy, a French philosopher and psychologist he was important for his leadership of the Ideologists; disciples of Condillac. Starting from Condillac's reduction of consciousness to the reception and combination of sensations, he developed a philosophy of education for post- revolutionary France. His major work the series *elements d'idéologie* was published between 1801-1815. It followed up on the philosophy psychology and economics of Condillac. Like Condillac he sought to ground value in psychology particularly utility. It is the centrality of utility in his theories and their application to his philosophy of education that is of importance here.

[xcviii] Durand, *Precis*, vol. I pg. 18.

[xcix] Durand exerted influence over the Ecole des Beaux Arts through his friend Rondelet who taught there and also through the students he taught privately in his own home. His reach was further extended when two of his students from the Polytechnique attended the Ecole des Beaux- Arts, won the Grand Prix and then later headed atelier's of their own.

[c] The reference here is to Charles Perrault's *Parallele des ancienes et des modernes* which started the Quarrel between the ancients and moderns at the dawn of Cartesian influence.

[ci] This idea was most likely taken from Le Roy who presented a comparative table of the evolution of the temple design in his *Ruines* of 1770. Gabriel- Pierre- Martin Dumont also published two plates illustrating theaters in 1764. See Middleton & Watkin, *Neoclassical and 19th Century Architecture I, History of World Architecture*, Electra/ Rizzoli, New York, 1993, pg. 29. And Werner Szambien, 'Durand and the Continuity of Tradition, printed in *The Beaux- Arts and Nineteenth- Century French Architecture*, edit. Robin Middleton, The MIT Press, Cambridge, Mass., 1982, pg. 27. Szambien also notes the title comes from Freart de Chambrey and Dumont's *Paralleles.*

[cii] Vidler, , The Idea of Type: The transformation of the Academic Ideal, 1750- 1830, *Oppositions Reader*, edit. Eisenman, Frampton, Gandelsonas, Vidler, Forster, Agrest, Princeton Architectural Press, New York, 1989, pp. 451.

[ciii] Baron Georges Cuvier was a French naturalist who taught at The Jardin des Plantes from 1795. He became permanent secretary (1803) of the Academy of Sciences and was later made Chancellor of the University of Paris. He was a pioneer in the field of comparative anatomy originating the system of zoological classification comprised of four phyla based on the differences in skeletal structure and organs. His more important works include; *Tableau élémentaire de l'histoire naturelle des animaux* of 1798, *Memoires sur les espèces d'elephants vivants et fossils* of 1800 and *Leçons d'anatomie compare* in five volumes published from 1801- 05.

[civ] Joseph Rykwert, 'The Ecole des Beaux- Arts and the Classical Tradition', printed in *The Beaux- Arts and Nineteenth- Century French Architecture*, edit. Robin Middleton, The MIT Press, Cambridge, Mass., 1982, pg. 16.

[cv] Serio Villari, *J.N.L. Durand (1760- 1834) Art and Science of Architecture*, Rizzoli, New York, 1990, pg. 57.

[cvi] In Durand's theory not only is Laugier's 'Primitive Hut' rejected because of its origins in a theory of imitation but also those 18th century theories of type derived from it, this would include the 'Primitive Cave", and 'Primitive Tent" of Quatremere de Quincy as well.

[cvii] Serio Villari, *J.N.L. Durand (1760- 1834) Art and Science of Architecture*, Rizzoli, New York, 1990, pg. 66.

[cviii] Perez- Gomez, *Architecture and the Crisis of Modern Science*, The MIT Press, Cambridge, Mass., 1992, pg. 298.

[cix] Durand, *Precis*, vol. I, pg. 18.
[cx] Durand had launched an attack on Soufflot's design for the Pantheon precisely on this issue claiming that it would have been more economical if designed with a large circular plan covered by a dome. He designed just such a version as proof.
[cxi] Vidler, , The Idea of Type: The transformation of the Academic Ideal, 1750- 1830, *Oppositions Reader*, edit. Eisenman, Frampton, Gandelsonas, Vidler, Forster, Agrest, Princeton Architectural Press, New York, 1989, pp. 452.
[cxii] Werner Szambien, 'Durand and the Continuity of Tradition', printed in *The Beaux- Arts and Nineteenth-Century French Architecture*, edit. Robin Middleton, The MIT Press, Cambridge, Mass., 1982, pg. 20, 32.
[cxiii] Durand, *Precis*, Paris, 1819, vol. I pg. 8.
[cxiv] Ibid., 1817-19, part 2, section 3, p. 91.
[cxv] Leonardo Benevolo, *History of Modern Architecture*, Cambridge Mass., 1971, vol. I, pp. 34- 35.
[cxvi] See Martin Goalen, 'Schinkel and Durand: the case of the Altes Museum', printed in *Karl Friedrich Schinkel a Universal Man*, edit. Michael Snodin, Yale University Press, New Haven, 1991.
[cxvii] Goalen notes that it was Professor Donaldson at University College, London, whose examination papers and prospectus relied on Joseph Quilt's *Encyclopedia of architecture* and Durand's *Precis* as texts. Goalen, 'Schinkel and Durand: the case of the Altes Museum', printed in *Karl Friedrich Schinkel a Universal Man*, edit. Michael Snodin, Yale University Press, New Haven, 1991, fn. 21.
[cxviii] While this idea actually has its roots in Italy most notably with Fra Carlo Lodoli, as we will see in the next section, his understanding of the nature of materials and its effect on form is fundamentally different from that of Durand.
[cxix] Durand, *Precis*, vol. I, pg. 19.
[cxx] Emil Kaufmann, *Architecture in the Age of Reason*, Cambridge, Mass. 195, pg. 212.
[cxxi] Serio Villari, *J.N.L. Durand (1760- 1834) Art and Science of Architecture*, Rizzoli, New York, 1990, pg. 67.

Chapter 10: The Epistemological Parameters of a Rational Tectonics

> "It is good sense, reason, which achieves all: virtue, genius, spirit, talent, taste. What is virtue? It is reason put in practice. And talent? Reason brilliantly set forth. Spirit? Reason well expressed. Taste is simply refined good sense, and genius is reason sublime."[i]
>
> M. J. Chenier 1842

The Epistemological Parameters of a Rational Tectonics

The epistemology of science could be said to be part of a long standing Rationalist tradition in Western thought, one that goes as far back as Plato, in which the notion of a perfect vision of the world is accepted. Historically this vision had been caught up in a belief in the mathematical or geometrical structure of the world, a world in which a method akin to the isolated truths of mathematics would allow for the attainment of truth.[ii] While not the sole tradition of thought in the West it was by far the most dominant and influential.[iii] Within the rationalist tradition there is the belief that with the right amount of discipline and logic, knowledge can be attained. Such a vision of a tidy rationally ordered universe transparent to human thought has long been a staple of our way of thinking.

There are three propositions upon which all such Rationalist traditions in the West, either Christian or Pagan, stood upon:

1. The first proposition is that all genuine questions can be answered. This was a central tenet of Scholasticism, the Enlightenment and the Positivist traditions and could be said to be the backbone of Western thought in general.
2. The second proposition is that all these answers are knowable, that is to say that they can be discovered by means that can be learnt or taught. That there is a given technique from which all answers are knowable.
3. The third great proposition is that all answers are compatible that is to say that they do not in any way pose contradictions. Contradictions in knowledge are seen as the result of false answers. An example of this is Einstein's goal of finding the formula that explains all formulas, the one law from which all laws are derived, a goal still actively sought in physics.

At the heart of these propositions, is the belief that the world is a finely ordered rational whole that follows a given plan or structure, and furthermore that that order or structure is inherently stable. Even when one assumes change, growth and development it is perceived to take place alone a set of fixed and identifiable rules. There is of course absolutely no means of proving such a hypothesis; that of a perfectly ordered rational system of rules governing the universe, but this is irrelevant, it is the necessary starting point for the construction of a worldview in the first place.

The epistemology of science was certainly part of this larger tradition but it offered a particular version or interpretation of such propositions, radically transforming them. While it is hardly true that the thinkers of the sixteenth, seventeenth and eighteenth centuries were all of a kind and in total agreement on every aspect of thought they did

hold in common a set of basic assumptions which structured the general trend in thought at the time. These assumptions established the core of the epistemology of science and made it distinct from the previous interpretations of the Rationalist tradition. They are essentially what distinguish the epistemological rupture we call Modernity.

1. *An absolute faith in reason.*

   Underlying this was a belief that reality, or nature, as the 'thing-in-itself' was a single, fixed, and stable whole, subject to a single structure of logically connected laws and generalizations that governed plants, animals and man. What's more that these laws were discoverable by man and could be verified by scientific method, a position not adhered to previously.[iv]

2. *The belief in a universal claim to humanity.*

   Like Nature, Man is a constant and all men possessed the same universal goals, such as happiness, knowledge, justice and liberty. These goals, or concepts, are essentially objective, common to all men, attainable and compatible. Such a construct begins to formulate Human nature as largely unaltered by place, and time, more over the conception of improvement and goals not only sets up a teleological structure to understanding human history but establishes a frame for value judgments that get carried over into social institutions such as religion, politics, art, science and technology.

4. The possibility of attaining the second by means of the first.

   Underlying this attitude toward knowledge is the belief that if the world could be rationally decoded we could create a world in which pain, and suffering,

> evil and vice no longer existed. We could essentially create a Utopia. Conversely along with this belief is it's inherent opposite; that pain and suffering, evil and vice are the product of non- rational thinking. I use the term non- rational here as opposed to irrational because the critique is not solely against the complete lack of reasoning but usually against all forms of thinking and reasoning save a particular kind. The result of this is that ethics and virtue are now inextricably linked to knowledge defined as that specific kind of reason.[v]

What the epistemology of science did was to substitute for the myriad means of accessing reality and human experience a specific method, the method of logical rational deduction found in mathematics or the inductive method of the natural sciences. What it could be said to have done was to push the issue to its 'illogical' conclusion, literally forcing a confrontation with the limits of such an *a priori* belief.[vi]

According to Habermas: "The project of modernity as it was formulated by the philosophers of the Enlightenment in the eighteenth century consists in the relentless development of the objectivating sciences, of the universalist foundations of morality and law, and of autonomous art, all in accord with their own immanent logic. But at the same time it also results in releasing the cognitive potentials accumulated in the process from their esoteric high forms and attempting to apply them in the sphere of praxis, that is, to encourage the rational organization of social relationships."[vii] The relentless development of 'objectivating science', as Habermas calls it, radically altered the rationalist tradition

not only resulting in a mechanistic worldview but also resulting in the transformations of the definitions of truth, nature, man, production, and social structures.

> "The eighteenth Century is imbued with a belief in the unity and immutability of reason. Reason is the same for all thinking subjects, all nations, all epochs, and all cultures."
>
> Ernst Cassirer
> *The Philosophy of the Enlightenment*

Reason in the form of Episteme

At the core of rational tectonics and architecture is the necessity to rationally define both the theoretical principles of design and the construction process. While design has always been reasonable it is the definition of reason as defined by the epistemology of science that marks the first parameter of rational tectonics; reason in the form of *episteme* as the starting point of design.[viii] How then is this definition of reason distinct from that of Classical tectonics?

For Socrates, reason reflected on the true nature of things understood as the thing-in-itself. In its ultimate form, reason should determine beliefs and regulate relations between men and between man and nature. The *daimonian*, in Socratic philosophy, or the Soul, in Platonic thought, might have been a mental faculty but it was trained on a reality extrinsic to it and in this sense held to a notion of a concrete reality and external truth beyond the faculty of thinking and consciousness.

This extrinsic characteristic of reason could be found not only in Plato and Aristotle, but also in Scholasticism and German Idealism where it was based in relations among human beings, social classes, social institutions and in nature and its manifestations. Its'

aim was to evolve a comprehensive system or hierarchy of all beings, including man and his aims. In this sense reason was the *logos* of man's understanding of the world, the mechanism of how we situate ourselves within the substrate of the world.

The degree of reasonableness of human actions was based upon the harmony of such actions with its totality. As Max Horkhiemer noted, it was this definition of reason that possessed "as its essence a structure inherent in reality that by itself called for a specific mode of behavior in each specific case be it practical or theoretical."[ix] In the philosophy of Ancient Greece *phronesis* was the vehicle of practical reasoning focused on the particularities of a given situation that allow men to function together such that the dialectic of *techne* and *phronesis* revealed the higher truth. In this sense reason originally meant a means for understanding ends, for their determination. In other words its emphasis was on ends not means.[x]

But this changed with the development of the epistemology of science. The alteration in definition was the by product of the new metaphysics and its duality. Reason was now an aspect of the *res cogitans,* the subjective mind, and hence divorced from the extrinsic reality of the *res extensa.* While this shift was undoubtedly brought about by Descartes metaphysics and theory of mind, it must be remembered that it was not only Descartes reason, but Newton's laws and the analytic method of his physics; not just abstraction and definition, but observation and experience that defined reason as such.

This definition established reason as a faculty divorced from extrinsic reality, disconnecting it from the various structures which make up the lived experience. According to Horkheimer "The present crisis of reason consists fundamentally in the fact that at a certain point thinking either became incapable of conceiving such objectivity at

all or began to negate it as a delusion."[xi] Reason became separated from *phronesis* as right action and in the process became highly theoretical and in the end an abstraction. It became a form of *episteme* to use the classical terminology. It is important to note that Enlightenment thinkers who so promoted the values of individual reason envisioned it to do just the opposite and appear to be unaware of the consequences of this.

This is fundamentally problematic as thought and reason serve any particular endeavor, good or evil, as Horkhiemer claims "Reason has never really directed social reality, but now reason has been so thoroughly purged of any specific trend or preference that it has finally renounced even the task of passing judgment on man's actions and way of life."[xii] In such a context all ethical, moral, political and aesthetic judgments fall outside of such concepts and the precept of reason itself. In the end, He asserts "Reason has finally renounced even the task of passing judgment on mans actions and way of life."[xiii] The essential problem with reason defined as *episteme* is that concepts such as justice, equality, tolerance which were once sanctioned by reason are now divorced from it, meaning there is no means of linking them to external reality either, in essence they too become abstract concepts, emptied of their content and devoid of a practicum.

". . . All reality, physical and social, is transformed into the 'ensemble of means' that actively and fully integrates the particular into an objective order."
Donald Phillip Verene
Vico's Science of Imagination[xiv]

Technique as Instrumental Order

The second parameter of rational tectonics is the operational motif of mechanical efficiency. In architecture this motif manifested itself in the Mechanism of Structure and the Mechanism of Disposition, but its basis lies in the reformulation of techne following the redefinition of reason as *episteme*. As Heidegger has noted, techne is no mere means, but rather an operational motif of framing and constructing 'truth' in any given age. [xv] How a given age defines techne becomes an important question precisely because it plays a significant epistemological role. Technology, therefore, cannot be seen as simply a means to ends, a tool, but rather must be understood from the perspective of its epistemological parameters, precisely because those parameters pose metaphysical limitations. Thus the question is one that concerns the nature of how the form of techne constructs truth and thereby creates human 'being' in the world.

What then is the form of techne proposed by the epistemology of science, how does it construct truth? The goal of the new science was to establish a rational mathematical order of the universe. The task of knowledge was no longer to define what a thing 'is', what makes it distinct, its 'essence', but how it was mathematically related to everything else. The world of objects was reduced to mathematical homogeneity, a uniform system of exchange, related to each other through a common set of principles. This was done through the systematic factoring out of the qualitative characteristics. In the process

causality was reduced to the quantitative characteristics as the epistemology of science sought a mechanism through which all things could be reduced to a single order or formative principle. In its reduction to the formal and material causes the ordering system of techne was reduced to those properties subject to the new definition of reason making it coincident with reason itself.

That order was metaphorically expressed in the mechanistic image of the world and the formative principle of simplicity and efficiency proven through mathematical demonstration. Science presents the world of nature, as clear self-evident means to ends. Just as nature is efficient and uses an economy of forces to achieve many ends, the world of human creation, the domain of techne, is subject to the same principle of mechanical efficiency.

It is important to note that the mechanical image of nature and the principle of mechanical efficiency are neither technology, nor the machine. They are a motif of operation, a system of organization. It exists at all levels of thought and not a mere outward manifestation of mechanized systems of production in the form of mass production.[xvi] It is mechanical in its precision relating all orders to a means of calculability. It is not the possibility of mechanization as a system of organization but rather the domination of all systems of organization by the concept of mechanical efficiency that is its hallmark.

In this new form, the choice of means is less a subjective decision between equally potential methods as an attempt to attain the best method in an absolute sense. It has become the search for the one best means in any given field. Here mathematical calculation becomes the determining factor, as opposed to personal preference, tradition

or ritual. The final solution is the one which can be demonstrated mathematically to be the most efficient means. In essence, means is reduced to the science of means. In the process techne becomes a form of rational demonstration. In this sense it has become instrumentalized.

Jacques Ellul has termed this new system of organization 'Technical Phenomena', Martin Heidegger referred to it as 'Standing Reserve' and Louis Mumford 'Technics'. [xvii] For the purpose of clarity in this text I will use the term techne to refer to the philosophical concept of *poesis* and making in all eras, technology to refer to any specific means of production, *phronetic-techne* to refer to the epistemological structure of techne as defined by classical tectonics, and 'Technique' to refer to the system of organization generated by the epistemology of science.[xviii]

As Ellul has noted in technique all forms of ordering are ontologically tied together. Cognitively, technique becomes a system of consciousness and thinking that conforms to the motif of operation, or system of organization, known as mechanization. Its' overall tendency is to push for the achievement of a highly sophisticated solution to a generalized problem. The ordering system becomes reducible to a fundamental law that serves as its motif. As science seeks the universal, technique seeks to establish a universal means, a motif, that satisfies the needs and requirements of the problem as outlined in the most efficient manner. Verene calls this the 'technical concept'.[xix]

In the traditional Aristotelian notion of concept particular objects or events are analyzed to extract a series of similar properties out of which a universal classification can emerge. This comes at the expense of the essential and accidental properties of the particular. At its highest level the universal can provide no determination of individual

particularities, the universal and the particular are fundamentally split. It is at this level, as pure concept, that it has no ability to connect with or follow the course of a physical event or object. In Aristotelian terms it is pure *theoria*.

Verene notes this is not the case with technique and the technical concept. In technique the relationship between the particular and universal is established as a functional procedure; the efficiency of means, which now stands in as technical concept, effectively replacing the universal as operative concept. The technical concept becomes wholly active and possesses the power to force the particular- be it object or process- into the mold of the functional procedure. According to Verene; "Through increased consciousness of the nature of procedure, the particular event is made to fit the law of the [technical] concept in a specific and workable fashion. As the thought-form of technique comes to be understood, all reality, physical and social, is transformed into the 'ensemble of means' that actively and fully integrates the particular into an objective order. . . . The technical concept does not follow nature; it supersedes the reality of nature." [xx] The technical concept- the motif of mechanical efficiency- effectively replaces the dichotomy of particular and universal, reducing the epistemological structure of the world and human 'being' to the operational motif of mechanical efficiency. It focuses its attention on the actual process, the organization of technique, and its own efficiency.

As Heidegger noted, in its classical form of *poesis*, techne served as a form of revelation, a bringing forth, not only of a product but also an understanding of the world and truth. [xxi] Yet technique serves to reveal only itself as technical concept. It reveals nothing outside its own mechanization. In this sense technique is not only

instrumentalized but autonomous and self-reflective, a form of regulation in a perpetual state of re-securing itself.

There are two serious consequences of this restructuring of the epistemology. The first is the obvious lose of any relationship to ethics. The epistemology of science provides no structure or framework for ethical judgment or evaluation outside its own mechanism of efficiency. This in turn leads to the concept that techne, the system of organization used- in this case the scientific method or technical phenomena- appear neutral. This has far reaching theoretical and practical implications that lead to the remaining parameters of rational tectonics.

> "Technique in its tendency toward totalization literally obliterates the existing framework of relationships between man and nature and man and culture forcing such relationships to mirror the structure of technique itself."
>
> Jacques Ellul
> *The Technological Society*[xxii]

Technique and the Means/Ends Equation

Like the definition of reason it is tied to, technique contains no external system of ethics from which to guide it. According to Horkhiemer "Reason is used to connote a thing or an idea rather than an act, it refers exclusively to the relation of such an object or concept to a purpose, not to the object or concept itself. It means that the thing or the idea is good from something else. There is no reasonable aim as such, and to discuss the superiority of one aim over another in terms of reason becomes meaningless."[xxiii] The same holds true for technique which has become coincident with it. It is concerned with

the adequacy of procedures and attaches little importance to whether the purpose is reasonable.[xxiv] To discuss the superiority of one aim or end over another becomes meaningless if and when the only system of evaluation is the efficiency of means. Technique is a means of action and not a means of evaluation of action. This is the third parameter of rational tectonics it's concentration on means as opposed to ends in the means/ends equation.

In classical tectonics the experiential structure of *phronesis* and its classification as a virtue that suffuses knowledge meant it resisted any distinction between means and ends or the possession and application of techne. If anything it focused more on ends. It was this characteristic of *phronesis* that made *phronetic-techne* resistant to instrumentalization in terms of the means ends equation.

Technique does not include the experiential knowledge of *phronesis,* effectively rupturing the concept of *phronetic-techne.* In the end we are left only with Aristotle's 'official' techne as a form of *episteme* and not his more complex version that serves as a *practicum*. It has been removed from the realm of practical wisdom, identified by Aristotle as the dialectic of techne and *phronesis,* to one of *episteme* or theoretical knowledge. It became an abstraction, a technical concept rather than a *practicum*.

The sole attendant problem within the system of technique is to determine whether the means respond to a given set of technical criteria in the most efficient manner. It is structured upon only one criteria of evaluation efficient ordering. It is applied instrumentally without discrimination. Epistemologically technique places its truth content on the possession of techne rather than its application. It does so in such a way

that the possession is understood as a technical concept, a formative law of efficiency of means, which serves as the only valid form of judgment.

This process is anathema to any form of philosophical reflection upon the direction of right living. It does not ask questions in regard to the end or the ethic of its production and use, only the calculated efficiency of production in the search for the one best means. There can be no form of practical philosophy in the traditional sense of the questioning of whether this or that means of living is directed toward the good. In this sense technique is blind. In technique the lack of any recourse to any system of judgment outside the technical concept of efficiency of means essentially ruptures its relationship to traditional ethics, itself a means of establishing organizational structures and therefore a framework of order and the determination of means. "Technique in its tendency toward totalization literally obliterates the existing framework of relationships between man and nature and man and culture forcing such relationships to mirror the structure of technique itself."[xxv]

> ". . . if reason itself is instrumentalized, it takes on a kind of materiality and blindness, becomes a fetish, a magic entity that is accepted rather than intellectually experienced."
>
> Max Horkheimer
> *The Eclipse of Reason*[xxvi]

Technique an the assumption of Neutrality

At the root of technique is the epistemology of science and its goals are the same; to rationally codify the world and experience according to its own unique form of logic. Science it must be remembered was originally structured to address the so called natural sciences, physics in particular. It was not and does not address the entire human being,

nor can it adequately deal with the reality of human experience. It comes as no surprise then that the critique of technique is accused of the same shortcomings. This is the fourth parameter of rational tectonics like reason it assumes neutrality.

Part of the problem with technique is its' assumed neutrality, This is something both Heidegger and Ellul have commented on, but this is only an illusion and is a potential threat if we lose sight of how technique actually shapes human 'being' in the world. As Horkheimer noted ". . . if reason itself is instrumentalized, it takes on a kind of materiality and blindness, becomes a fetish, a magic entity that is accepted rather than intellectually experienced."[xxvii] The same is true of techne, once instrumentalized we may potentially lose sight of how techne actually shapes human ends.

Technique is in a sense a form of falsehood in its objectification of reality it creates the illusion of utopia, a world of technical efficiency greater than the world of nature herself. According to Mumford "True objectivity must include every aspect of an experience, and therefore one of the most important sides, the subject, himself, must not be left out. When we are truly objective we do not merely see things as they are, but reciprocally things see us, so to say, as we are: how we think, how we feel, what our purposes and values are, all enter into the final equation."[xxviii]

Technique moves independently of man, essentially serving its own aim and not man in a higher idealized sense. In this way it augments the world by its recreation of it in its own image. The fundamental problem is that this image is now independent of man forcing man to self augment to the image of technique or risk alienation. In previous civilizations, man used technology to adapt the world to himself, his physical, intellectual

and spiritual needs. The main characteristic of technique is that this adaptation is reciprocal.

The same can be said for art in general and architectural reasoning or theory in particular. Once instrumentalized art and architecture take on a sense of inevitability and we are blind to them as systems of organization. Such a condition renders true theoretical speculation anathema. Rational tectonics serves, not as a unique means or system of organization of the particularities of reality and the human experience, but to reinforce the a priori system of organization known as science. It is a radical departure from architecture's role in classical tectonics.

Classical tectonics operated in a system in which theory served as metaphysics for praxis in the dialectic of techne and *phronesis* that maintained human experience as a central aspect in the cognitive features of the design process. In this sense architecture and tectonics were still centered on human experience and artistic expression was a willful political act of ethics in the application of techne.

This is not to say that with rational tectonics, architecture loses its claim to truth or ethics, but that such concerns are not part of its discourse, as all truth and value judgments are calculated in terms of efficiency and means. While rational tectonics can and should be seen not only as valid, but as a key principle of the discourse of modern architecture, it is a highly instrumentalized principle and too often appears self-evident as truth. The problem is not rational tectonics and its application, but the potential to see it as the end of all architectural theorization, as well as the only principle guiding the design process.

We must be reminded that art and architecture are forms of techne. In previous eras those forms were seen as a means of coming to terms with the world and the creation of the *lebenswelt*. Art is an intuitive form of understanding beauty, an incontestable form of knowledge and mode of thought, one that also generates a mode of thinking. According to Francastle "The artist does not merely concretize the sensibilities or thought of his milieu through his temperament, thanks to his mastery of an instrument, which is his particular technique. Nor does he draw on immanent values in order to give them concrete form. He is essentially a creator. Art is a construct, a power to give order and to prefigure. The artist does not translate; he invents. We are in the realm of imagined realities."[xxix]

> "In his relation to the world, man has always made use of multiple means, none of which were universal because none were objective. Technique is a means of apprehending reality, of acting on the world, which allows us to neglect all individual differences, all subjectivity. Technique alone is rigorously objective. . . .Today man lives by virtue of his participation in a truth become objective. Technique is no more than a neutral bridge between reality and the abstract man."
>
> Jacques Ellul
> *The Technological Society*[xxx]

Technique and Ethos

Techne helps to establish the framework of value judgments and objectives of society. In that sense the relationship is symbiotic: the selection of technologies is just as much a selection of objectives, as a selection of means. It is not an issue therefore of good or bad technologies or its users but of the harmonizing of society's objectives and

goals with its definitions of techne. All forms of techne, of systems of ordering, act as intermediaries between man and reality this is true with both art and science.

Pierre Francastle has indicated that what we are really dealing with is not just a technological or speculative progress, but really the joint evolution of social and technological activities out of which arose a new ordering system of human relationships.[xxxi]

The problem with the epistemology of science is not what it includes but what it excludes. It inherently degrades all systems and studies outside itself, including religion, and human erudition.[xxxii] The division of causality comes along the lines of technical categorization and human expression. That is to say, the causality of the epistemology of science is a reduction of it to that which is technically definable at the expense of that which is distinctively human in its explanation of the world. With this move all discourse on human perception of the thing-in-itself becomes not only secondary but extraneous to the discourse of knowledge. In essence it alienates human experience from the discourse of knowledge while denying all other subsequent discourses any claim of truth or in particular any scientific validity. This is the fifth parameter of rational tectonics; its decidedly non-humanistic *ethos*.

This was the fundamental problem with Descartes philosophy and continues to plague the modern world to his day. Descartes exclusion of the humanistic imagination from the discourse of knowledge has meant the exclusion of those very forms of thought that allow man access to his own nature. Self-knowledge is not possible within this epistemological structure and it's ordering system; technique. [xxxiii]

Previous definitions of techne were anthropological in their form, the universe and the cosmic order were understood through a symbolic system that in essence troped man into that order. Thus the figure of the universe was recreated in human form making it understandable and interconnected to the order of human existence and being. The relationship between reality and lived experience were coterminous. This condition allowed man to regulate his environment according to human values through the application of technical tools to material nature. Thus technology served human ends in a world conceived from the beginning as personified. Technology was a means to a given human end.

In classical tectonics, it was Aristotle who codified that. His division of techne into two forms; one practical and generative and the other theoretical and analytic, allowed him to establish two epistemological frameworks for dealing with production. Analytic techne conformed to the epistemology of *theoria* while generative techne conformed to the epistemology of *phronesis*. Contained within classical tectonics was a critique of the limits of rationalism in its application to techne such that the true knowledge of the Craftsman was neither one of these but their union in the final act of *poesis*. The result was that its overall structure was dependent on *phronesis*.

In its application *phronetic-techne* manifests four characteristics: limitation of the field of action, limitation of the available means, localization, and freedom of choice.[xxxiv] *Phronetic-techne* is limited in action in the sense that it is focused on a given task, performed at precise and defined times: sowing of fields, the reaping of harvest, etc. It is limited in means in that it stressed ingenuity in the use of existing means to maximize results. *Phronetic-techne* is localized because a technology is the product of a given task

preformed at a given time for a given end it is subjected to the particularities of a given society. It bears the stamp of its particular culture, in this way it is not an autonomous process, but rather dependent upon the particular culture within which it exists. *Phronetic-techne* maintains a freedom of choice in that the individual has the ability to reject the existing technologies of a given society.

Following the epistemology of *phronesis,* classical tectonics emphasized the worker, not the tool or the technology. In the process it established the centrality of man, at the same time pushing for individual betterment and advance. The result was a variety in individual technologies, and a uniqueness of the finished object, as an expression of individual ingenuity, talent and skill. Mumford notes that as long as technology involved the craftsman who had complete control of his processes there would always be balance between efficiency and human value, between the need to produce and the need for expression. *Phronetic- techne* established a centrality of man in the possession and application of techne making it anthropocentric or to use Heidegger's term 'anthropomorphic'.[xxxv]

The development of technique was from the beginning generated or accompanied by the very willingness to accept hard facts and an impersonal view of things. It is the mater-of-factness coupled with mechanical uniformity and repetitive order that characterizes it. By eliminating the qualitative characteristics both the epistemology of science and technique eliminated any recourse to experience and the particularity of 'being'. How did this occur? The shift in causality limited the rational understanding of an object as the 'thing-in-itself' reducing it to formal and material causes which can be demonstrated mathematically. But the understanding and experience of things is more encompassing. A

Church in its materiality may be brick and mortar and may serve as a place of religious ritual. But it is the sacredness of the idea of the house of God that manifests it as distinct from say a town hall. Thus its meaning in humanistic experiential terms is dependent upon both its material and formal causes and its efficient and final causes. As Heidegger noted the material and formal causes are self evident in the very materiality of the 'thing-in-itself' but it is the efficient and final causes that reveal its hidden necessity to humanity. It is this revealing that goes beyond the objective reasoning of extrinsic reality that is the true value of knowledge in a practical sense. This shrinkage of causality reduces it, according to Heidegger, to mere reportage, reason and techne no longer serve humanity in its quest to situate itself in the world.

Like Descartes' pineal gland and Newton's sensorium, technique serves as an intermediary between the subjective human reason of the *res cogitans* and the extrinsic reality of nature distancing man and his environment transforming the human experience into a simulacrum. Reality and the lived experience are only an image or representation of reality.

Cognitively, technique does not view man as a complete being but rather focuses on a single human element, the magnified eye or hand which is conceptually thought of as disembodied. Only in this way can one theorize a series of movements that maximize outcome and productivity. This process fragments the operational procedure and removes any inherent presence of humanity.[xxxvi] While the mechanical paradigm was in fact justified on functional human need and therefore a human value, its scope was far too limited to satisfactorily overcome this. As Mumford noted "Even mechanical function itself rests on human values: the desire for order, security, for power; but to presume that

these values are, in every instance, all-prevailing ones, which do away with the need for any other qualities, is to limit the nature of man himself to just those functions that serve the machine."[xxxvii] It leads to the sense of alienation because the world is reduced to technique in such a way that humanity is factored out of the construction of truth and reality. The sense of alienation engendered by the modern era and discussed by men like George Simmel is in fact this necessity to accommodation.[xxxviii] In his famous essay entitled 'Metropolis and Mental Life' he argued that the structure of modern society engendered a sense of alienation that permeated all life. It was the new structure of relationships between the individual and the collective engendered by this new social form, referred to here as 'technique' that forces major adaptation of the individual personality. The result was what Simmel referred to as the 'Blasé' attitude, indifference toward distinctions, which provide meanings to things. It was this attitude that results in a sense of alienation. According to him modern man must resist the 'social-technological mechanism' which threatens to swallow him up. For Simmel this desensitizing represents a fundamental alteration in the mentality of modern man a point also made, as I shall get to, by Ernst Cassirer.

This facilitates not the destruction of humanity but rather the necessity of humanity to accommodate itself to the necessity of technique. Emotion, feeling and individuality become the first casualties. In order to accommodate ourselves we must deny a certain percentage or our own being. Such a denial is impossible and can only lead to the recognition of our own non-commensurability with the world. With technique man is no longer able to grasp his own essence and hence any true self-knowledge or *sophrosyne*. This in many ways becomes the irony of technique in that historically techne was a

means of commensurability with the world as man learned to adapt the material world to his needs. As Verene has noted the generation of systems according to the framework established by technique generates order but not meaning, technology never appears fully human in the most substantial of ways.

The distinction between technique and *phronetic-techne* is the subject matter at play in the intermediary between reality and man. One is abstract theoretical and concerned with universals, the other humanistic and focused on man's creative faculties in interpreting reality and generating a distinctly human signification of the *lebenselt*.

> "[Art's] goal is both to explore the universe and to reshape it. Plastic thought, which exists alongside scientific or technological thought, belongs to the realms of both practical activity and the imaginary."
>
> Pierre Francastle
> *Art and Technology*
> *in the Nineteenth and Twentieth Centuries*

Technique and Design Cognition

With the development of the epistemology of science came the disintegration of the classical theory of mimesis. In its place was what has been termed the 'Theory of Imitation'. While both can be said to be imitative theories of art, their subject matter and how they function is different. In all imitative theories of art the subject matter is historically identified as nature, such that art is a mirror of nature, or an imitation of nature. But such identification assumes that the definition of nature holds the same over time. With epistemological shifts come significant changes in definitions which are not

always apparent. Such is the case with the definition of ‘nature’, too often overlooked or misunderstood, this definitional shift was epistemologically important. As I intend to show the definitions of nature are not the same and the subsequent restructuring of aesthetics delineates a fundamental shift in the cognitive process of design thinking.

In classical mimesis the subject matter ‘nature, is defined as the creation of the *sophron eros* and *harmonia*. Art exists in the sphere of mythic time, all new creative acts are re-creations of origins that re-presence the creation of the world. It is a re-‘becoming’ of the manifestation of *sophrosyne* and *harmonia.* The mimetic function of art is addressed as necessary not only to the creation of, but the continued manifestation of, harmony in the world. The function of the *sophron eros,* and architecture in its manifestation of it, is the literal construction of the ethic of the Good. In this sense we can state that mimesis is ontological in its formulation.

This is fundamentally different from the theory of imitation whose object while still nature, is nature understood as an ideal rational principle. Art’s subject matter is pure *theoria* a fixed and permanent principle, a functional significance. Reason as abstract universal ideal replaces the *sophron eros* as the object of imitation. The theory of imitation asserts that the work of art that most closely imitates the fundamental purity of reason is synonymous with virtue. Art’s role is not to formulate, create or maintain ethics, but rather to represent it as an ideal, itself coterminous with knowledge. In the case of architecture it is the clarity of representation of the Mechanisms of Structure and Disposition as ‘technical concepts’ that is the virtue of good architecture and the sign of its reasonableness. It is no longer ontological but representational in its formulation.

In both cases art manifests a form of ethic but in mimesis such ethic is negotiated and specific to the particular situation while in the theory of imitation virtue is an a priori abstraction. Thus we can claim that while both are imitation theories they operate differently one is ontological the other representation. One is dialectical, fluid and negotiated; the other fixed, immovable and abstract. One defines the subject matter of art as in a constant state of 'becoming' whilst the other defines it as permanent, a fixed state of 'being'.

At the heart of the distinction is a significant shift in the cognitive process. What Cassirer termed the shift from the 'imitative' to the 'indicative' gesture. [xxxix] While his discussion of the shift centered on language it was crouched in a broader discussion of symbolic form, making it equally applicable to aesthetic theory.

Mimesis is a form of 'imitative' gesture. According to Cassirer, the 'imitative' gesture implies no distance between object and knowing subject. It is biologically derived from the actual mimicry of the object in order to communicate about it. In such a case the knowing subject becomes the thing which it is making reference to. Art behaves 'like' the subject matter and is in fact identical with it serving as its manifestation. From the cognitive point of view the work of art as thing-in-itself is an embodiment of the underlying principle of *sophrosyne* and in fact plays a significant role in its manifestation. While *sophrosyne* exists in the objective reality of nature it must be made ontologically present in the objective reality of human experience. It is artistic production that not only serves didactically to bring about an appreciation of it, but also manifests it as a presence in the objective reality of the polis. Thus the principle is not only embodied in the work

of art, but *sophrosyne* is dependent upon the production of the work of art for its manifestation.

In mimesis the apparent reproduction presupposes an inner production. As Cassirer pointed out "This form of reproduction never consists of retracing, line for line, a specific content of reality; but in selecting a pregnant motif in the content and so producing a characteristic 'outline' of its form."[xl] While this is certainly on its way toward representation it is distinct from it. Kunze refers to this as a system of exchange. "The mimetic gesture's intention [is] to reproduce the content of its referent directly, through the medium of bodily movement, expression, or sound. Unlike the pointing finger, which epistemologically isolates the knower from the known, the mimetic gesture initiates an exchange that alters both the signifier and the signified."[xli] The mimetic sign in this way creates both object and self, in such a way that both are intricately linked to each other. Cassirer notes that in the mimetic gesture the 'I' remains a prisoner of outward impressions and its properties; the more accurately it reports its impressions excluding all spontaneity of its own, the more fully the aim of imitation has been realized."[xlii]

The theory of imitation, on the other hand, is a form of 'indicative' gesture. According to Cassirer the 'indicative' gesture is derived from the actual movement of grasping, which is both biologically and genetically derived. It is from this movement; the physical attempt by an individual to make reference to an object outside itself through the act of pointing, the distinguishing of the self from the object, and which also in the act of grasping, implies a sense of possession, that we derive the logical or conceptual aspect of language. Kunze remarks that this form of signification operates through a system of substitution. He states "Indicative meanings presume the possibilities of categories, in

which particulars may be grouped and represented by some class characteristic. Categories in turn, presume an idealized access to objects. Amidst this possession, power and words flow smoothly and continuously from universal to particular. Meaning is defined as a link, part of a catena binding the lowest things to the highest, and determining their positions."[xliii] Here the object to be imitated is grasped through properties which must assume abstract categories derived from the negation of particularity in the process of generating the universals of categories. Language in this instance becomes epistolary, completely symbolic, in the sense that it is an abstract symbolic substitute for a conceptual meaning or thing. This shift is directly related not just to the concentration on universals of the epistemology of science but to its Cartesian theory of mind as well.

Descartes *cogito ergo sum* had created a division of body and mind, isolating reality from the cognitive faculties of reason whose only recourse to the *res extensa* were the faculty of the senses. The inherent suspicion of the senses and imagination as faculties associated with the body, and hence less rational, meant that any comprehension of 'beauty' was a matter of judgment subject to the methodology of doubt and that of reason. What the system of representation in the theory of imitation does is by-pass objective reality. Art, in this case architecture, represents functional significance which is a 'technical concept' that has no sensual presence and hence 'nature' as thing- in- itself is removed from the discourse despite the nomenclature of 'la belle nature'. This removal of objective nature from the discourse of knowledge is part and parcel of the epistemology of science, and part of a process that began with Descartes division of the *res cogitans* from the *res extensa*.

Part of the problem with Descartes theory of mind has to do with the definition of Consciousness. Consciousness begins with the *Ansich*, the conception of self-consciousness, with the mind, distinct from the body, reflecting on sensations. [xliv] Here the object is not understood as super sensualist object experienced, as that which it is, but rather as a representation of the external object grasped by the mind through the intellectual categories. The 'this as I' and the 'this as object' exist in a relationship that is always demonstrative or apodictic. It is this aspect of representation which Cassirer claims is cognitively indicative, rather than gestural, and is the distinction between classical mimesis and the theory of imitation. Descartes duality requires the intermediary of the knowing self or 'I'. In the case of representation the object is no longer received in sensuous form as the thing- in- itself but rather built up by the consciousness according to its constitutive traits as a reflective act. According to Cassirer "to reproduce an object in this sense means not merely to compose it from its particular sensuous characteristics, but to apprehend it in its structural relations which can only be truly understood if the consciousness constructively produces them."[xlv] Here the world of sensual objects is reflected on and then indicated.

This is nowhere more evident that in the Mechanisms of Structure and Disposition in the development of architecture. The cognitive process of design is based upon the reduction of both process and appreciation to abstract categories. The conscious 'I' does not experience the work for its sensual qualities as the thing-in-itself. Design cognition does not take into consideration notions of feelings, mood, or expression nor does it consider ritual, traditional meaning or symbolism. Rather it builds it up from its constituent parts which in turn are abstract representations not of the materiality of the

work but of its functional significance, the 'technical concept' of mechanical efficiency. In the place of genuine human experience and expression are categories and conceptual meanings. Design cognition itself has become instrumentalized.

> "The simplest operations of the mind were cluttered by symbolic verbiage of an entirely non-operational kind. In order to come clean, man took refuge in a different kind of order, in number, in regularity, in drill. Unfortunately, Western man in his search for the object, presently forgot the object of his search. In getting rid of an embarrassing otherworldliness he also got rid of himself?"[xlvi]
>
> Louis Mumford
> *Art and Technics*

Summation

The foundation and development of rational tectonics is tied to the epistemology of science and its increased impact on Western thought. The subsequent restructuring of causality forced a restructuring of what constituted truth and the redefinition of 'nature'. As the epistemology of science moved forward it brought with it a complete rethinking of architectural theory in line with the increased rational project of science. With it came a rejection of the classical concept of mimesis that resulted in the development of the duality of beauty and the redevelopment of the idea of imitation in art.

The new epistemology of science effectively replaced the emphasis on experimental knowledge found in *phronesis*. In its place was the instrumentalization of efficiency of means to ends. While superficially based on the idea of the particularity of material analysis and physics it was nonetheless a redirection of the formula of mathematical calculation, itself reducible to quantitative characteristics at the expense of the qualitative

aspects those things that make the object-in-itself unique. It redirected the definition of techne away from the discourse of *phronesis* effectively severing the dialectic of techne and *phronesis*. In its place a new epistemological structure derived from the epistemology of science and its method emerged. This in itself opened a whole new set of problems and critiques. In the end this change facilitated a restructuring of the design process along the lines of mechanical efficiency becoming a didactic explanation of how statical stresses and other quantifiable qualities can be manipulated in the means ends equation.

Rational tectonics made a major contribution to architecture and architectural thinking, becoming one if its essential principles. The Mechanism of Structure opened the door to a rational science of construction. The development of the first means of analysis of statics and material strength provided a rational means of material selection and the determination of proportion and size of structural components. It also provided a means for the determination of validity of structural representation. The Mechanism of Disposition provided a rationally quantifiable means of evaluating the functionality of spatial organizations. It also provided a means of categorization of architectural types.

But as a design process it proved limiting. The definition of techne upon which it stands, technique, is highly theoretical, a form of *episteme*, which bears little epistemological connection to the lived experience. As such it can provide no true sense of a *practicum*. It effectively severs theory from practice. The technical concept that underlies the Mechanisms of Structure and Disposition begins with an assumed model, mechanical efficiency, which is then analyzed for efficacy and clarity of representation. But there are several problems with this. First, architecture cannot be reduced solely to

issues of mechanical efficiency, human need is far more comprehensive. Second, it fails to provide a means of determination of ends.

Unlike the classical concept of *décor,* which sought judgment on the particularities of a given situation, aesthetic judgment now was open to the adherence to cultural standards seen as evidence of universal truths. With décor the standard was removed from the physicality of the project and rested within an ethical discourse of social propriety- and hence, socially determined. It lay in an external value structure. In the case of rational tectonics it lay in perceived laws that were fixed through continued use seen as evidence of their universality. Here the structure of aesthetic judgment is no longer external but internal to the discourse of architecture itself. It becomes not only autonomous and self referential but it implies, as does the epistemology of science itself, that the thing-in-itself is coterminous with virtue, in its adherence to universality and truth. We might be lulled into thinking of technique as neutral but the direct and visible impact of architecture on humanity prevents us from accepting the possibility that ends are of no concern.

Third, lies in the structure of the technical concept itself. Derived from the epistemology of science, technique models itself on the scientific method. But this method is an analytical one and art and architecture are generative processes. How does a system of organization whose essential process is analytical, based upon the dissection of an a priori object, address the generation of orders when there is no a priori object to start with and when the epistemology is constructed in such a way as to banish both objective reality and its particularities of client, site and culture?

Rational tectonics also raises additional issues specific to the case of architecture. It had the impact of focusing the discourse of architecture on the quantifiable aspects of the

design process, in such a way that they could be systematically analyzed along the lines of function and utility, effectively raising them to a higher status in architectural judgment. But it also had the effect of devaluing the qualitative aspects of the buildings materiality, form and space. The Mechanism of Structure had the impact of focusing the discourse of architecture on the relationships of its component elements and the analysis of the material. Materials are selected for the efficiency of their statical structure as opposed to their sensual effect, be it visual, tactile, acoustic or olfactory. The Mechanism of Disposition had the impact of focusing the discourse of architecture on spatial relationships. But it also had the effect of devaluing the qualitative aspects of space reliant on experience and perception effectively rendering any concept of the genus loci, understood from the perspective of Ancient Greek philosophy or Modern Phenomenology unthinkable. Such issues were now seen as relegated to cultural prejudice; the arbitrary or customary beauties, themselves now subject to rationalization via a Baconian approach to history as teleological and experiential that again revealed over time through consistency a universal truth. The particularities of space, place and time, materiality, sensual impression and their value in aesthetic judgment and relevance to the discourse of architecture could now be called into question.

Rational tectonics teaches us to reason 'correctly' in only one sense. To quote Horkheimer "An intelligent man is not one who can merely reason correctly, but one whose mind is open to perceiving objective contents, who is able to receive the impact of their essential structures and to render it in human language; this holds also for the nature of thinking as such, and for its truth content."[xlvii] It is also true of the architect. It is the task of the architect to see within the particularities of the condition of architectural

production its objective contents, its essential structure and to render them in such a way as to manifest a truth content within a means of expression that is understandable and meaningful. If he/she does not then we are left only with engineering and the calculable efficiency of production. It was technique that severed theory from practice and until we reexamine this definition in light of architectural production we cannot re-theorize a unity of theory and practice.

ENDNOTES

[i] Marie Joseph Chenier, 'La Raison', lines 8-14, *Poesis* Brussels, 1842, pg. 81.
[ii] This was certainly the case with the epistemology of science and the philosophy of Descartes but it had its roots in neo-Platonic thinkers from Plotinus and St. Augustine through the Renaissance, with thinkers like Spinoza, and continued in various 18th and 19th century thinkers.
[iii] Isaiah Berlin has argued that running parallel to this tradition of thought is another tradition, which is less strict or limited in its 'rationality'. He points to the traditions of the Bible and Judaism. In these traditions the world is explained in terms of social relationships; family, filial and tribal. In this tradition it is the complex series of relationships that exist within the social framework and their qualities that are used to explain both nature and life. Here all relationships both animate and inanimate are explained or interpreted in terms of relationships to human beings or at any rate to personalities. See Isaiah Berlin, *The Roots of Romanticism*, Princeton University Press, Princeton and Oxford, 2000, pg 1-20.
[iv] Consistently throughout the Western Rationalist tradition up through and including the Renaissance, philosophers and theologians asserted a distinction between divine knowledge and human knowledge. This distinction rendered our understanding of the world in decidedly humanistic terms. It also created an intellectual barrier through which human knowing could not pass meaning that the full understanding of reality, as God the creator understands it, lays outside the scope of human possibility. The same was true of Ancient thought and philosophy which held a clear distinction between the transcendental realm of *theoria* and the platonic *eidos* and the realm of *phusis* that existed *Kata tu Cheron* or in a state of flux and change that could be otherwise. The epistemology of science and Enlightenment philosophy assert that no such barrier exists and that reality is fully accessible to man in the same way, depth and completeness as it is to God.
[v] Virtually all the Enlightenment thinkers agreed on the view that virtue was ultimately consistent with knowledge. That knowledge would lead automatically to virtue and more importantly to a virtuous society. Inherent within such a position was the idea that virtue was a stable and fixed entity, that all societies agreed upon what constituted virtue and that any reasonable person not only could recognize such virtue but also seeks it. Virtue like the concepts of justice, freedom and truth had become abstract in their formulation, no longer the product of human relationships and values but of pure reason. Virtue, like everything else, was a general proposition obtainable by the dependable method namely that of the natural sciences.
[vi] When restricted to the proper realm of the physical sciences such a rational system for the most part appears to work and be the most efficient means of analysis. But it must be remembered that the Enlightenment pushed this method outside the realm of the sciences making the claim that it was the only means toward knowledge replacing all others. That meant that the method was translated into religion, art, politics and ethics where its limitations and fallacy was made all the more evident warranting a serious inspection and critique.

It is important to note that I am in no way asserting that rationality is a fallacy or that I am advocating the irrational. Rather my point is that the unilateral application of the rational deductive method of mathematics and the inductive method of the natural sciences is problematic, most notably when applied to what are termed the human sciences or humanities in particular; religion, ethics, politics and art, including most significantly to the current discussion architecture.
[vii] Jungen Habermas; 'Modernity: An Unfinished Project", given as his acceptance speech on receiving the Theodor W. Adorno Prize awarded by the City of Frankfurt in September of 1980 it was first published in *Kleine Politische Schriften I-IV* Frankfurt, Suhrkamp Verlag, 1981, pp. 444- 464. The English translation is taken from *Habermas and the Unfinished Project of Modernity Critical Essays on The philosophical discourse of Modernity*, edit. d'Entrevees and Benhabib, MIT Press Cambridge Mass, 1997.
[viii] I am here using the term episteme in the combined sense of both Aristotle and Foucault. Aristotle referred to the structure of theoretical knowledge- understood as the logical ideal of demonstrability defined by its exactness as episteme. In such an epistemological construct truth and reason are defined by their exactness and as permanent and fixed entities. According to Foucault in Power/Knowledge episteme was defined "retrospectively as the strategic apparatus which permits of separating out from among all the statements which are possible those that will be acceptable within, I won't say a scientific theory, but a field of scientificity, and which it is possible to say are true or false. The episteme is the 'apparatus' which makes possible the separation, not of the true from the false, but of what may from what may not be

characterised as scientific." See Foucault *Power/Knowledge*, edit. Colin Gordon, Pantheon Books, New York, 1980, pg. 197.
[ix] Max Horkheimer, *Eclipse of Reason,* Continuum, New York, 1992, pg. 11.
[x] Ibid., pg. 4-5.
[xi] Ibid., pg. 7.
[xii] Ibid., pg. 9.
[xiii] Ibid., pg. 9
[xiv] Donald Phillip Verene, *Vico's Science of Imagination*, Cornell University Press, Ithica & London, 1981, pg. 207.
[xv] See Heidegger 'The Question Concerning Technology' printed in *The Question Concerning Technology and Other Essays*, trans Lovitt, Harper & Row New York, 1977.
[xvi] That is to say that by mechanized systems I do not mean mass production which took place during all ages going as far back as the mass production of mud or kiln dried bricks in the early Mesopotamian cultures of Sumerians, Assyrians and Babylonians. It was present in Greek pottery and Bronze sculptures produced for a global market particularly in Rome. It was also a staple of the highly industrial processes of the Roman Empire.
[xvii] See Jacques Ellul, *The Technological Society*, trans. Wilkinson, Vintage Books, New York, 1964. See Heidegger 'The Question Concerning Technology' printed in *The Question Concerning Technology and Other Essays*, trans Lovitt, Harper & Row New York, 1977. See Louis Mumford, *Art and Technics*, Columbia University Press, New York, 1952. Also *Technics and Civilization*, Harvest Books, 1934 and *The Myth of the Machine: Technics and Human Development*, 1967. Mumford uses the term Technics to refer to the interplay of a social milieu and technological innovation - See Heidegger 'The Question Concerning Technology' printed in *The Question Concerning Technology and Other Essays*, trans Lovitt, Harper & Row New York, 1977the "wishes, habits, ideas, goals" as well as "industrial processes" it is the totality of the ordering system in the modern era. His choice of terms is deliberate in its reference to both tectonics and technology. The thrust of his argument was a critique of modern technology and its sense of alienation his point being that not all civilizations manifested the same form of technology and many were able to achieve great things without resorting to technics. But they are not alone in the recognition of a major transformation in the ordering structure of techne. Jean Cassou, Pierre-Maxime Schuhl, Alexandre Koyre, Andre Varagnac, Jean Fourastie, and Sigfried Giedion all recognized that a major transformation of techne along the lines of mechanization occurred following the development of the epistemology of science that began in the sixteenth century. In his book *La Naissance de la Civilization* John Nef pointed out that the technological skills and the theories of the Enlightenment did not overlap at first but were separate developments. It wasn't until the nineteenth century that we see therefore the real impact of the developments of the previous centuries. See John Nef, *La Naissance de la Civilization*, published in English under the title *The Cultural Foundations of Industrial Civilization*, Harper Torch 1960.
[xviii] The term 'Technique' was used by Ellul to refer to all means of organization in general. Its systematic formation as the only operative means in the modern era he called 'technical phenomena'. In this sense I am not using the term exactly as Ellul used it. Instead I am using in the sense of the 'mechanism of technique' that is its mechanistic form.
[xix] Donald Phillip Verene, *Vico's Science of Imagination*, Cornell University Press, Ithica & London, 1981, pp. 205-207.
[xx]Ibid. pp. 206- 207.
[xxi] See Heidegger 'The Question Concerning Technology' printed in *The Question Concerning Technology and Other Essays*, trans Lovitt, Harper & Row New York, 1977.
[xxii] Jacques Ellul, *The Technological Society*, trans Wilkinson, Vintage Books, New York, 1964, pg. 125.
[xxiii] Max Horkheimer, *Eclipse of Reason,* Continuum, New York, 1992, pg. 6.
[xxiv] Ibid., pg. 3.
[xxv] Jacques Ellul, *The Technological Society*, trans Wilkinson, Vintage Books, New York, 1964, pg. 125.
[xxvi] Max Horkheimer, *Eclipse of Reason,* Continuum, New York, 1992, pg. 23.
[xxvii] Ibid., pg. 23.
[xxviii] Mumford *Art and Technics*, Cornell University Press, Ithica and London, 1952, pp. 55.
[xxix] Pierre Francastle, *Art and Technology in the Nineteenth and Twentieth Centuries*, trans. Cherry, Zone Books, 2000, pg. 19. Originally published in France as *Art et Technique au XIXe et XXe siecles*, Les Editions de Minuit, 1956.

[xxx] Jacques Ellul, *The Technological Society*, trans Wilkinson, Vintage Books, New York, 1964, pg. 131.
[xxxi] Pierre Francastle, *Art and Technology in the Nineteenth and Twentieth Centuries*, trans. Randall Cherry, Zone Books, New York, 2000, pg. 33.
[xxxii] This point was first made by Vico in his critique of Descartes, but it still holds true for the broader epistemology of science and its development since. See Vico, *The Autobiography of Gianbattista Vico*, trans. Fisch and Bergin, Cornell University Press, Ithica and London, 1944, pg. 113. See also Verene *Vico's Science of Imagination*, Cornell University Press, Ithica & London, 1981, pg. 201.
[xxxiii] Donald Phillip Verene, *Vico's Science of Imagination*, Cornell University Press, Ithica & London, 1981, pg. 201.
[xxxiv] I am here following Ellul's outline of the limitations placed on what he termed traditional technique. For purposes of clarity and continuity I am replacing his term 'traditional technique' with the one I have consistently used in book I Dunne's 'phronetic-techne'. See Jacques Ellul, *The Technological Society*, trans. Wilkinson, Vintage Books, New York, 1964, pp. 64-77.
[xxxv] In his essay 'The Question Concerning Technology', Heidegger asserted that the form of technology is either anthropological or instrumental. See Heidegger 'The Question Concerning Technology' printed in *The Question Concerning Technology and Other Essays*, trans Lovitt, Harper & Row New York, 1977, pg. 5.
[xxxvi] Mumford notes that fragmentation can be seen in the transition from handwork to machine art and is the result of the mechanization of man in the advance of technique. His term here is technics. See Mumford *Art and Technics*, Cornell University Press, Ithica and London, 1952, pp. 64-65.
[xxxvii] Mumford *Art and Technics*, Cornell University Press, Ithica and London, 1952, pp. 119.
[xxxviii] George Simmel, 'Metropolis and Mental Life' 1903, reprinted in Modernism *An Anthology of Sources and Documents*, edit. Kolocontroni, Goldman & Taxidou, The University of Chicago Press, Chicago, 1998.
[xxxix] See Cassirer, *The Philosophy of Symbolic Forms vol I.: Language*, chapter 2 'Language in the Phase of Sensuous Expression'. Yale University Press, London and New Haven, 1955. ref. pg. 180.
[xl] Ibid. 183.
[xli] Donald Kunze and Wesley Wei, "The Vanity of Architecture: Topical thinking and the Practice of Discontinuity", *Via*, pg. 57
[xlii] Cassirer, *The Philosophy of Symbolic Forms vol I.: Language*,. Yale University Press, London and New Haven, 1955. ref. pg. 182.
[xliii] Donald Kunze and Wesley Wei, "The Vanity of Architecture: Topical thinking and the Practice of Discontinuity", *Via*, pg. 57
[xliv]The term *Ansich* in philosophy is perhaps more properly applied to Hegel's method of the phenomenology where it is a central category but it is the conception of self consciousness which underlies Modern philosophy from its inception in Descartes *cogito ergo sum*.
[xlv] Cassirer, *The Philosophy of Symbolic Forms vol I.: Language*,. Yale University Press, London and New Haven, 1955. ref. pg. 183-184.
[xlvi] Louis Mumford, *Art and Technics*, Cornell University Press, Ithica and London, 1952, pg. 57.
[xlvii] Max Horkheimer, *Eclipse of Reason*, Continuum, New York, 1992, pg. 55.

Part IV

Architecture and Idealism:
The Emergence of Poetic Tectonics

Chapter 11: Tectonics and the Italian Humanist Tradition: Vico, Lodoli and Piranesi

The first attempt in the mid- 1700's to understand architecture outside the epistemology of science came with the Italian '*rigoristi*', the followers of theorist Father Carlo Lodoli, whose theories were based on the writings of Giambattista Vico an ardent critic of Descartes rationality and geometric method. He is perhaps the most misunderstood and least seriously studied theorist of architecture. This fact is not owing to his work or relative obscurity, he was fairly well known in his time as a significant leader in Venetian intellectual circles.[i] As I intend to show, the historical occlusion of Lodoli's theory and impact is largely due to problems with the historical interpretation and scholarship of his writings. Lodoli taught architecture at his own school in Venice where, as Diana Hibbard Bitz notes, the curriculum was based on Vico's *On the Study Methods of Our Time*.[ii] Lodoli's ideas on architecture served as a precedent to the later tectonic theorists of the 1800's; but to understand that precedent and to discover the underlying epistemological parameters of tectonics it is necessary to understand what underlies Lodoli's thinking. [iii] Vico represents an alternative to the dominant Western tradition, but the basic ideas and premises of his critique were carried on by later thinkers, ones who had a more direct impact on the thought of men like Schinkel and Botticher.

While Lodoli based his theory of architecture on the idea that form, details and meaning were derived from the nature of materials and their constructive forces; he resisted the temptation to 'instrumentalize' such factors. Rejecting their reduction to a mechanical exposition of forces, Lodoli understood them in relationship to a concept of

image formation and representation predominantly derived from Vico's philosophy of mind. Lodoli proved to be a formidable and outspoken critic of the theories of the Abbe Laugier; in public debates he formulated an alternative ground from which to conceive of architecture.

The impact of Lodoli's work was then carried forward by Giovanni Battista Piranesi, whose theoretical work should be read as a continuation of Lodoli's thought and writings. This position was first advanced by Joseph Rykwert in *The Necessity of Artifice* and latter by Alberto Perez- Gomez in *Architecture and the Crisis of Modern Science*.[iv]

The History of Lodolian Scholarship

The scholarship of Lodoli's theory has encountered serious problems over the years due to the fact that he died before he could finish his treatise. Only two outlines exist, saved by Francesco Foscari and published by Andrea Memmo in his *Elementi d' architecttura Lodoliana* of 1834. They should not be seen as coterminous, but rather as extensions of each other. The first draft takes as its subject matter the origin and development of the building arts. It also introduces some attributes of Lodoli's architecture. The second draft defines what Lodoli views as the goal of his new theory: the unification of form and representation.[v] It also addresses how he defines the attributes of form and the rules and principles of this new form of architecture.

The incomplete nature of the treatise and its outlines have meant that historically Lodolian scholarship has had to resort, additionally, to the texts of the '*rigoristi'*, five individuals who either commented on, or attended Lodoli's lectures at his school of

architecture in Venice. Of these Francesco Algarotti, and Andrea Memmo each interpret the theory of Lodoli based upon their class notes from his lectures. Francesco Milizia, the third commentator, derives his understanding of Lodoli from the writings of Algarotti. He is significant in that his comments will be influential in the interpretation of Lodoli in the later 18th century. In addition to these three writers, note should be taken of two other students of Lodoli, Zaccaria Seriman and Giovanni Battista Piranesi, both of whose writings on architecture, while not commentaries on Lodoli *per se,* contain thinly veiled references to him and the contemporary architectural debates in which he was constantly embroiled. Theoretically this would seem to present us with a complete picture of Lodoli's thoughts, yet historically this is precisely what has not happened.

Diana Bitz has pointed out that Algarotti's 'Lodoli' is characterized in such a way as to make his thought reminiscent of the mathematical methodology of René Descartes. His 'Lodoli' is a 'rigorist' whose theory is exclusively rational, ahistorical, founded solely on utility and in it, function and representation are fundamentally the same things. Every detail must be beholden to the structure and nature of the material and all ornament is unnecessary and must be removed. According to Kruft "He [Algarotti] presents Lodoli as a philosophical purifier of architecture, who proceeds with the 'most rigorist, rational examination' of abuses in architecture . . . Everything besides function is affectation or falsity. Beauty without function is impossible."[vi] In opposition to this presentation is that of Memmo, whose 'Lodoli' is characterized as a thinker who stands within the rhetorical tradition of Italian Humanism.[vii]

Modern scholarship is primarily based upon the writings of Algarotti and Memmo and can be traced back to a 1939 article by Rudolf Wittkower on Piranesi (Lodoli's most

famed student) entitled "Piranesi's 'Parere su l' Architecttura'" published in the *Journal of the Warburg Institute*. Bitz has pointed out that it is in this article that the unfortunate modern misunderstanding of Lodoli began.[viii] While Wittkower cites Memmo, whose characterization places Lodoli more in line with his favored authors Cicero, Pufendorf, Bacon, Conti and Vico, the description of Lodoli's thought is decidedly that of Algarotti. Wittkower therefore, takes Piranesi's attack on the 'rigorists' as an attack on his teacher Lodoli. Unfortunately, Emil Kaufmann, in his article "Algarotti vs. Lodoli", emphasized this reading of Lodoli as a 'rigorist' as well. Because Algarotti was a social dilettante and courtier, Kaufmann was convinced that his interpretation of Lodoli must be the correct one. He dismissed the differences between Algarotti and Memmo as minor points. But the important issue is that the differences were not, as Kaufmann would will it, 'minor'. They were in fact fundamentally different and, as Bitz has shown, Algarotti's interpretation is not only unscholarly and biased, but he obviously failed to understand the sophistication of Lodoli's teaching and philosophy, a point which Memmo, Seriman and Piranesi each in their own way pointed out.[ix]

It is the definition of Lodoli perpetuated by Wittkower and Kaufmann that has labeled Lodoli as a rationalist, a forward thinking visionary and grandfather of the Modern Functionalist aesthetic. The power and influence of these two historians is evident in the continual misrepresentations of Lodoli even until fairly recently. I am of the opinion that nothing could be farther from the truth than this interpretation of his work. I shall attempt to explain why this cannot be a proper interpretation of Lodoli and therefore what is the correct reading of his teachings. In this I am more in line with Joseph Rykwert who has done much to establish the primacy of Memmo as a source of Lodolian thought.[x]

The only way to address Lodoli's architectural theory and how it might be distinguished from its predecessors and contemporaries is to look first at the writers who have commented on him, Algarotti, Milizia, Memmo, and Seriman. If we then examine the key author who inspired him, Vico, it will be possible to venture an outline of Lodoli's theory and approach to architecture. Finally, by looking at Piranesi we can identify the real impact of Lodoli's thought as a critique of rationalist tectonics in architecture.

Algarotti & Milizia: the Construction of a 'Rigorist'

In 1753 friends of Lodoli, prompted by the publication of Laugier's *Essai sur L' Architecture*, commissioned Algarotti to write *Saggio Sopra l'Architettura*. Both Laugier and Lodoli's theories, though markedly different, share an important feature typical of their time; the grounding of architectural forms in primordial origins. Algarotti was not the ideal choice, but he was influential in European intellectual circles. Lodoli's friends thought his commentary would bring a greater international reputation.

That Algarotti was not an acceptable choice, and had ulterior motives, should have been obvious from the two conditions that he placed upon the commission. First, was that he did not have to speak to Lodoli, who was at this time still alive, and second that Lodoli not be allowed to review the text before its publication. Algarotti's text turns out, not to be an essay on Lodoli, but rather a presentation of two different approaches to architecture. The first is that of the 'philosophic spirit', which is obviously supposed to be Lodoli, who Memmo called 'the Socrates of architecture', but not directly identified as

such. The second was a more traditional position, none other than that of Algarotti himself.

The 'philosopher spirit' uses his Socratic method to defend architecture through reason, rejecting the authority of tradition and example, and thereby purging architecture of all falsehoods. His main principle is that ". . . nothing must be seen within a building that does not have its proper office and is not an integral part of the same construction, ornament has to result exclusively from necessity, and all other that architects introduce into their work will be mannerism and deceit."[xi] The philosopher goes on to state that all-architectural forms, construction and ornament, should suit the nature of the material. Ornament should be based solely on construction and material used.

In opposition to this, Algarotti places his own considerations of what architecture is. He considers two principal concerns of the architect: intrinsic solidity, and external beauty. In accordance with solidity the architect must consider the characteristics of the materials used and alter the proportions accordingly. In this he is in accordance with the philosopher. But when it comes to exterior beauty the form itself must be derived from the proportions and characteristics of only one material and form of construction, that of timber.

Algarotti believes that architecture is an imitative art and that the model to be imitated is the timber hut. While the publication of Laugier's *Essai* prior to this had advocated the origin of architecture in the primitive hut, this idea actually originated with Filarete. He was most likely inspired by Vitruvius, who claimed that the Greeks first built in wood, and that the forms of the Greek temples were derived from the forms and proportions of this type of construction. Algarotti believed that stone forms would be rude. Therefore he

advocated the idea that architectural form, following the Greeks, according to Vitruvius, should be derived from the archetype of wooden construction. For him the 'lie' was more beautiful than the truth.[xii] This was the artistic genius of the Greeks. It was a central point for Algarotti; beauty was not always reducible to reason. Rather architectural precedents have an authority that may overstep the laws of reason. For him the task of the architect is to examine historical architecture in an attempt to determine the variables that make the form more pleasing. Algarotti limited his examples to the orders and their proportions, in this way he remained a traditionalist.

Often associated with Algarotti was the Neapolitan theorist Francesco Milizia. His *Vite De piu Celebri Architetti* of 1768 lays out a nine point system for architectural design and in actuality is a compilation of the writings of Algarotti, de Cordemoy, Frezier and Laugier. Milizia too, bases his architectural theory on the Vitruvian model of *Firmitas*, *utilitas*, and *venustas*. For him architecture is an imitative art. Following de Cordemoy its model is both the rustic timber hut, as exemplified by the Greek temple, and the forest, as exemplified by Gothic construction. The distinction between a man-made model and a natural one is for him insignificant. This is in contrast to Algarotti, but in line with de Cordemoy, Frezier and Laugier.

In his outlines of architecture, which include not only the *Vite* but also the *Principi di Architettura Civile* of 1781, Milizia identified himself as a follower of Giovanni Pietro Bellori, in that he believed that man could imitate nature and constantly improve upon its beauty.[xiii] His search was for universally applicable rules for architecture. He saw architecture as a science, which betrays his rationalist leanings. This was where Milizia and Algarotti parted company. Algarotti insisted that architecture was an art. He did not

conceive of architecture as a discourse that investigated nature in order to find universally applicable laws. Unlike Milizia who saw the rustic timber hut as an abstract universal model, Algarotti conceived of the evolution of the orders through a process of substitution that was a response to practical necessities, a point derived from Lodoli himself.

It is here that the temporal difference between these too men become important. Algarotti was the Baroque dilettante, the last theorist of an older tradition. For him the end of architecture was still verisimilitudes, not scientific truths. Milizia on the other hand is a product of the Enlightenment; his quest was to turn architecture into a science as defined by the epistemology of science and Enlightenment reason. Algarotti had created the rigorist 'Lodoli', with unflinching rationalism, as a foil in order to criticize the undermining of traditional architecture by the new scientific method. Yet, in his theory the role of reason is left ambiguous. When Milizia reads Algarotti, he does so through the filter of Cartesian rationalism, this allowed him to conflate the Lodolian ‘rigorist’, with Laugier's rustic timber hut, which Algarotti had claimed was the origin of architecture. Kruft explains this move in the following manner "On the question of ornament, Milizia is once again close to Laugier, interpreting the Orders as an integral part of architecture and as the framework of a building, disallowing all ornament not grounded in necessity. Any ornament that is made merely as ornament is a vice. Functional necessity dictates the form of each architectural element: if it is in appearance, so it must always be in function. This formulation is a clear paraphrase of Lodoli. But Milizia reinterprets Lodoli's stipulation, which related truth to materials, to mean Laugier's structural functionalism."[xiv] Thus the image of Lodoli as a 'rigorist' was the product of two

misinterpretations, one deliberate, the other not, by two theorists whose writings appear on both sides of a theoretical divide.

The issue of Lodoli's attitude toward ornament is an important one. The definition of Lodoli as a 'Rigorist' and the grandfather of Functionalism hinged on his rejection of ornament. But as Rykwert has shown, Lodoli's own work fully embraced ornament, indicating that this interpretation was flawed.[xv]

Memmo: Setting the Record Straight

This brings us to Andrea Memmo and his interpretation of Lodoli. Bitz remarks that in his *Elementi d' Architettura Lodoliana,* posthumously published in 1834, Memmo recorded the reaction of Lodoli to Algarotti's *Saggio Sopra L'Architettura.* The reaction is recorded in the form of short story. If Memmo is to be believed there is no doubt as to whose interpretation is more accurate.

According to the story, a hunter gave Lodoli a fat pheasant as a gift. He then decided to take it to the Balena workshop to be stored until he returned, hoping later to give the pheasant to a friend as a gift. Upon his return he discovers that the gift is gone, an apprentice by the name of Francesco Algarotti has cooked it with the *fritelle* of the day. The parable is pointed; the fat pheasant is presumably the metaphysics of Vico upon whose philosophy Lodoli modeled his school. As a teacher he had hoped to pass the gift on to the world in the form of an architectural theory. Algarotti, as a result of his limited wisdom, failed to recognize it for what it was. While Lodoli implies that Algarotti's error was unintentional and due to his ignorance, the use of the term fritelle is a brusque

critique just the same. *Fritelle* is a common and lowly dish. Memmo implies that Lodoli has given Algarotti a tasty philosophic morsel, which he has confused with his own low and common thought. Algarotti's other writings never amounted to much. This was perhaps the greatest insult to the noble courtier.

Memmo's text takes as its main goal to set the record straight, and present the true theory of Lodoli.[xvi] He claims that Lodoli did not argue against architecture *per se*, he knew that contemporary architecture was built upon the work of the past. What Lodoli intended to do was to reverse the decline in architectonic reasoning, through a critical examination of all architecture past and present. He had been particularly interested in those specific architects who not only practiced, but also wrote. While the past was for Lodoli an important historical source for contemporary practice, he did not advocate either an imitation of the ancients, or an imitation of an idealized model, as his contemporaries did.

Memmo's critique noted that Algarotti and his patrons favored traditional systems of architectural theory. They rejected the ‘philosophical’ examination espoused by Lodoli, who proposed a ‘true’, as opposed to a ‘good’ or ‘correct’ manner of building, which was intended to give form to ornament and demonstrate, or ‘prove’ the principles upon which it was based. Lodoli’s theory was not based upon utility as it had been for the French rationalists, rather, formal elements were to be determined by, and demonstrations of, the nature of the materials and how they were used in given situations. Such demonstrations were the product of reason. Lodoli’s criticism of traditional theory was only a matter of point, where the elements used contradicted the truth. Such truth was determined by the energy within the material form, and the overall structure or organization of the building.

Such precepts Lodoli himself could trace back to Vitruvius and were therefore grounded within the past and tradition.[xvii]

Memmo also goes on to attack Algarotti's 'beautiful lie', noting that even he had to admit of the temporal pre-eminence of Egyptian architecture. Since Egyptian architecture developed prior to the Greeks, stone construction and technology must have existed prior to the timber constructions of the Greeks. This was an important fact in the contemporary debates of the day and could be traced back to the historical studies of architecture by men like Perrault, Guarini, Wren and Fisher Von Erlach.

The Greeks developed their architecture in timber because it was originally plentiful and available. When the countryside was deforested they were forced to develop another construction material, or else they were simply influenced by Egyptian stone construction techniques. In either case, basic architectural forms and proportions had been developed prior to the Greek temple form. This immediately places the conception of the origin of architecture in Laugier's rustic timber hut in doubt. It should be noted, though, that the imitation theory continued well into the nineteenth century, as we have seen, in the work of men like Quatremere de Quincy (1755- 1849).[xviii]

Memmo stressed that the 'beautiful lie', of the Doric order, did not reflect architectural truths, but reflected Greek taste.[xix] If this was so, then the Orders were not essential to architecture as an art form. This was Perrault's argument.[xx] This was where Algarotti and Milizia got it wrong, they, like Laugier, mistook a part of architecture, the Orders, for all of it. Lodoli parted company with the traditionalists on this and appeared as a revolutionary modern, ala Perrault, to them. [xxi] But he did not accept Perrault's assertion that the orders originated out of fancy. According to Lodoli the Orders were not the

essence of architecture, but they were originally tectonic truths that were subsequently maintained as products of cultural taste.

Parting company with rationalists like Laugier and the latter Neo-Classicists, as well, Lodoli refused to accept the column and entablature as fundamental principles of architecture to be imitated. Since the orders were in stone, as opposed to their original timber, they had ceased to be demonstrations of original architectural reasoning. Lodoli rejected them not because they weren't a reflection of a 'Positive' or timeless beauty, but because their forms ceased to be true demonstrations of their original meaning. The revolutionary character of Lodoli's thought lay in his rejection of any imitation theory when it came to the orders. As I will show below, the detail was for Lodoli a representation of the function and materials used in a given situation. The orders revealed the truth of a given situation during the dawn of Greek culture. Their continued use was nothing more than copying and represented a failure to learn the valuable lesson that they embodied: the thought process that creates style in the first place. This was the true principle of architecture as revealed in the orders, not the form of the orders themselves. It was this that sets Lodoli apart as a true revolutionary, and a precursor of later 'tectonic' discussions in architectural theory.

Sheriman and the Dream of a New Architecture

Zaccaria Seriman, who was supposed to be a frequenter of Lodoli's school, made the same point poetically clear in *Viaggi di Enrico Wanton,* a literary work composed in 1749.[xxii]. This work takes the form of an imaginary journey, a genre popularized by Swift

and derived from Lucian. In this ingenious fable a young Englishman Enrico Wanton is shipwrecked in a foreign land on the coast of Terra Australis, in the Paese delle Scimie, the land of the monkey-men. Wanton, like Gulliver before him, wanders through this land encountering different peoples and cultures along the way. The text is an allegory of the contemporary debates on architecture and philosophy.

Wanton's first encounter is with the Capitol City of Scimiopoli; it reflects the values and manners of Venice. Here the excesses of fashion and luxury are the rule of the day. The people's greatest fear is the rise of a new form of education and science, which values personal, rather than class, superiority. The character of the society is reflected in its architecture, which can only be described as an agglomeration of parts, none of which seems necessary. The architectural beauty of Scimiopoli can only be defined by its multiplicity of ornament, which shows a blatant disregard for materials and proportions. The land of the monkey men, and its capitol city Scimiopoli, is allegorical of the aristocratic traditionalists and the Rococo fashion they espoused in the 18th century.

It is here, within this city of excess, that Wanton meets a most unlikely philosopher, one who seeks to reduce the architectural forms of this city to majestic and primordial simplicity, through the application of mathematical principles. The philosopher argues that ornament is unacceptable if it contradicts the truth, and that materials may only be used in a manner true to their nature. Wanton is fascinated by this man the locals call mad. The 'mad' philosopher is none other than Carlo Lodoli.

The second half of the journey takes Wanton to the Regno dei Cinocefali, the Kingdom of the dog-faced men. This kingdom is depicted as a neoclassical utopia ruled by a philosopher- king. For the Cinocefali education consists of schooling in moral

philosophy which guides them in the control of their passions and balances both individual and communal needs. The society is founded on moral philosophy, not fashion and manners. It stands in opposition to that of the Scimie. Any contradictory philosophical factions are banished to the Paesi de' Filosofi.

On his trip through the countryside of this land Wanton first encounters the Fortezza de' Venti, or miserable citadel. This fortress is the home of the metaphysicians who worship abstraction. Their language is filled with words like force, virtue, quality, form, universal, and category. Here the citizens are concerned only with the abstraction of esoteric thought in total disregard for the particulars of the body, the result is that the society is in disrepair; crops are not tended, work is never done, services never provided. This is attributed to the underlying belief of this society that 'the beings of reason are not possible in reality.'[xxiii] The physical characteristics of the architecture of the Fortezza de' Venti is that it is a feeble patchwork of materials and construction, in a sterile landscape. On his last night in this fortress Wanton dines with a learned nobleman who reveals the sole thought upon which all thoughts are based, in this fortress as least. "'*Io cammino, dunque . . . dunque son vivo*---.' ' I walk, therefore, I am alive."'[xxiv] The inherent irony is an obvious reference to Descartes, who derived existence from thought in his famous *cogito ergo sum*. The nobleman derives existence from an action of the body, yet this is in direct opposition to the priorities of his own society.

The next city that Wanton approaches is the Castello delle Misure, the Castle of Measure. This is the city of mathematicians, each citizen a specialist and proponent of an aspect of geometry. The city is well built, ordered and ideal. Its' buildings are reasonable and decorous. This capitol city contains numerous academies, which relate mathematics

to other disciplines such as physics, music and ethics. Its moral philosophy is based upon the line and calculus. The reference here is to Spinoza, whose *Ethics* showed a great concern for geometrical rigor and rendered Descartes *Principles of Philosophy* into geometrical form. The citizenry though, have divided into two factions, one debating the supremacy of the line, the other of calculus. A wise Cinocefalo explains to Wanton what the basic problem is. He uses the analogy of the sword: it has no use if not applied to a physical body. When used to cut only the air one should not blame the sword but rather the swordsman. Wanton understands the message of the wise man; science when applied to intangibles is fruitless and can only be socially divisive.

Seriman's fable rejects first the courtly society for its excesses, which have no order or truth, second the rationalist approach which has no concern for practical needs, and third, the society founded on esoteric wisdom which reduces all reasoning to abstractions derived from mathematics. The lesson to be learned is that reasoning without experience, necessity and human narrative is fruitless.

When one compares the descriptions of the cities visited in the fable, a strong and topical (given the intellectual debates of the time) theme emerges. In order for society to be just and serene, wisdom must be applied to practical problems. Without practical wisdom, metaphysics fails to provide for the needs of humanity. While mathematics and geometry provide order they do not ground morality and ethics in ‘being’. Ethics and practical wisdom must engage the particulars of daily life, of the experience of virtue and vice.

Seriman's fable indicates that Lodoli's was an alternative position to the excesses of the earlier traditions, the rationalism of the Cartesians and the abstractions of the

mathematician. It identifies Lodoli as a wise sage, attempting to simplify architecture and society through the application of new principles in order to produce a better society founded on truth and the nature of materials. But how did Lodoli set out to accomplish this in architecture? In order to answer this question it is important to look at those writers who influenced him and how he used their ideas to shape his own theory.

> "invention based on a manipulation of the details of real images . . . a singling out of parts to reach a presentation and an understanding of a whole, i.e. a non- trivial representation."
>
> Marco Frascari
> *The Particolaregiamento in Literature and Architecture* [xxv]

Particolareggiamento or the Mytho- poetic Reasoning of the Particular

Lodoli associated with the prominent thinker Antonio Conti, a Venetian nobleman, mathematician and metaphysician. Widely known throughout Europe, his tragedy *Caesar* had brought him fame in Italy, France and England. He was also known to have had correspondences with both Leibniz and Newton. Conti was one of a group of prominent Italian philosopher poets who considered themselves 'reformed Cartesians'. In addition to him, the group included Ludovico Antonio Muratori, Gian Vincenzo Gravina, his uncle in Naples Gregorio Coloprese and the Philosopher Giambattista Vico. They advocated a form of mytho- poetic reasoning referred to as *particolareggiamento.*

Marco Frascari has insinuated that it was this form of thinking that accounts for Lodoli's revolutionary new approach to architecture.[xxvi] *Particolareggiamento* refers to the idea that the particular takes supremacy over the universal in the formation of 'truth'.

Such a stance is in opposition to the epistemology of science, which gives supremacy to the universal.[xxvii] The term is derived from two Italian words, the noun *particolare,* and the verb *particolareggiare.* The noun means both a detail, and a particular. The verb means to detail, to particularize, to reason by the particular rather than the universal, but also to narrate. Frascari defines *particolareggiare* as: "invention based on a manipulation of the details of real images . . . a singling out of parts to reach a presentation and an understanding of a whole, i.e. a non- trivial representation."[xxviii]

The most profound and comprehensive application of this position can be found in the writings of Giambattista Vico, then Chair of Latin Eloquence at the University of Naples. His work proved to be of great interest to Lodoli who, along with his friend Antonio Conti, attempted in 1728/9 to have Vico's *New Science* published in Venice in a revised addition. He was unsuccessful in this, but did manage to publish Vico's *Autobiography* in 1729. [xxix]

Vico had argued that the process of cognition moved from particular to universal, insisting that the 'universal' represented a form of abstraction. To use an analogy; the universal concept 'couch' is approached, or understood, only through the generalization of traits commonly found in a series of particular 'couches', that may differ significantly from each other in their individual traits. In this process individual traits of the 'thing- in-itself', are removed in order to isolate a list of characteristics common to all objects in the group 'couches'. Only in this manner does one arrive at a generalized concept. Cognition must therefore, begin with the recognition of a series of individual particulars, that are recollected in memory as bearing similar traits and therefore linked, or related through their similitude. Only then can the conceptualization of the 'universal' take place.

For Vico, this became the basis of understanding cognition, indicating that the origin of thought itself could be found in the minds' ability to identify verisimilitudes. This became the key to understanding the mind, memory, and imagination.

> "Memory is the same as imagination, which for that reason is called *memoria* in Latin . . . Imagination is likewise taken for ingenuity [*ingegno*] or invention. Memory thus has three different aspects; memory when it remembers things, imagination when it alters or imitates them, and invention when it gives them a new turn or puts them into proper arrangement and relationship."
>
> Giambattista Vico
> *The New Science* [xxx]

Vico and the Origins of Cognition

The realization that the recognition of common traits among diverse objects or events precedes the identification of a universal concept, led Vico to reject Descartes' notion of clear and distinct ideas impressed upon the mind, like so many images in a wax tablet. Without the assumption that universal concepts were a priori ideas given by God, Vico was left to assume a state of mind that must have existed prior to man's codifying the world with human meaning, in which the world would be nothing but sensory flux. The transition from a state of barbarian/ animal, what he called the *bestione,* to a world of human meaning required the subject to alter his or her thinking, from a series of isolated sensual experiences in time, to a series of like experiences linked together. This act, a product of *fantasia*, must literally create the idea of the self, as a fixed identity moving through time and experience, in the process. Such a moment in time was, for Vico, literally the origination of human cognition and the origin of humanity.

Vico was left to pose the question: 'how is it possible for the mind to have anything before it at all?' Since the only knowledge the *bestione* possesses is knowledge of its own body, it must have been forced to describe and 'think' of other objects metaphorically in relationship to itself. This was how man originally conceived of the world around him, he thought in poetic metaphors. The imagination became a central tenet of original cognition. As Marcel Danesi states "Vico's conception of the imagination can be summarized as that basic mental faculty which translates sensorial experience into images that are stored by the memory system and given expression in the form of metaphors. This faculty must have been present in the first acts of transforming sensorial experience into a world of meaning."[xxxi] It was this ability that allowed man to overcome the sense of alienation in nature, through codifying it experientially and assigning meaning to objects and events.

The word 'imagination' was derived from the Latin *imago;* 'image', and referred to our innate ability to form mental images. As Danesi points out, "This, remarkably, is exactly what Vico means when he refers to human mentality as having originated in the *fantasia* in the form of images. The exercise of the imagination is, in fact, the only way that figurative meaning can be inferred from metaphorical expression."[xxxii] For Vico the image, and by extension metaphor, was the primary means by which the human mind, or the imagination, came to terms with the world around it.[xxxiii] This was the origin of thought itself. It became the basis of Vico's 'poetic logic', whose corollaries were the first tropes of metaphor, metonymy, and synecdoche.

As Donald Phillip Verene has pointed out, this was a theory that identities 'metaphor as the fundamental epistemological element' and the key structure of original

perception.[xxxiv] Vico himself stated the importance of language as a center-point between sense perception and the mind's ability to grasp and interpret the world when he stated that "a man is properly only mind, body and speech, and speech stands as it were midway between mind and body."[xxxv]

For Vico the imagination was an aspect of memory, which he claimed was threefold. "Memory is the same as imagination, which for that reason is called *memoria* in Latin . . . Imagination is likewise taken for ingenuity [*ingegno*] or invention. Memory thus has three different aspects; memory when it remembers things, imagination when it alters or imitates them, and invention when it gives them a new turn or puts them into proper arrangement and relationship."[xxxvi] Memory here was a mental faculty and primary component in knowledge construction.

> "The first poets attributed to bodies the being of animate substances, with capacities measured by their own, namely sense and passion, and in this way made fables of them. Thus every metaphor is a fable in brief."
>
> Giambattista Vico
> *The New Science* [xxxvii]

Vico and the Forms of Thought

According to Vico, Man once thought in images, what he referred to as 'Imaginative Universals'. This was the 'master key' of his *The New Science:* original thought was imagistic and by extension metaphorical. As Verene claims, the 'Imaginative Universal' was basically a theory of image. It was Vico's discovery that the first peoples thought in "imaginative genera (images for the most part of animate substances, of gods or heroes, formed by their imagination) to which they reduced all the species or all particulars

appertaining to each genus."[xxxviii] It was through these imaginative genera that the first men attempted to understand the world around them by animating nature. "The first poets attributed to bodies the being of animate substances, with capacities measured by their own, namely sense and passion, and in this way made fables of them. Thus every metaphor is a fable in brief."[xxxix] Images, and metaphor, became seen as the fundamental category for understanding the world. They were the primary operation of the mind. This was what Vico referred to as ‘poetic’ logic. It was for him a form of poetic metaphysics and preceded the rational metaphysics of the abstract concept.

In opposition to this, as a latter development, Vico proposed the 'Intelligible Universal', a form of knowledge as ‘rational’ logic. It was derivative of an age when men are able to abstract concepts and to think thoughts that have no figurative presence about them. The function of the mind was to sort and analyze. This was accomplished through the mind's ability to abstract properties that may be common to various objects and thereby link particulars into class and genera. Verene summed this up by stating that "The essential features of these objects are abstracted through reflection. As the mind rises from the perception of individual objects to the essential properties that constitute them as species and to the genera according of the species by omitting sensuous content from the original perceptions, so the mind can descend from genus to species to individual object by adding elements of specific content. According to this view, the universal is that which can be conceived as a property common to the members of a given class and which can be predicated commonly to all members of the class."[xl] The 'Intelligible Universal' constitutes the basis of conceptual thinking and develops a rational metaphysics.

Conti's *particolareggiamento* and Vico's 'poetic' logic framed an alternative theory of mind and epistemological structure. It argued that thought was essentially metaphorical, and that the imagination, memory and *fantasia* were central to understanding how meaning is created in the world of human experience. It also identified the inherent abstraction of the universal: as a concept that distances itself from reality and truth. From this position Vico developed first a critique of Descartes and the epistemology of science and then a complete philosophy and metaphysics in the *New Science*.

Vico's philosophy essentially exists outside the development of Western philosophy, and therefore represents a true alternative to it. By deriving his position from such a philosophy, Lodoli was able to posit a theory that was a true 'other', from which real resistance to the rationalist 'instrumentalization' of architectural theory was possible. In order to understand the very radical nature of Lodoli's theory and its implications for architectural theory it is necessary to first understand the radical nature of Vico's critique of Descartes, the epistemology of science and his reformulation of truth and science.

> "But I who think am mind and body, and if thought were the cause of my being, it would be the cause of body. However, there are bodies, which do not think. Thus I think, rather, because I consist of body and mind. Body and mind united are therefore the cause of thought, for were I solely body I would not think, but were I solely mind I would understand [the reasons forming thought]."
>
> Giambattista Vico
> *The New Science*[xli]

Vico's Critique of the Epistemology of Science

The epistemology of science was structured around two core tenets. The first was the assumption of nature's essentially geometric structure. It was this principle, originating first with Galileo that became the basis of Descartes' geometrical method outlined in the *Discourse on Method,* and was the foundation of Newton's theories of motion and mass. The Second was the development of a specific form of rationality, were reason was equated solely with 'conceptual, 'logical' or 'abstract' thinking. Irving Horowitz has referred to this as 'Epistemological Rationalism', which denies the efficacy of the senses in gaining knowledge of the world, and insists that 'truth' can be derived solely from the employment of the powers of reason.[xlii] This was precisely the basis of Descartes' philosophy and the *'Cogito ergo sum',* wherein the senses and the imagination were denied as means to certain knowledge. While most intellectuals of the eighteenth century accepted these tenets they were not without controversy and criticism.

Vico was one of the earliest and strongest critics who directly challenged the epistemology of science on both tenets. He first attacked the geometrical structure of knowledge in *On the Study Methods of Our Times* in 1709. In it he claimed that geometry was not a demonstration of the structure of nature, but a mere probability, because we

ourselves have made the rules of geometry. According to him: '. . . the principles of physics which are put forward as truths on the strength of the geometrical method are not really truths, but wear a semblance of probability. The method by which they were reached is that of geometry, but physical truths so elicited are not demonstrated as reliably as are geometrical axioms. We are able to demonstrate geometrical propositions because we create them."[xliii]

The postulates in both mathematics and geometry are, in a sense, closed hermetic systems that have no relationship, as postulates, to external objects. The point, line and plane of which they are composed are human fictions. While true in and of themselves the postulates are not true in the sense of their application to the world of physics. They may serve to define the objective reality of a given object, but tell us nothing of its inner nature, its causes.

Vico did not devalue mathematics or geometry; on the contrary, he viewed them as examples of human constructions that mimic divine creation. We understand the postulates of mathematics and geometry in the same way as God understands the natural world, because we ourselves have made those postulates. Geometry and mathematics are 'true', because we make them and understand their cause, but the world of nature is not a construction of man, it requires a relationship between the human mind, and that which is external to it, whose causes are essentially unknown. The geometric proofs, according to Vico, prove nothing except their own validity as geometric axioms. Establishing them as the basis of method in science was a fundamental problem for him.

Accordingly, natural science becomes true only in the sense of experimentation, in which the experiment itself is a geometrical construction. The truth of the physical

sciences is a truth of mathematical demonstration, whose real object still exists outside the demonstration in the realm of mathematics. It is a mediated truth, not a real 'truth' of reality. It is for this reason that, according to Vico, the physical sciences do not provide us with the certain truth claimed by Descartes, only mere probability.

The second tenet of the epistemology of science was its insistence on 'Epistemological' reason; 'conceptual, 'logical' or 'abstract' thinking. This originated from Descartes' methodology of systematic doubt and culminated in the proposition *Cogito ergo sum*, 'I think, therefore I am.' But was the proposition a truth as Descartes maintained? Did philosophic doubt lead to absolute truth? Vico thought otherwise. In *On the Most Ancient Wisdom of the Italians* of 1710, he took on Descartes' theory of mind head on. When knowledge of the true is unknown men hold to what is certain.[xliv] Vico pointed out that in everyday life men often mistake consciousness for testimony of the thing, without real proof. Such is the condition of the skeptic who, while conscious that he thinks, is still ignorant of the causes of thought: or how it is that he thinks in the first place. Vico argues: "But I who think am mind and body, and if thought were the cause of my being, it would be the cause of body. However, there are bodies, which do not think. Thus I think, rather, because I consist of body and mind. Body and mind united are therefore the cause of thought, for were I solely body I would not think, but were I solely mind I would understand [the reasons forming thought]. Thinking is not, indeed, the cause of my being a mind, but a sign of it, and a sign is not a cause. Thus the wise skeptic will not deny the certainty of signs, but he will deny that of causes."[xlv] Truth, according to Vico, is knowledge of causes, Descartes' *cogito* proves only a consciousness of being,

not its cause. Nor for that matter does the *cogito* provide us with a means of assessing the cause of thought; how or why 'I think'.

Verene explains Vico's criticism this way: "Descartes, in Vico's view, has failed to distinguish between what is true, *verum*, and what is certain, *certum*; and he thus fails to distinguish between scientific knowledge, *scientia*, and consciousness, *conscientia*. *Scientia*, whose object is the true, requires knowledge of causes. Such knowledge would require the mind to possess the form from which, to make itself. In the *cogito* the thinker discovers himself as a *certum*; of which he is indubitably aware. The *conscientia* of the sign of his being in not a *scientia* of its truth . . . From this extraordinary *certum*, this exceptionally powerful act of consciousness, it is not possible to generate *verum*, true knowledge of causes."[xlvi] The rationalism of Descartes' *cogito* produces only a consciousness of signs that indicate or point toward truth, but fail to actually reveal it. The *cogito* doesn't reveal itself to be the key to truth, but rather the shadows in Plato's cave. This became the basis of Vico's general opposition to Descartes and modern science.[xlvii]

The ramifications of Vico's criticisms were staggering for modern science, the '*cogito*' provided a rationality of signs, not causes, and the natural sciences provided knowledge of experiments in the form of mathematical demonstrations, but not 'reality'. Under such conditions, was it possible for science to provide access to the 'True'? According to Vico the answer was that it could not, the basic tenets upon which the epistemology of science was established provided a false truth.

Forward looking thinkers like Lodoli and others in the Venetian circle were not willing to give up on either truth or science, but they could not ignore Vico's findings

either. Once the argument was put forward it became necessary to rethink science and truth along Vichian lines. This point is essential. The distinction between Vico and Descartes makes all the difference in the interpretation of Lodoli's intentions. The inability to make such a distinction was the source of the historical confusion. How then did Vico define the nature of the 'true' and of 'science' that formed the basis of Lodoli's theory?

> "Philosophy contemplates reason, whence comes knowledge of the true; philology observes that of which human choice is author, whence comes consciousness of the certain."
>
> Giambattista Vico
> *The New Science*[xlviii]

Vico on Truth

For Vico *certum* and *verum* are not interchangeable, *certum* is only part of the *verum*.[xlix] They are poles within the discourse of knowledge. He would refer to this as the *verum/ certum* principle. Descartes' confusion of *verum* and *certum* led not to a philosophical truth, but a philological one. As Vico claims: "Philosophy contemplates reason, whence comes knowledge of the true; philology observes that of which human choice is author, whence comes consciousness of the certain."[l] The task of philosophy is to undertake an examination of universals, of that which is held in common among things, it is a truth of the whole. Philology, on the other hand, undertakes to examine particulars of the historical world.

The philosophers, Vico claimed, failed by half in not giving certainty to their reasoning by appealing to the philologians, who in their case failed by half in not giving authority to their findings by appealing to the reason of philosophers.[li] This is precisely

the problem with the epistemology of science. It is derived from philological certains, *il certo,* not from philosophical truths, *il vero*. It is ignorant of the *verum/ certum* principle. It is a science of facts, not of causes, of the part, not the whole.

In *On the Most Ancient Wisdom of the Italians,* Vico would later outline what would serve as the second basis of his understanding of the true. In Latin *verum* (the true) and *factum* (the made) are interchangeable, from this piece of philological observation Vico postulated the convertibility of the true and the made, the *verum- factum. Verum* is here understood in a metaphysical sense as 'Intelligibility'. *Factum* is understood from the position of *ens factum;* being made, or the making of 'being'. What Vico postulated as 'truth', as 'intelligibility', was the making of 'being'. Truth, according to Vico, is not only knowledge of the object of study, but also of its causes, the how and why it is made.

What is true, or intelligible, is fully present as a truth only to its maker. According to Vico ". . . the true is what is made; that the first truth is therefore in God, because God is the first Maker; that the first truth is infinite, because God is the Maker of all things; and that it is complete, because it makes manifest to God since He contains them."[lii] God as the Maker of the world knows the inner and outer nature of things because He himself has created them. Since we have not created the physical world such full and complete knowledge is closed to us as a *verum,* or absolute truth.

This point is vital according to Vico, because it identifies the distinction between Divine knowing and human knowledge. "And just as divine truth is what God orders and produces as He comes to know it, so human truth is what man arranges and makes as he knows it. In this way knowledge is cognition of the genus or mode by which a thing is

made, and by means of which, as the mind comes to know the mode, because it arranges the elements, it makes the thing."[liii]

As Donald Phillip Verene has pointed out, the *verum- factum* is the middle term of the syllogism; the ultimate middle term of thought itself.[liv] The 'True', according to Vico, is the product of a triangulation between *verum*, *certum* and *factum*. The 'True' is knowledge of how the 'intelligible' is made manifest in 'materiality'. It implies an understanding of the relationship between the universality of the idea, and the particularity of the 'thing-in-itself'.

Such a relationship is the very object of the art of *disegno*, an area of theoretical study in the arts in Italy that began in the Renaissance. Venice was an important historical center for the arts and for aesthetic theory. Theories of *disegno* had long been topics of discussion in the Venetian circles. Vico's *verum ipsum factum* provided a serious philosophical means of addressing the relationship between 'intelligibility' and 'materiality' in the guise of what he calls a 'new science'. It is no wonder that Lodoli became fascinated with Vico's propositions. It could potentially lead to a 'new scientific' approach to art and architecture. One that could provide a theoretical ground outside rationalist discourse that could resist the 'instrumentalization' of architecture and prevent the loss of meaning.

Vico's New Science

Vico's understanding of the relationship between the *verum/ certum* and the *verum-factum* led to his major philosophical work, *Principles of the New Science of*

Giambattista Vico Concerning the Common Nature of the Nations. The *New Science* was an attempt to reestablish 'science' along another trajectory. What was Vico's 'new' scientific approach?

For him science begins with the universal: it classifies objects, through the process of abstraction, according to genera and type, essentially removing all secondary characteristics that identify the object as a particularity. The scientific method is one of analysis, or dissection, in which the object, once classified is broken down into its constituent parts, which are then analyzed according to the relationship between primary characteristics. The relationship of parts, one to another, is then documented. This method provides a consciousness of the constituent parts of the 'thing-in-itself', and their relationship, but not of their causes.

In place of this consciousness of physical things, Vico sought knowledge of man's production of knowledge: the very nature of cognition and humanity itself. In order to do this, one must overcome the mind's tendency to be satisfied with a consciousness of the 'thing-in-itself', and seek the generation of the true causes of that consciousness.

As it is used in the title of his work, the term 'new science' encompasses a wider meaning than previously used. It refers to both *scienza*[lv] and *coscienza*[lvi]. According to Bergin and Fisch, their distinction can be summed up in the following manner "*coscienza* [is] consciousness of conscience, and *scienza*, [is] knowledge or science. *Coscienza* has for its object *il certo*, the certain; that is, particular facts, events, customs, laws, institutions, as careful observation and the sifting of evidence determine them to be; and *scienza* has for its object *il vero*, the true; that is universal and eternal principles . . . The pursuit of *coscienza*, of the certain, is philology or history; the pursuit of the true or the

common is philosophy."[lvii] Vico's *New Science* takes as its methodology both pursuits: philosophy and philology. Its method begins not with the classification of objects of study as universals, but with an investigation of the particular, as given certain.

This method also grounds truth in the particulars of time and place, since history and *praxis* cannot be considered outside of such categories. In this way Vico can redirect the entire epistemological structure of his 'new science' toward those very conditions of time and place whose denial had made modern science so problematic to human experience.

But Vico's critique of modern science was not just a critique of method, but of object as well. The natural sciences take as their object that which is made by God, and as a result its 'truth' is a mediated one for us. Following the principles of *verum- factum* and *verum/ certum*, to possess an unmediated 'truth', a true 'intelligibility', the object of science must be something that we ourselves make.

What Man makes are human institutions; because they are man-made, not only can we claim them as true, and know their causes, but in making the human world man makes his own history and therefore can truly know its inner and outer nature, its causes. It is a truth of the reality of human experience, which is a truth greater than that of geometry: of the point, line and plane, which possess no reality outside the human mind.[lviii] Max Horkheimer has commented on this point, making the claim: "Vico takes over the principle of the exclusive knowability of the created and even makes it into a yardstick of his philosophy- but attributes to it a completely different and radically new meaning. What men have created and what therefore constitutes the prime target of cognition- those creations in which the essence of human nature and 'mind' is most clearly revealed- are not the fictive constructions of mathematical reason but rather the happenings of

historical reality."[lix] The *New Science* relies on an analysis of human thought as it regards what is considered necessary and useful to man in a given situation. In other words, all modes of human production must be explained in relation to, or in terms of, necessity, as reactions to material needs. The keys to understanding the world of human experience are the external conditions of human life and the early psychic characteristics of early man. For Vico, the 'true' science is not the science of Galileo and Newton, but the science of human institutions and history, the humanities, as opposed to the natural sciences.

Once understood, architecture, a product of human making, becomes a legitimate subject of Vico's new science, one that is to be explained in terms of necessity as reaction to material need. This is where Lodoli must have seen the potentiality for a new theory of architecture.

> "Our new science must therefore, be a demonstration, so to speak, of what providence has wrought in history, for it must be a history of the institutions by which, without human discernment or counsel, and often against the designs of men, providence has ordered this great city of the human race. For though this world has been created in time and particular, the institutions established therein by providence are universal and eternal."
>
> Giambattista Vico
> *The New Science* [lx]

The Verum of Vico's New Science: Providence

In the *New Science,* Vico referred indirectly to the *verum- factum* when he discussed his famous *corso e ricorso*, the ideal eternal history: the course of historical events in the rise and fall of nations. For Vico, all nations order themselves temporally and spatially

according to the same principles, these are derived from the nature of human mentality. The stages in the development of institutions are the same as the stages of development of the human mind and cognition: from the mytho- poetic *fantasia* of the Imaginative Universal to the Intelligible Universal.

This is the universal, philosophic *verum* of the ideal eternal history. Each nation is a microcosm of the totality of the human world, each stage in its development a microcosm of that stage of mentality. The *certum* and *verum*, particular and universal reveal themselves in a reciprocal relationship. It is in the course of civil history, the rise of civil institutions, of laws and customs that the ultimate truth of human making is revealed. The examination of human action, or *praxis*, according to the principles of *verum- factum* and *verum*/ *certum* gives the mind knowledge of itself, of its own causes and modifications.

What Vico claimed to have discovered, as the eternal truth of human existence, is man's singular will to a social and cultured existence, in spite of historical setbacks of individual action or nature. True wisdom, as human self- knowledge, can only be derived from an analysis of the historical process of making, and not from introspection or reflection. Since governments, laws, religions, science and the arts are all human creations, they all have their origins in this historical process, they cannot be understood from an analysis of an isolated individual, but must be understood from the point of view of relationships between individuals, from within their sociability.

Vico called this Divine Providence, the 'Queen of human actions'. It was this providential wisdom that was the goal of his new science. "Our new science must therefore, be a demonstration, so to speak, of what providence has wrought in history, for it must be a history of the institutions by which, without human discernment or counsel,

and often against the designs of men, providence has ordered this great city of the human race. For though this world has been created in time and particular, the institutions established therein by providence are universal and eternal."[lxi]

> "To recollect is to order things in terms of their origin, to obtain a totalization of all the fragments of the activity of the human spirit through a progressive ordering of things between the origin point once found, and the form of the present mentality from which the ordering takes place . . . What must be sought is a sense of self- identity that extends through time from the origin to the present. We must re-perceive with our memory what this first world is like before it can become an object of reflection."
>
> Donald Phillip Verene
> Vico's Science of Imagination[lxii]

The New Science as Self- Knowledge

In *The New Science*, Vico points out that his new science is a rational civil theology of divine providence, a philosophy of authority and a history of human ideas from which a theory of mind can proceed.[lxiii] The methodology of *The New Science* asks that its practitioner seek within the philological particulars of history and the course of nations an economy of structures, of causes and effects that are common to all. Such common traits reveal the philosophical truth of history, its' providential pattern. The meditation on these two givens makes manifest the ideal eternal history as a civil theology. It is a faith that despite the diversity of conditions, variations within cultures, and the eventuality of a nations decline and fall, the human race will preserve itself and in the end maintain a verity of human reality.

In much the same way the *New Science* manifests a philosophy of authority. The philological 'particulars' of history and the course of nations expose the specifics of human choice, and how judgments are made. What is revealed is that human action is a product of human choice, determined not from rational inference or a priori postulates, but from a common perception of things, the *sensus communis* of a given society. Choice and decision derive their authority, and are therefore shaped by, the form of thought at any given stage in the development of a nation.

Likewise, it is in the course and recourse of nations, their rise and fall that the providential truth of human making reveals a history of human ideas. In the *New Science* Vico claimed: ". . . the world of civil society has certainly been made by men, and that its principles are therefore to be found within the modifications of our own human mind."[lxiv] This correlation is essential in understanding Vico's thought. The correspondence between the principles of the ideal eternal history and the modifications of the mind imply a history of ideas in which forms of thought and forms of society, are co-determinate. Logic, language and civil institutions develop together in a specific order through time. The discovery of the Imaginative universal as a means of original thought meant that the rational and abstract way of philosophical thinking could not have been the means of thought of the first men who founded civilization. Likewise, the rational laws and civil institutions could not have arisen all at once, but must have developed over time.

The human mind and the reality of human experience are intricately linked, like the two terms of a syllogism. By uniting the philosophical *verum* of the ideal eternal history with the philological *certum* of civil history it becomes possible to understand the

universal in the particular and therefore, the true as it becomes manifest in the particulars of reality. This implies that civil institutions encode the *verum* of the human mind and its making.

But to understand this *verum* of humanity we must, as Vico claimed: "begin where its subject matter began",[lxv] with the origins of humanity, or humanization: the moment at which the world was codified as a world of human meaning. The mind must approach the origin through an exercise of the original powers of the mind. To do so means to understand such an original moment through *fantasia,* through memory as imagination, and to unfold the world from it. This is not the narration of events, an historical tracing of chronology, nor is it an abstract reasoning from philosophical a priori's. It is an explanation of particulars and their causes. It must be a recollection of humanity from origins to the present.

In Vico's thought the re-making of the moment of origination is an act of *memoria* as recollection, imagination and invention. The origin is a moment of the past that must be remade, but in its remaking the subject must confront the other-ness of the past as past. This other-ness establishes a dialectic between past as recollection and present as *ingegno*, the placement of the parts in their proper order or relationship. This temporal juxtaposition sets up a metaphorical structure whose third term is the imagination or *fantasia*. Vico's conception of *invenzione,* which acts as a bridge between the subject matter and the means by which it is expressed, calls attention to the shifting of meaning from its origins to its potential permutation into new forms. By doing so it deconstructs the very structure by which the human mind applies meaning to the world around it. In calling attention to the construction of meaning, it achieves a didactic structure. It

achieves *scienza*, through the exposure of the structure of meaning. And it achieves *coscienza* by bringing an awareness of the way in which shifts in that structure have occurred, are occurring and might occur.

Verene explains this process in the following way: "To recollect is to order things in terms of their origin, to obtain a totalization of all the fragments of the activity of the human spirit through a progressive ordering of things between the origin point once found, and the form of the present mentality from which the ordering takes place . . . What must be sought is a sense of self- identity that extends through time from the origin to the present. We must re-perceive with our memory what this first world is like before it can become an object of reflection."[lxvi] In the end the proof and truth of the new science must be remade by its practitioner, it must be made convertible. This is the real value of the *verum ipsum factum*: the mind through the exercise of the *fantasia* must apprehend its own nature. True self- knowledge comes when the self remakes the process of humanization for itself. Vico's *New Science* becomes a form of self-knowledge.[lxvii]

> "She is born out of experience no less than from reasoning. Experience is a continuous and consummate reflection of usage and is perfected by operating on the necessary material of any type according to the idea of the design."
>
> Vitruvius
> *The Ten Books of Architecture* [lxviii]

Recollecting Architecture

Lodoli was regarded as a modern, a revolutionary, often depicted as rejecting the past and tradition. This interpretation is in many ways unfounded. He neither accepted, nor

rejected historical authority out of hand, but rather reaffirmed those traditional doctrines and images which passed the test of objective reason, defined in architectural terms. His thesis was itself derived from the very historical texts that he called into question. Thus we find that his architectural theory, like many before him, begins with a reinterpretation of Vitruvius.

From the ancient Roman architect Lodoli took his definition of architecture as theoretical and practical science. "She is born out of experience no less than from reasoning. Experience is a continuous and consummate reflection of usage and is perfected by operating on the necessary material of any type according to the idea of the design." [lxix] With this statement Lodoli asserts a link between memory, in the form of reflection on experiences, and reason. Architecture is the union of memory and reason. The nature of the materials used, reason and memory establish the use of architectural forms and proportions. Architectural memory is the recollection of this relationship through history.

In addition to this fundamental notion about architecture, Lodoli also took from Vitruvius his definition of proper imitation, which became the source of much of his criticism of contemporary theory. "The ancients held that what could not happen in the original would have no valid reason for existence in the copy. For in all their works they proceeded on definite principles of fitness and in ways derived from the truth of nature. Thus they reached perfection, approving only those things which, if challenged, can be explained on grounds of the truth."[lxx] Lodoli only sought to provide that challenge which Vitruvius mentioned and to hold architecture accountable to this Vitruvian standard. His

goal was therefore, not a rejection of tradition and authority, but rather a reaffirmation of it.

It was this very doctrine that Lodoli used to reject the truth of the Doric Order in stone and to designate the eternal laws of statics and material function as the true basis of all architectural design. Using Vitruvius' own assertions, Lodoli rejected any imitation theory of architecture outright, including the inherent concept of an ideal type. This is where Lodoli differed from Laugier and the latter Neo-Classicists, whose theories were based on the imitation of ideal type forms.

Lodoli rejected the idea of the timber hut, both as the sole origin of architecture, and the source of the greatest variety of forms. Not only was the cave an original shelter, but its priority over the timber hut may be asserted. It was the cave that was the origin of stone and vaulted, architecture. It should be noted here that Lodoli is making such claims prior to Quatremere de Quincy and in the end comes to a different conclusion.

The imitation of either the hut or the cave, though, could only lead to aesthetic monotony. Variety and stylistic development was for Lodoli the product of reasoning, not imitation. Unlike the abstraction of the rationalists, reasoning for Lodoli was a process of practical substitutions, as when flaws in detailing were revealed and subsequently altered and amended. Over time, through experience, the details were refined and transformed. This kind of reasoning was derived from practical experience and was inherently topical. There is no application of a priori concepts or categories and hence no abstract reasoning.

Algarotti elaborated this system of architectonic substitution in his discussion of the timber hut. In his exposition, the base of the column resulted from the inclusion of a block of wood when it was discovered that humidity and dampness damaged the post.

Likewise, the introduction of the capitol was due to the realization that a block at the top would help to transfer the loads from horizontal support to a vertical one in a smoother fashion.

This learning through experience led Lodoli to argue that the architectural detail was a union of both function and representation. Architectonic innovation and ingenuity were the products of necessity and use. The architectonic image was therefore, an image of the solution to the complex problem of a particular statistical and physical problem as defined by the architect in a given situation at a given moment in time. Architectural reasoning was one from the particular.

Lodoli's doctrine of the particular fundamentally challenged the Albertian tradition that had begun in the 15th century and was left virtually intact up to his time. In the introduction to *De Re Aedificatoria* Alberti divided architecture into two halves; *Linamenta* and *materia*, the *linamentia* conceived in the mind of the architect were independent of the *materia* to which they were applied. Alberti essentially established a division between theoretical a priori concepts and practice. He was also responsible for initiating a separation of ornament from structure. Lodoli's understanding of Vitruvius meant that these aspects of Alberti's theory were problematic.

The division between structure and ornament, which had been initiated by Alberti and made all the more prominent by developments in structural analysis and the growing technical dimension of architectural delineation, had by the middle of the 18th century raised the question of meaning in architecture as a central concern.

Lodoli did not launch an all-out attack on Albertian principles though. Alberti's notion of *commoditas* became for Lodoli a central tenet. As Alberti defined it,

Commoditas was the concern for utility and function guided by *Decorum*. The overall grace of a building for Alberti was built up from the *commoditas* of each of its constituent parts, which were the product of the suitableness of size and function of the materials in that particular setting. The linking of *decorum*, with its connection to virtue, and *commoditas* allowed Lodoli to introduce the notion of truth into the picture. Since truth and virtue were historically linked, reason could be used as a form of judgment in a given situation to determine the *commoditas* of a given detail. This became Lodoli's new standard of *decorum*. In Alberti's *decorum* social hierarchy and rank determined the final judgment, in Lodoli's *decorum* reasoned truth based upon the laws of physics and mechanics, determine the final judgment. This issue was present in Seriman's fable, in the distinction between the Scimii and the Cinocefali.

> "Our new Science must therefore be a demonstration, so to speak, of what providence has wrought in history, for it must be a history of the institutions by which, without human discernment or counsel, and often against the designs of men, providence has ordered this great city of the human race. For though this world has been created in time and particular, the institutions established therein by providence are universal and eternal."
>
> Giambattista Vico
> *The New Science* [lxxi]

Lodoli and the 'New Science' of Architecture

Lodoli was a scholar of Vico and a Vichian analysis of architecture would provide not only a *verum* of architecture as an institution, but would solve the issue of meaning as it arose in the 18th century as well as, grounding that meaning in the *verum* of human

intelligibility. The application of Vico's *New Science* became the basis of Lodoli's theory of architecture. Vico claimed that "Our new Science must therefore be a demonstration, so to speak, of what providence has wrought in history, for it must be a history of the institutions by which, without human discernment or counsel, and often against the designs of men, providence has ordered this great city of the human race. For though this world has been created in time and particular, the institutions established therein by providence are universal and eternal."[lxxii] The Science of architecture must therefore, be a demonstration, of what providence has wrought in the history of architecture, it must be a history by which, without the discernment or counsel, and often against the designs of men, providence has ordered this institution we call architecture. For though this would have been created in time and particular, the laws established therein by providence are universal and eternal. This was the task Father Carlo Lodoli set before himself and for which he was so misunderstood.

When one understands this proposition is it easy to understand why Lodoli had become known for his collections and why they were organized in the way that they were. Lodoli, it must be remembered, collected paintings and architectural fragments, which he arranged according to stylistic periods. While arrangement according to style is now common, it was Lodoli who first began this practice. To arrange by style is essentially to arrange by historical period and local culture. Lodoli's collections were his first move in coming to understand aesthetics, and the history of art, from the point of view of Vichian history, as a *corso* in the ideal eternal history. Each style is a given *certum* that can be recollected in relation to others as the first step in determining a *verum* of stylistic development. Such a system of classification focuses attention on how a given

nation, at a given point in time, chooses to express itself in the work of art. What is revealed is the *sensus communis,* the common sense of a nation, in the determination of the rules of composition, form and detailing.

This is Vico's philosophy of authority. The philological 'particulars' of history and the course of nations expose the specifics of human choice, and how judgments are made. What is revealed is that human action is the product of human choice, determined not by rational inference or a priori postulates, but from a common perception of things, the *sensus communis* of a given society. Choice and decision derive their authority, and are therefore shaped by, the form of thought at any given stage in the development of a nation.

History reveals the philological 'certains' from which all analysis or experiment must begin. As Vico says "All inquiries must take as their beginning the subject of their inquiry." Hence, in the first outline of his treatise, Lodoli begins with an examination of the origins of the various styles of architecture: the Egyptian, the Greco- Roman, the French or Gothic, and the Spanish or Moorish, This is Vico's 'Memory' as Recollection. Lodoli (Re)collects the philological 'certains' of architecture.

The history of built form stands as the history of experiments in architectural expression. Whilst no singular experiment can be conceived of as a truth in its own right, the recollection of all of these experiments increases the certainty of what they reveal. Each stylistic period is understood as a system of building and of theoretical principles; a demonstration of what providence has wrought in history. A product of a particular nation or culture at a given moment in its history, they represent the philological *certum* that must be examined for the philosophical *verum* they contain. While any one Style

may be said to contain the *verum* of architecture, the certainty of our understanding of such a *verum* is increased when they are understood collectively, and in proper relationship to each other.

Derived from his study of the origin of styles, Lodoli asserted that architecture was dependent on 'Primary' and 'Secondary' attributes. Unlike his predecessors Perrault, Wren and Guarini, who attempted to create a value structure that related beauty to an abstract definition of truth, and a Cartesian theory of mind. Lodoli did not attempt to understand this division through a rationalist filter instead he applied Vichian properties to his findings.

The 'Primary' attributes consist of firmness; structural stability, and *analogia*; proportions based on statical analysis of the materials used in a particular situation. The 'Primary' attributes were governed by *analogia,* derived from nature understood as physics. Since man is not the maker of nature the properties of both physics and mechanics can only be considered as *il certo,* according to Vico. They are not absolute truths, but represent only a consciousness of the physicality of the material.

The 'Secondary' attributes are derived from commodity and ornamentation, properties that were culturally derived, and made to conform to the 'Primary' attributes. The 'Secondary' attributes of commodity and ornamentation are the elements of a Style that are made by men and can be properly called *il vero,* according to Vico.

Using these attributes Lodoli was able to evaluate the various historical styles. In this way he was able to examine architectural production in terms of necessity, as a reaction to material needs, grounding his understanding of architecture as a process of making in

the particulars of time and place. Thus the study of architecture takes the guise of a Vichian science.

The Goal of Architecture

In the second outline of his treatise, Lodoli addressed what he referred to as the goal of his new civil architecture: the unification of function and representation. Both are derived from his understanding of the 'Primary' and 'Secondary' attributes and their relationship to the elements of style. It is the relationship and combination of the two that produces a true understanding of architecture and design for Lodoli.

Lodoli did not define Function as the rationalists had: as 'utility'. Function was the use of a material in accordance with its properties i.e. its *analogia*: the internal and external forces acting on the material, as demonstrated by the laws of physics and mechanics, when that particular material was used in a particular situation in a given moment in time.

Lodoli defined Representation as: "the individual and total expression that results from the material used if the latter is disposed according to geometrical, mathematical and optical laws for the desired end."[lxxiii] Representation is essentially an image of the *analogia*, one that communicates the equilibrium of the forces within the detail. The image is one of *commoditas.*

Such integration of function and representation is the result of a triad of *analogia, firmitas* and *commoditas,* and is what we would refer to as architectural expressivity. True style, or more precisely the architectonic image present in the detail, is a v*erum,*

derived from necessity, and shaped by a given nation, in a given place and time. In essence ‘style’ is dependent on the properties of the material used, and the images created by the *senus communis* of a people. Since the nature of human society is constantly changing, so too do the requirements of architecture.

Lodoli only produced one architectural work, the renovation of the hospice at San Francesco della Vigna. The best known aspect of this work was the famous Lodolian window. The form is derived from an examination of traditional constructional details and forms and how they have performed and specifically how they have failed. A common problem when monolithic jambs were used in conjunction with monolithic thresholds was that the thresholds usually failed, cracking in the center. Galileo had examined this condition in his *Two New Sciences* and claimed that it resulted from the upward thrust of the threshold at the center in response to the downward thrust of the jambs. Previous attempts at solving this problem resulted in the slippage of the threshold or the jambs in the vertical dimension.

Lodoli's solution is unique and poetic. The threshold is divided into three sections; one under each jamb, and the central one which acts as the sill proper. This central section is dovetailed under the end sections that prevent it from slipping 'up' in response to the ‘downward’ thrust of the end sections. Perhaps the most intriguing aspect is the form of the central section that takes its shape from Galileo's 'ideal solid’; the beam is straight across the top and parabolic along its bottom side. A stone of this shape weighs 1/3 less than a rectangular beam of the same strength and its central thickness concentrates its compressive strength precisely where historically the sill cracked.

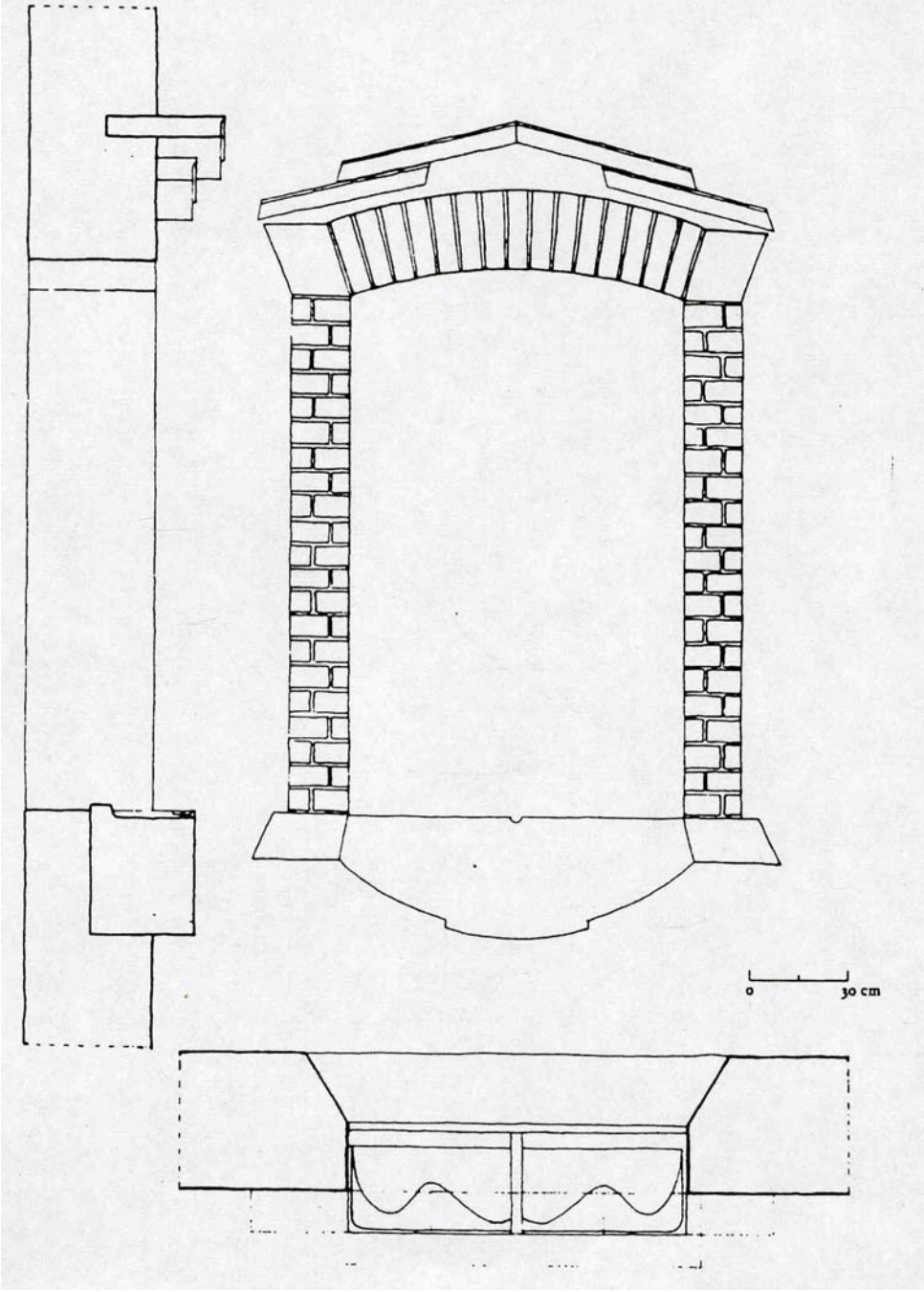

Fig. 19 image of Lodolian window

The detail achieves the goal set out by the second outline of Lodoli's architectural treatise, that of uniting function and representation. Lodoli defined function as the function of the materials, the internal and external statical forces that continuously act on

a specific material in a given and particular situation. Representation was defined as the expression of a given materials function in a particular condition according to the rules of geometry, arithmetic, and optics. It is a solution based upon *particolareggiamento*.

Lodoli's detail arises from the statical resistance expressed in a form that in no way is solely accounted for in terms of construction techniques alone, whose standard code has successfully been resisted. In its place is the production of a detail expressive of the particular condition. It is a representation of a given solution, to a given particular problem. Lodoli provides us with an image that allows us access to his *Ingegno*.

> "No, an artist, who would do himself honor, and acquire a name, must not content himself with copying faithfully the ancients, but studying their works he ought to show himself inventive, and, I had almost said, of a creating Genius; . . . he ought to open himself a road to the finding out of new ornaments and new manners. The human understanding is not so short and limited, as to be unable to add new graces, and embellishments to the works of architecture, if to an attentive and profound study of nature one would likewise join that of the ancient monuments . . . new things present themselves to us, capable of fertilizing, and improving the ideas of an artist, who thinks, and reflects."
>
> Giovanni Battista Piranesi
> *Diverse Maniere*[lxxiv]

Piranesi and the Lodolian Legacy

Memmo introduces into his text Piranesi's *Della Magnificenza ed Architettura de' Romani* as an example of elegant inventions. He also cites that Piranesi gave, as a gift, a copy to Lodoli. This he does to contradict Algarotti's insistence that Lodoli rejected all non-functional ornament. While the gift alone does not prove in any way that Lodoli

approved of Piranesi's fantasies it indicates a connection between the two which should not be ignored. While the connections are problematic, I believe that they only indicate that Piranesi was perhaps inspired by, but not derivative of Lodoli.

As a young man Piranesi was apprenticed to the uncle (Giovanni Scalfurotto) of one of Lodoli's critics Tommaso Temanza. Piranesi soon broke away from this apprenticeship and was attracted to the circle of Joseph Smith, the British Consul in Venice, and the intellectual circle of which Lodoli was a part. There is also speculation that Piranesi may have attended lectures at Lodoli's school. The connection with Lodoli is further emphasized by the fact that in 1740 Piranesi left Venice for Rome to work with Marco Foscarini, a well-known student of Lodoli.

Piranesi's most memorable work is perhaps his famous *Carceri d' Invenzione* series of 1760. It is within this work that the greatest speculation of the influence of Lodoli on Piranesi takes place. This work also forms the backdrop for understanding Lodoli's non-rigorist approach to ornament. The historical importance of the Carceri series in both their early edition, as *Invenzioni Caprice di Carceri all Acqua Forte*...(published in 1745), and in the later edition is its radically new depiction of architectural form. Of note are two aspects, first the lack of ornamentation, and second the sharp distinction between wood and stone architectures, a point that Rykwert has noted.[lxxv] These hold true and are consistent in both editions and call to mind Lodoli's teachings.

Fig. 20 Image from Carceri series

An aspect of these drawings often noted is the spatial disjunction that occurs within them. While initially appearing to be coherent perspectival constructions, upon further inspection the viewer becomes trapped in a desperate, and doomed, attempt to rationalize the spatial configurations according to Euclidean geometry. The space of Piranesi's prisons cannot be rationalized, or at least explained fully through the use of mathematics.

Ulya Vogt- Goknil has undertaken an elaborate and well-known study of the perspectival compositions of Piranesi's drawings with some surprising results.[lxxvi] Vogt-Goknil notes that in the second series the systems of architectural construction, i.e. wood and stone, which are each clearly distinct in terms of their form, exist in different spatial realities. The stone constructions are set according to one set of perspective lines while the wood constructions are set according to another. This is the source of the spatial anomalies and disjunction. Each system is understood from a different point of view, this implies a shift in both time and place. The world of Piranesi's *Carceri* cannot be understood or rationalized from a fixed perspective in time and space. The mathematics of Euclidean geometry does not help to navigate this world. The space of the *Carceri* is not the rational space of natural science, nor is it the space of optical perspective. The shifting of time and space indicated by the shifts in perspective indicate that the *Carceri* can only be experienced historically. The space of the *Carceri* is the space of recollection, imagination and memory.

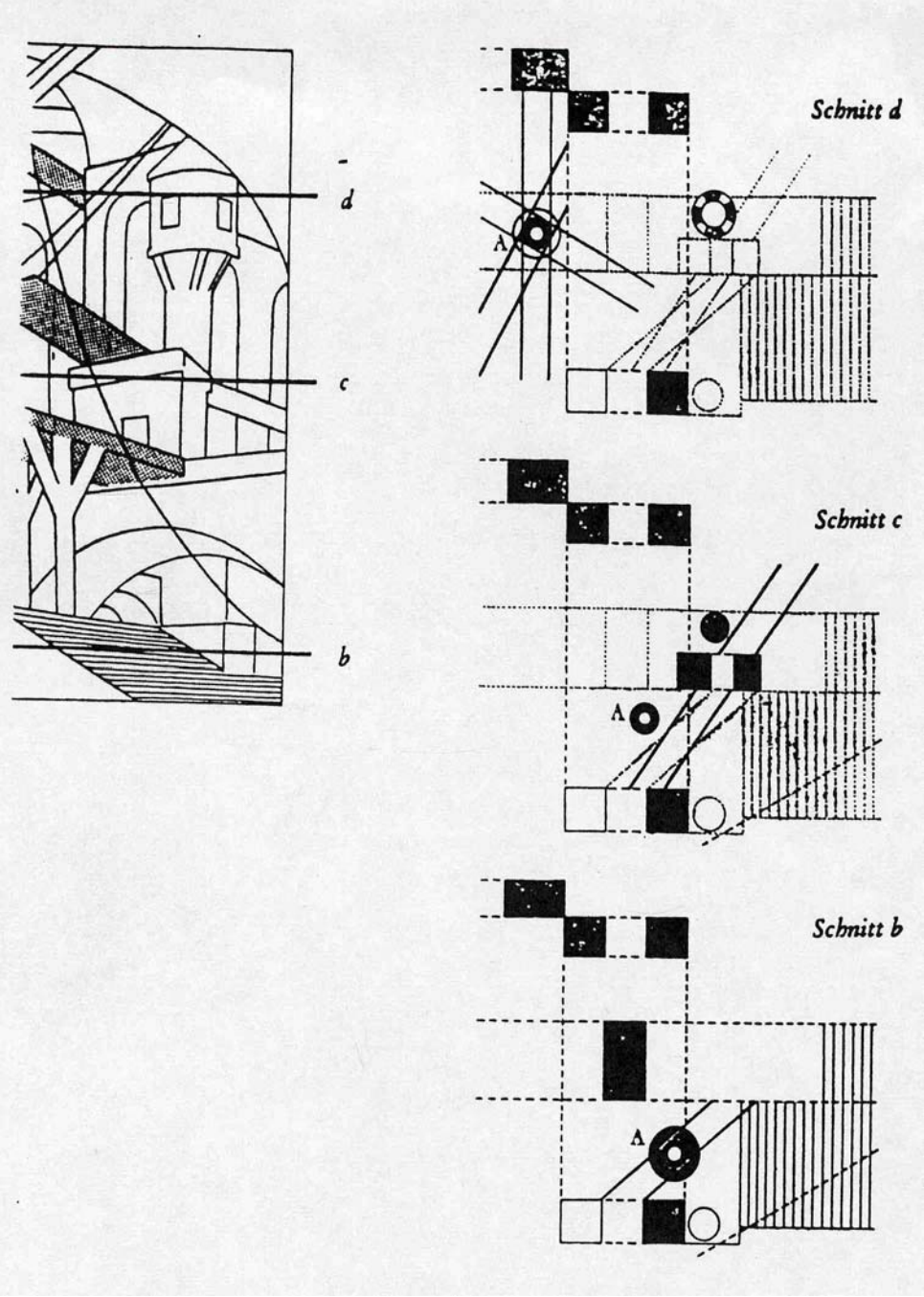

Fig. 21 Image of Vogt- Goknil's diagrams

Maurizio Calvesi has noted that the inscriptions on the stone structures in the *Carceri* series are references to specific historical figures of ancient Rome.[lxxvii] He points out that these same figures are the figures that Vico uses in the *New Science* to discuss his Ideal

Eternal History. Vico uses the history of the Roman nation as his heroic metaphor for his ideal history of all nations. Thus Calvesi interprets Piranesi as making a reference to Vico's notions of moral philosophy via the device of architectural form. Kruft also notes the connection between Piranesi's works and theory and that of Vico.[lxxviii] Bitz makes this observation "If the Carceri refer to the heroic age of Vico's ideal eternal history, they may also suggest the principles of Lodoli's ideal eternal architecture [which was derived from Vico]. Masonry and timber architectures, both created in a heroic, poetic past, reveal their basic differences of space and time through the element of scale."[lxxix] While the two systems exist in the memory as a united *historia*, their disjunction in time and place sets the stage for a duality of origins.

During the years between 1747 and 1761, Piranesi produced a series of engravings of Rome, commonly known as the *Vedute*. Up until the commencement of the production of these prints, roughly 1750, the primacy of ancient Rome was categorically left unquestioned. As the final great culture of the ancient world it was seen as the culmination of all that had come before it. But this position began to be challenged in the 1750's most particularly by the French academies and the work of the German historian Johann Joachim Winckelmann. Unlike the ideal eternal history of Vico, and in Lodoli's history of architecture, which claimed that all nations arise independently and achieve an equal level of magnificence, this new school proposed quite a different scenario. Men like Winckelmann, Ramsey and LeRoy argued for the supremacy of Greek art and culture over Roman, which they began to depict as a decadent copy of the superior original.

Piranesis continuously argued against the idea of Ancient Greece as a golden age and as a period of supremacy in the arts. He also argued against the idea that the Romans

imitated the Greeks. It is clear in his writings that he defends the Vichian idea that each nation reinvents for itself its own history. Vico's *corso e ricorso* is translated into the idea that each nation discovers architectural truths for itself. Piranesi like Vico does not deny the influences of another culture, but the idea that any culture merely adopts the ideas of another.

Piranesi counters this argument with his polemical work *Della Magnificenza ed Architettura de' Romani* of 1761. In it he claims that the Etruscans, the true origin of Roman culture, according to him, brought every kind of art to its ultimate perfection. In a direct attack upon Winkelmann's assertion that Greek art was superior Piranesi draws out a familiar argument. He accuses the Greeks of an addiction to ornament and useless elegance. Kruft outlines his argument in this way "He goes so far as to play Vitruvius off against the Greeks, using Vitruvius' observations on the transference of wood construction methods to stone against the caryatids of the Erektheion, of whom he says it is hardly credible that they would be able to carry so heavy an entablature with such a cheerful expression on their faces. It would, he says, have been more appropriate to use 'satyrs, or sturdy rustics' for this purpose."[lxxx] The argument is a familiar one; it is Lodoli's against the 'beautiful lie'. The architectural truth of the timber construction becomes an architectural deceit in stone; it becomes excessive ornament when it is transferred into the form of a maiden. It is important to remember that according to Memmo, Lodoli did not have a problem with this kind of transference of meaning, provided that it was understood, not as an architectonic truth but as a product of cultural memory and taste. In addition, the argument cannot be held to be Piranesi's final word on architectural invention given his fanciful drawings, particularly those found in the

Diverse Maniere of 1769. Rather it must be seen as an ironic pun. The French academics used Laugier's structural rationalism, as exemplified by the rustic timber hut, to argue the superiority of Greek architecture over Roman. Piranesi used this same argument to undermine LeRoy and his cohorts.

That Piranesi was in Lodoli's camp in opposition to the French Rationalists becomes all the more evident when we look at what Piranesi had to say in his *Parere su L' Architettura* of 1765. Ironically it is this same text which was used by Wittkower to argue Piranesi's turn away from Lodoli. The *Parere* is set up in the form of Socratic dialogue between Didascalo, the master, and Protopiro, his rigorist apprentice. Protopiro raises a quote from Montesquieu; "A building loaded with ornaments is an enemy to the eyes." Didascalo uses the rigorist's own argument to defeat him. The master returns to the concept of the rustic timber hut and using function as the sole criteria for judgment begins to eliminate first the capitols, then the bases, as well as, the entablature, and finally the walls. It must be noted that this argument is not that of Lodoli, but that of Laugier in his *Essai Sur L'Architecture*. Piranesi's 'rigorist' is not Lodoli, but Laugier. Bitz points out that the brusque character of Didascalo and his use of the Socratic dialogue were well known characteristics of Lodoli's teaching style. In the end the master claims that such an approach to architecture leaves one with nothing but a vacant place and reduces the architect to a mere copyist.

Didascalo also warns that when architects are reduced to copyists the role of the patron and the workmen in design increase. When this occurs the architect is reduced to a mere decorator. This is interesting in light of a remark by Vico. For Vico it cannot be denied that even in the age of the 'Barbarism of Reflection', when rationalistic thought

abounds, that man may and does resort to fantasy. However, they can no longer recognize its primary or originating function. Fantasy is deployed as an external substitutive tool to activate the functioning of rational concepts on the passions, forcing the mind where the rational process cannot take it. "When [in the age of the Barbarism of Reflection] we wish to give utterance to our understanding of spiritual things, we must seek aid from our imagination to explain them and like painters form human images of them."[lxxxi] Piranesi lived in an age of rationalism, when architects espoused the glories of copying. Piranesi for the most part either could not or would not build. Perhaps his etchings are in truth polemic commentaries declaring that all of architecture was now really nothing more than decoration. The *Diverse Maniere* can be read as Piranesi's commentary on the role of the architect in the 'Age of the Barbarism of Reflection', when architecture looses its truth and descends into fantasia, and madness.

The following quote from Piranesi's *Diverse Maniere* gives some insight into both the mind of Piranesi and that of Lodoli. "No, an artist, who would do himself honor, and acquire a name, must not content himself with copying faithfully the ancients, but studying their works he ought to show himself inventive, and, I had almost said, of a creating Genius; . . . he ought to open himself a road to the finding out of new ornaments and new manners. The human understanding is not so short and limited, as to be unable to add new graces, and embellishments to the works of architecture, if to an attentive and profound study of nature one would likewise join that of the ancient monuments . . . new things present themselves to us, capable of fertilizing, and improving the ideas of an artist, who thinks, and reflects."[lxxxii] Such thoughts could have been spoken by Lodoli as well.

The central attack of both Lodoli and Piranesi is against the 'Rigorist' notion of stripping down architecture to its essential parts to become an ideal model for imitation. This rigor is the application of systematic doubt, used by Descartes, which Didascolo calls sophistry. It uses rationality to deny the lessons of history as empirically observed. This is Piranesi's argument and contribution, the collective evidence to refute the abstract logic of the Cartesians and Laugier in particular. At the root of their challenge is a rejection of the theory of imitation and its notion of an ideal age under such rubric architecture and human imagination are in a state of being that denies history they in turn argue for a definition of imagination that is historical, a state of 'becoming'. The question therefore is not *"In what style should we build?"* but *"Why are we not studying the history of styles to find the principles of design and human creativity that are the foundations of architecture?"*.

> "By all means treasure the rationality that you proclaim, but at the same time respect the freedom of architectural creation that sustains it."
>
> Giovanni Battista Piranesi
> *Opinions on Architecture: A Dialogue*

Lodoli and the Reasoning of the Particular

Lodoli never attempted, as many of his contemporaries did, to produce a system or set of rules to govern architectural production. Rather he sought to outline basic principles that describe how systems, or styles, arose in the first place. In this way he sought for architecture what Vico sought for human meaning. He rejected the search for a true 'form' of architecture. It was his belief that architects of different times and in different

cultures, using the same materials would produce different architectural forms and solutions to their problems, none was more 'correct' than the others. In this way Lodoli showed his adherence to the Italian Humanist tradition and its basis in Roman rhetoric. Architecture has no natural model, its model is a man- made invention, a product of 'human' reality and meaning. Following in the Italian Humanist tradition from Salutati to Vico, the creation of human reality is a product of time and place it begins as a particular, not as a universal.[lxxxiii]

It was because of this that Lodoli was also able to claim that architecture was dependent upon cultural taste and traditions and in addition that the caprices and inventions of the architect were important. These elements of architecture were derived from individual and cultural memory. This memory was Vico's memory seen as *Memoria*; "memory when it remembers things, imagination when it alters or imitates them, and invention when it gives them a new turn or puts them into proper arrangement and relationship."[lxxxiv]

Lodoli was searching for the *verum* of architectural design: how the mind creates new forms of architectural expression. Following Vico's metaphysics, he grounded his science of architecture on the recollection of the twofold aspects of 1) the particular examples of architecture revealed in history and 2) the particular forces and strengths of given materials. Seeing or finding the verisimilitudes between the particulars of history and physics are an act of *ingegno,* the second form of Vico's *memoria.* In a chapter from *On the Ancient Wisdom the Italians* entitled *On Ingenuity*, Vico pointed out that both *ingenium* and *natura* mean the same thing. He postulated that it is the very nature of humanity therefore, to invent, to create, in a manner imitative of the divine. He asked: "is

it because just as nature produces physical things, so human ingenuity gives birth to mechanical things. And just as God is the artificer of nature, so man is the god of artifacts? . . . Or is it because human knowledge consists solely in making things fit together in beautiful proportion, which only those of ingenuity can do?"[lxxxv] As he uses the word it involves the innate capacity to invent, to synthesize, to find similarities in diverse things, and to have insight.

The combination of recollection and *ingegno* lead to the third form of *memoria*, invention the proper ordering of images. This is how Lodoli presents the methodology of creating new images or forms in architecture, through the 3-fold definition of Vico's *memoria*. This aspect of Lodoli's theory is shockingly absent in Algarotti and Milizia's exposition of it. They only admit of its rational component. This is where Algarotti and Milizia both failed to grasp a true understanding of Lodoli's theory. They mistook his use of Vichian topical reasoning and mathematics for that of the Cartesians, such as Laugier. It should be clear by now that Lodoli was not a 'rigorist' or a proponent of a rationalist approach to architectural form or its history. The true 'rigorist' was in fact Laugier and the French academies.

Diana Hibbard Bitz sums up the 'revolutionary' character of Lodoli's theory in this way: "Lodoli reinterprets Vitruvian precepts, intuitive demonstrations, in light of the mathematical proofs of modern science. What is revolutionary is his application of the paradigmatic topic of Gianbattista Vico's *New Science*, the ideal eternal history of the gentile nations, to architectural history and theory. Furthermore, the fusion of natural science (mechanics) and representation, building and knowing, in the creation of

architectural forms is a completion of knowledge, a making of truth necessary to any Vichian science."[lxxxvi]

Summation

Vico conceived the *New Science* as a history of human ideas, the theory of mind developed out of it, and the previously outlined method that was taken over by Lodoli and represents the real revolutionary character of his theory. A similar view of history emerged in the German *Auflerung* or Enlightenment that prompted the development of tectonic theories of architecture there as well.

ENDNOTES

[i] The son of minor nobility Lodoli left his family during a dispute over his vocation, and joined the Minor Observants of the Franciscan Order at the age of 16. He took his orders in 1708 two years latter and spent the years from 1709 to 1720 traveling, including three years studying in Rome and two living in Verona, where he taught philosophy, theology, physics and mathematics and befriended the noted scholar Scipione Maffei. He then returned to Venice, where he got his start in the Franciscan Order at the church of San Francesco della Vigna. Here he entered the intellectual circles of Venice's leading Salons including that of Joseph Smith the British Consul. Once resettled he took to the proper education of the son's of Venice's noble families. In 1736 he was appointed the influential position of Censor, his task being to examine books published in or imported into the Veneto.

[ii] Bitz. Architecttura Lodoliana Topical Mathematics as Architecture. p. 11.

[iii] Lodoli was also known for his two collections, the first of painting from the Middle Ages to the Renaissance, and the second of architectural fragments. Kruft points out that Lodoli had arranged the paintings and fragments according to local schools, this was supposedly done to demonstrate the progression of the art of *desegno*. He also remarks that this method, which was copied by others, makes Lodoli "one of the founders of stylistic art-history." Kruft, *A History of Architectural Theory from Vitruvius to the Present*, p. 197.

[iv] See Rykwert, *The Necessity of Artifice*, 'Lodoli on Function and Representation', Rizzoli, New York, 1982, Rykwert claims that Lodoli's work was continued through Piranesi and influenced English architecture through Piranesi's influence on Robert Adam and George Dance. He does not elaborate on exactly how Lodoli influenced Piranesi or on what aspects of Piranesi were translated to Dance and Adam that would clarify his point. For his part Perez- Gomez interprets Piranesi as continuing in Lodoli's critique of the crisis of meaning initiated by the incursion of the epistemology of science on architecture. He reads the etchings of Piranesi' *Carceri* series as commentary on the absurdity of man's powers of abstraction. Perez- Gomez, *Architecture and the Crisis of Modern Science*, MIT Press, Cambridge, Mass., 1992, pp. 257- 258.

[v] It should be noted that while the outline identifies this goal it does not provide a critical means by which one might understand exactly how form and representation might actually be united. One must presuppose this was to be elaborated in the final text. Marco Frascari has noted that it may be understood through Conti's mythopoetic theory of Particolaregiamento.

[vi] Kruft, A *History of Architectural Theory from Vitruvius to the Present*, p. 198.

[vii] Bitz, *Architecttura Lodoliana Topical Mathematics as Architecture*, p. 18.

[viii] Ibid., p. 12.

[ix] Ibid., p. 12.

[x] See Rykwert "Lodoli on Function and Representation" printed in the *Architectural Review 146*, and *The First Moderns*, pp. 288-337.

[xi] Algarotti, *Saggio Sopra L'Architettura*, trans. Diana Hibbard Bitz, pp. 312.

[xii] The 'lie' here being that the tectonics forms of Greek stone temples, its detailing, reflects not stone construction techniques but those of wood timber construction.

[xiii] For a synopsis of Bellori's theoretical approach to art and his impact on aesthetics see; Barasch, *Theories of Art from Plato to Winkelmann*, New York University Press, NY, 1985, pp. 315- 322.

[xiv] Kruft, *A History of Architectural Theory from Vitruvius to the Present*, p. 204.

[xv] See Rykwert, *The Necessity of Artifice*, 'Lodoli on Function and Representation', Rizzoli, New York, 1982. In this article Rykwert shows how Lodoli used bas relief, the one sited is one of San Jacobus Picenus, to communicate ideas associated with the building.

[xvi] It should be noted that Kaufmann completely dismisses Memmo on the supposed basis that since he was a close friend of Lodoli his writings could not have presented Lodoli's theory in a critical and objective way. Since Algarotti outlines Lodoli's thoughts and also criticizes them his must be the more accurate interpretation. It is I think a sad statement as to the state of over 200 years of Lodolian scholarship that it should have been based on such a supposition.

[xvii] Bitz, *Architettura Lodoliana Topical Mathematics as Architecture*, p. 42.

[xviii] Quatremere De Quincy attempted to resolve this by postulating three origins of architecture, the cave, the hut and the tent, each of which corresponded to a type of construction. It remained though a theory of type imitation.

[xix] The 'beautiful lie' refers to Vitruvius' insistence that the Doric order evolved first in wood as an expression of construction, need and necessity, but was then maintained when the Greeks began to build in stone. Thus the Doric order does not reflect the tectonic reality of stone construction but of wood construction. This 'lie' was maintained, because it was deemed beautiful by the Greeks. See Vitruvius bk. IV, chap. II.
[xx] See Perrault, *Ordonnance*, 'Preface', trans. McEwen, The Getty Center Publications, 1993, pg. 52. "Hence, neither imitation of nature, nor reason, nor good sense in any way constitutes the basis for the beauty people claim to see in proportion and in the orderly disposition of the parts of a column; indeed, it is impossible to find any source other than custom for the pleasure they impart. Since those who first invented these proportions had no rule other than their fancy to guide them, as their fancy changed they introduced new proportions."
[xxi] In this sense Lodoli appears to have come to the same conclusion as Perrault in the 'Preface' to the *Ordonnance*. It might have been this appearance of an identical conclusion that led Algarotti to identify him with the French Moderns in the first place.
[xxii] I shall not recount the entire tale here. It would take far too long and this is not the subject of the current work, what follows is a short summation. Two complete English summaries are readily available, they are found in Marco Frascari's *Monster's of Architecture* and Diana Hibbard Bitz's dissertation *Architettura Lodoliana Topical Mathematics as Architecture*.
[xxiii] Seriman, *Viaggi di Enrico Wanton*, trans. Bitz from *Architettura Lodoliana Topical Mathematics as Architecture*, p. 50.
[xxiv] Ibid. p. 50
[xxv] Marco Frascari, The Particolareggiamento in Literature and Architecture, *JAE* vol. 43, 1989, pg. 8.
[xxvi] Ibid., pg. 8. For further information see Michele Rak, *La Fine dei Grammatici*, Bulzoni Editore, 1974.
[xxvii] The supremacy of the universal over the particular is most prevalent in the writings of Newton who held that it was in the genera and species that the truth of science was to be found. Hegel finds the strongest refutation of Newton's assertion in the Prolegomena to The Phenomenology of Spirit.
[xxviii] Ibid., pg. 8.
[xxix] Both Lodoli and Conti were responsible for the profound interest in Vico's work in Venice. For more information on the relationship and correspondence between Vico and Lodoli see; Verene, *The New Art of Autobiography An Essay on the Life of Giambattista Vico Written by Himself*, Clarendon Press Oxford, 1991, pg. 27, 61- 62, also Vico, *The Autobiography of Giambattista Vico*, trans. Fisch and Bergin, Cornell University Press, Ithaca, 1944, *Introduction*, pp. 4, 16, 182- 192.
[xxx] Vico, *The New Science*, trans. Bergin & Fisch Cornell University Press, Ithaca, 1948, par. 819.
[xxxi] Marcel Danesi, 'Language and the Origin of the Human Imagination', in *New Vico Studies*, vol. 4, edit. Tagliacozzo & Verene, Humanities Press International , Inc. Atlantic Highlands, NJ, 1986, pg. 49
[xxxii] Ibid., pg. 48
[xxxiii] For a contemporary re- affirmation of this concept see the studies in cognitive science by George Lakoff and Mark Johnson. *The Body in the Mind*, Johnson, The University of Chicago Press, 1987, and 'Cognitive Semantics', George Lakoff, in *Meaning and Mental Representation*, edit. Umberto Eco, Indiana University Press, 1988.
[xxxiv] Verene, *Vico's Science of Imagination*, Cornell University Press, Ithaca, 1981, p. 72.
[xxxv] Vico, *The New Science*, trans. Bergin & Fisch Cornell University Press, Ithaca, 1948, par. 1045.
[xxxvi] Ibid, par. 819.
[xxxvii] Ibid., par 404.
[xxxviii] Ibid., par. 34.
[xxxix] Ibid., par 404.
[xl] Verene, *Vico's Science of Imagination*, Cornell University Press, Ithaca, 1981p. 72.
[xli] Vico *On the Ancient Wisdom of the Italians*, trans. Leon Pompa, in *Vico selected Writings*, Cambridge University Press, Cambridge, 1982, pg. 59.
[xlii] Horowitz, *The Renaissance Philosophy of Giordano Bruno*, Coleman- Ross Co. Inc., New York, 1952, pg. 143. Horowitz thesis is that science initiated a fundamental change in the definition of rationality from an 'Ontological' to an "Epistemological' rationalism. Earlier 'ontological' forms of rationalism assumed an orderliness and regularity in the operations of the universe. The 'ontological rationalism' of the pre-Socratics was materialistic while Medieval 'ontological rationalism' was formed out of an objective idealism derived from Aristotelian metaphysics and Christian doctrine. Renaissance 'ontological

rationalism', particularly that of Giordano Bruno attempted to unite the two previous forms while maintaining the emotional and poetic character of Medieval rationalism. For a detailed discussion of this shift see Irving Louis Horowitz, *The Renaissance Philosophy of Giordano Bruno*, Coleman- Ross Co. Inc., New York, 1952, pp. 142- 143. For information on its effects on aesthetics see pp. 282- 289.

[xliii] Vico, *On the Study Methods of Our Time*, (1709) English trans. Elio Gianturco, Cornell University Press, Ithaca, 1990, pg. 23.

[xliv] Vico, *The New Science*, trans. Bergin and Fisch, Cornell University Press, Ithaca, 1948, par. 137.

[xlv] Vico *On the Ancient Wisdom of the Italians*, trans. Leon Pompa, in *Vico selected Writings*, Cambridge University Press, Cambridge, 1982, pg. 59.

[xlvi] Verene, *Vico's Science of Imagination*, Cornell University Press, Ithaca, 1981, pp. 43- 44.

[xlvii] Vico, *On the Most Ancient Wisdom of the Italians*, chap. 1, sec. 3. Vico claims that Descartes' first principle from which all others are derived is the Cogito Ergo Sum, this he says is 'Neither knowledge (*scientia*), nor a rare and fully considered truth . . ." it is merely consciousness, *coscienza*. The foundations of the science of his contemporaries has divided *scienza* and *coscienza* into two forms and mistakenly followed the latter.

[xlviii] Vico, *The New Science*, trans. Bergin and Fisch, Cornell University Press, Ithaca, 1948, par. 138.

[xlix] "*Certum est pars veri*", Verene points out that this statement, the *verum/ certum* principle is first found in Vico's *De uno universi iuris principio et fine uno*, Opera 2, chap. 82. Verene, *Vico's Science of Imagination*, Cornell University Press, Ithaca, 1981, pp. 56.

[l] Vico, *The New Science*, trans. Bergin and Fisch, Cornell University Press, Ithaca, 1948, par. 138.

[li] Ibid., par.. 140.

[lii] Vico, *On the Ancient Wisdom of the Italians*, trans. Leon Pompa, in *Vico selected Writings*, Cambridge University Press, Cambridge, 1982, pg. 51.

[liii] Ibid., pg. 51- 52.

[liv] Verene, *Vico's Science of Imagination*, Cornell university Press, Ithica New York, 1981, pp. 47-48.

[lv] *Scienza* is defined as knowledge of both good and evil, it is the 'tree of knowledge', and pure science all rolled into one. It is the definition of philosophy in that it is a constructional theory of knowledge, the construction of the unity that is the universe. It also implies a poetic composition as it is used in the provincial Italian phrase *La gaia scienza*. It root lies in the Latin *skei* or *scio* which means to cut off (that which is separated off, decided by the people) so that the primary meaning of *scire* is to separate, to find by analysis. The Latin word comes from the Greek *Chyati* which means divides and was originally applied to verse and drama, it implied a syncopated or contracted form, hence the relation in Latin to poetic composition. It latter took on the meaning to know (a fact) or be cognizant of something.

[lvi] *Coscienza* means consciousness, it implies an awareness, a conscious, and carries with it the connotation of conscientiousness. As such *coscienza* implies an awareness of something, a conscious logic as it were, it is therefore prepositional in that it requires conscious thought.

[lvii] Vico, *The New Science*, trans. Bergin and Fisch, Cornell University Press, Ithaca, 1948, 'Introduction', pg. xxx.

[lviii] Vico describes his own approach: "Thus our science proceeds just like geometry which itself creates or constitutes the world of qualities whose principles it establishes and examines; but it proceeds with so much more reality as the institutions governing human affairs are more real than points, lines, planes and figures are." Vico, *The New Science*, trans. Bergin and Fisch, Cornell University Press, Ithaca, 1948, par. 349.

[lix] Horkheimer, *Vico and Mythology*, printed in *New Vico Studies*, vol. V, p. 65.

[lx] Vico, *The New Science*, par. 342.

[lxi] Ibid., par. 342.

[lxii] Verene, *Vico's Science of Imagination*, Cornell university Press, Ithaca New York, 1981, pg. 155.

[lxiii] Vico, *The New Science*, trans. Bergin and Fisch, Cornell University Press, Ithaca, 1948, pars. 342, 347, 350. For a more detailed study of each of these aspects of the New Science, see Verene, *Vico's Science of Imagination*, Cornell University Press, Ithaca, pp. 144- 158.

[lxiv] Vico, *The New Science*, trans. Bergin and Fisch, Cornell University Press, Ithaca, 1948, par. 331.

[lxv] Ibid., par. 338.

[lxvi] Verene, *Vico's Science of Imagination*, Cornell university Press, Ithaca New York, 1981, pg. 155.

[lxvii] For Socrates, self-knowledge referred to the acceptance of the limits placed on human excellence through an understanding of the true nature of humanity. It can only come from knowledge of the human

mind, the *polis*, and their relationship to conceptions of the divine. The ancient Greeks referred to the laws that keep things in their place, order and harmony as *Moira*, *sophrosyne* was an understanding of the *moira* of human existence. For further information on sophrosyne and its relationship to self- knowledge see; Verene, *Philosophy and the Return to Self- Knowledge*, Yale University Press, New Haven, pp. 41- 88, and Stanley Rosen, *The Ancients and the Moderns: Rethinking Modernity*, Yale University Press, New Haven, 1989, pp. 83- 106.

[lxviii] Vitruvius, *de architectura*, trans. F. Granger, Harvard University Press, Cambridge, 1985 I. I.l. Lodoli's translation is recorded in Memmo, *Elementi*, 1: 273- 275. See also discussion in Frascari, *Sortes Architetii*, 81- 85.

[lxix] Ibid..

[lxx] Vitruvius, *The Ten Books of Architecture*, trans. Morgan, bk. VI. III. 5-6.

[lxxi] Vico, *The New Science*, par 342.

[lxxii] Ibid. par. 342.

[lxxiii] "Rappresentatione e l' individua e totale espressione che risulta dalla materia qualor esa venga disposta secondo le geometrico- aritmetico- ottiche ragione al proposto fine." Andrea Memmo, *Elementi dell' architettura Lodoliana*, Zara 1833- 34, facs. repr. Milan 1973, pg. 60.

[lxxiv] Piranesi, *Diverse Maniere*, trans. Bitz.

[lxxv] Rykwert, *First Moderns*, p. 375- 378.

[lxxvi] Vogt- Goknil, *Giovanni Battista Piranesi: Carceri*,

[lxxvii] Calvesi's *Architettura Fantastica- Giovanni Battista Piranesi* explores the relationship between Piranesi's Carceri and Vico's ideal eternal history. See 'Introduction' in *Giovanni Battista Piranesi*, Henri Foucillon, Alfa, Bologna, 1967.

[lxxviii] Kruft, *A History of Architectural Theory from Vitruvius to the Present*, p. 199

[lxxix] Bitz, *Architettura Lodoliana Topical Mathematics as Architecture*, p. 73.

[lxxx] Kruft, *A History of Architectural Theory from Vitruvius to the Present*, p. 200.

[lxxxi] Vico, *The New Science*, par 402.

[lxxxii] Piranesi, *Diverse Maniere*, trans. Bitz.

[lxxxiii] For a fuller understanding of my reference here and its meaning please refer to my answer to question 6 of this exam. Lodoli was a follower of Vico and his methodology of architectural categorization and analysis is decidedly Vichian.

[lxxxiv] Vico, *New Science*, par. 819.

[lxxxv] Vico, *On the Ancient Wisdom of the Italians*, trans. Leon Pompa, in *Vico selected Writings*, Cambridge University Press, Cambridge, 1982, pg. 70.

[lxxxvi] Bitz, *Architettura Lodoliana Topical Mathematics as Architecture*, p. 45.

Chapter 12: The 'Romantic' Revolt in Germany: Hamann and Herder:

> "We have been 'practical' so long that what we have imagined forth is relatively monstrous, and by sane standards unreal, untrue to man's oneness: true only to his dualism, Modern man is a traitor to himself in suppressing one-half of himself."
>
> Louis Sullivan
> *Kindergarten Chats*[i]

Introduction

Vico was the first critic of Cartesian Rationalism and his *New Science* revealed the inherent problems with the epistemology of science. While his work was taken into the field of architecture via Lodoli and Piranesi, his impact was limited and indirect outside Italy. But the critique and its impact did not end with him. It would be picked up in Germany by two philosophers whose work would have a more direct and extensive impact on the intellectual developments of the day; Johann Georg Hamann (1730-1788) and Johann Gottfried von Herder (1744-1803).

Like Vico before him, Hamann rooted his doctrine of knowledge in the denunciation of Descartes' assertion of the mathematical nature of knowledge and the application of the mathematical method outside the natural sciences. Both developed a general definition of man that was rhetorical in its general formulation and relationship to nature. But Hamann came to this position independently. If he knew of Vico's writings it would have come later in his life after having formulated his own thought. Hamann provided the first true arsenal of weapons in the revolt against 'universalism' and the scientific method.

While Hamann's influence was limited, his thoughts were carried on and extended by his student Herder who would prove to be the most formidable adversary of the Enlightenment.[ii] Recognized as the father of Nationalism, Historicism and *Volksgeist*, he leveled an attack on the structure of Enlightenment reason and the epistemology of science. At the core of his argument was the charge that the very definition of reason and its application to our understanding of reality was wrong. Collectively, their work would be taken up and advanced by later intellectuals in Germany, including Goethe, Schiller, Fichte and Hegel, and serve as the basis of what should be understood as an alternative epistemology.

> "Everything that a man sets out to achieve, whether it is produced by deed or word or by some other means, must spring from all his powers combined; everything segregated is deplorable."
>
> Goethe
> *Dictung und Warheit* [iii]

Hamann and the Challenge to the Enlightenment

Throughout his writings Hamann was dominated by three intellectual concerns or conceptions; creation, understanding and intentionality. He accepted the traditional teleological notion of God as the creator of the universe who creates for his own purposes. Where he parted company was in the idea that God's creation was rational. The very idea that God was a mathematician, or architect, was a feeble attempt to anthropomorphize the divinity and attempt to define it according to human terms and within human limits.[iv] This was the excess of rationalism, which in the end could only, in his view, provide a poverty stricken view of human possibilities. Hamann conceived of

God more as a poet, one who continuously creates anew. Poetry here was understood in the sense of *poesis*, of coming into being. God's creation was a continuous action or *praxis* and this was life.

According to him, to understand is not an abstract action of the subjective mind, rather to understand someone or something, is to understand a voice speaking, or something that conveys meaning. To understand history is not to understand a list of 'historical' facts, but to understand the 'why' of history; the meaning behind the actions taken. This means coming to terms with the intentionality of the historical agent or cultural trend. Such intentionality may be conscious or not, it may be individual but also collective in the form of groups, cultures, nations or institutions. In this way history reveals the course of a people; their goals, desires and ends.[v] As he saw it, science reduced the means by which creation and human expression were accomplished, leading humanity down the road to a dead and artificial symbolism. It was better to explore other languages and styles of art and in this way to expand the imaginative sources that help us to convey the purpose of life in a more sufficient fashion.

> "The existence of the smallest things rests on immediate impression, and not on ratiocination."
>
> Hamann
> *Briefwechsel*[vi]

The Revolt Against Reason

According to Descartes, knowledge was acquired from innate ideas through deductive reasoning. It was the foundation stone of his metaphysics; his theory of mind, his

definitions of man and truth were all built upon it. This was for Hamann the first great fallacy of modern thought.

The only real challenge to it had come from Hume who claimed that the real foundation of thought was belief. Hume's basic point had been that from one fact no other fact can be logically deduced, necessity is a logical relationship between symbols and not reality. Propositions must be deduced from experience and not from methods of pure thought as the Cartesians had proposed. If Hume had been a skeptic, Hamann turned his skepticism into an affirmation of belief, taking this up as his chief tool with which to dismantle the methods and values of the scientific method and the rationalism of the Enlightenment.

According to Hamann there were no innate ideas in any sense including those of Descartes, Leibniz or the Platonists. For Hamann there can be no knowledge without belief and at its base unreasoned belief.[vii] All propositions must rest on this, making all abstractions in the end arbitrary. He claimed; "Our own existence and the existence of all things outside us must be believed and cannot be determined in any other way."[viii] And "*Belief* is not the product of the intellect, and can therefore also suffer no causality by it: since *belief* has as little grounds as taste or sight."[ix] Our immediate impression of the world was derived from our belief and feeling about its existence. "The existence of the smallest things rests on immediate impression, and not on ratiocination."[x] He stressed, far more than Hume ever did, that belief was central to all understanding, going so far as to claim that feeling was the source of Wisdom. The very distinction between faith and reason posited by the Enlightenment was according to Hamann a fallacy.[xi]

This played into his view of man's relationship to Nature. Man was not a passive receptor of perceptions from an objective reality that existed outside the mind. He rejected the notion that we 'perceive' causes or necessity in nature, rather we believed them. Science claims to extract 'facts' about Nature, as 'thing-in-itself', postulating unalterable, objective 'necessities' about its essence when the 'facts' were actually projections from our own mind. Such 'facts' were not perceptions into the ontological reality of Nature, but the ontological reality of how the mind, by necessity, must believe it to be. There could be no place outside the mind from which to perceive the universe to explain, justify or prove its existence.

Instead he interpreted the world, at least our understanding of it, as a product of our own active and creative powers which played a vital role in the empirical attributes associated with it. Both our understanding of nature and the traditions that it generates are actually an accumulation of our own belief systems. Men, according to Hamann, cut reality as they see fit, the world of our experience is as we make it. In order to come to know the world we must construct hypotheses, but we must not lose sight of the fact that they are our own constructions. To forget this basic truth was to condemn ourselves to folly.

The tendency of reason to start with sense perception and to invent entities from which to explain those sense perceptions, as if ideas of pure reason or pure being, was an illusion. The world of the *a priori* was a fiction. There could be no *a priori* laws of nature, or even nature itself, save how we understand it. To conceive of nature outside this dialectic was to deny the very existence of the human mind in the process. Vico may have said it earlier, but it was Hamann that brought the argument to the main stream. [xii]

For him, the problem with science and rationalism was their inherent tendency to abstraction and universalism. The general desire to reduce the world and its rich diversity and variety to a guiding law or principle, to a uniformity easily perceived was a rejection of the very essence of reality and our experience of it. The world was a series of relationships, which cannot be conceived of outside the particularities of time and place. To generalize a doctrine of being from terms instead of relations, of substances instead of attributes was again to distance oneself from reality, exchanging truth for fictions. No abstraction, no generalization, no universal could ever be exchanged for the variety and concreteness of lived experience. The very nature of Hamann's understanding of man's coming to terms with Nature was a patent rejection of the idea that either nature or man was a permanent fixed objective reality from which laws could be discovered or defined.

Hamann was critical of both philosophy and science because they attempt to construct systems and abstractions that negate the difference that to him make up the world. The tendency toward universalism, at the expense of the particular, was a negation of the variety and infinity that was the reality of Nature and Human life.[xiii] What so much of the epistemology of science was doing was creating a world of elegance and beauty, but a beauty of harmony and order that denied the savagery and violence of nature. This form of Apollonian classicism was for Hamann, and later Herder and Goethe, a shallow form of classicism. In a world that sought harmony and the complete resolution of conflict in the form of neat little theoretical packages, where truth was the simplest mathematical formula, true wisdom was madness, folly. The true seeker of Wisdom was born into the world upside down. He or she knows that truth is not a search for a single answer that resolves all conflicts in our perceptions of reality, but the tool that exposes our own

ignorance of that reality. To understand the truth of being and nature was to understand the Bacchanalian revel and the world of Ceres.[xiv] The rationalists had destroyed Nature, because they have failed to learn these lessons.

In the end, Hamann viewed scientific reason and method as a form of casuistry that turned human relations into mechanical ones, transforming living truths into dead rules. The great enemy was necessity, either metaphysical or scientific, which transformed itself into a pseudo- objective authority, an institution greater than that of tradition or religion, one that eventually led humanity on a path to dehumanization and reification. This was a sentiment latter echoed by Fichte who claimed "At the mere mention of the name freedom my heart opens and flowers, while at the word necessity it contracts painfully."[xv]

> "Passion alone gives to abstractions and hypotheses hand, feet, wings; images it endows with spirit, life and language. Where are swifter arguments to be found? Where the rolling thunder of eloquence, and its companion, the monosyllabic brevity of lighting?"
>
> Hamann
> *Samtliche Werke*[xvi]

Man as Experiential Unity

Hamann's originality was in his definition of Man, it would have the most lasting and influential impact on Western thought. He argued that daily experience was enough to disprove the basic claims of the Enlightenment definition of Man that trended to dissect man into a series of discrete faculties. To understand humanity one had to observe human conduct; passions, feelings, thoughts and ways of life - not as the Enlightenment

philosophes had done through a priori concepts and categories.[xvii] The first task of knowledge was to expose the verbal fictions. Reason's aim was not to increase theoretical knowledge as such, but to define the limits of knowledge.

Experience and life were forms of an unbroken unity; of thought and feeling, of theory and practice. There can be no subject-object relationship because there is no subject and object, only continuity. Therefore any form of dualism, including that between reality and appearance, was a blatant denial of that unity. Only the whole man; reason plus the passions, emotions, desires, and physiological reactions, can pursue truth. These were the concrete facts of human experience and as such, the true basis of knowledge and reality. The denial of the passions and the senses was a denial of far too large a part of existence and being.

Hypotheses that failed to understand or address the experience of life in its fullness were only theoretical abstractions unrelated to the practice of life. They denied the wholeness of man and nature. We can either attempt to uncover the pattern of continuity through direct experience, whether of history or nature, or we can shield ourselves from reality through the construction of systems, rules, and endless abstractions that produce dualities and distance ourselves from nature and ourselves.

This prompted Goethe to see him as a great awakener, a man who championed the unity of man in the face of scientific fragmentation, specialization and categorization. He would sum up Hamann's basic argument as; "Everything that a man sets out to achieve, whether it is produced by deed or word or by some other means, must spring from all his powers combined; everything segregated is deplorable."[xviii] It is important to understand the radical nature of this assertion. Descartes, it must be remembered, saw the

imagination, passion and emotion as hindrances to reason and truth and factored them out of the discourse of knowledge. Hamann on the contrary was insisting on the necessity of their inclusion.

For Hamann, the self was a mirror of our intercourse with the other. To understand ones' self, was to understand oneself in relationship or communion to others. Man and self- knowledge are the product of human communication, of interaction and expression. Communication was part and parcel of the web of human interrelationships and without it speech and thought were not possible. This web of interrelationships presupposes thought, therefore existence does not rely on its products for its justification. Rationalism and its abstractions of concept and pure reason therefore, cannot be the means by which experience or man is defined. The world is made up of people and their means of communication, which enables them to express their own experiences and establish relationships. "Through language are all things made."[xix] This was the means toward self-knowledge, the freedom to experience the fullness of communication and relationships that allowed for the fullness of one's humanity to come forth.

For Hamann life was action,[xx] the daily face to face encounters with the experience of men and things that led to an understanding of the fullness of life itself. This was how the artist created the complete immersion in life, but this was also how men achieved the realization of what was most human in them. Accordingly, all human activity, all cognitive powers have for their object self- knowledge and it was the foundation of all of our activities. Self- realization, self- knowledge was essentially the creative process; *poesis*. True wisdom came from a true participation in life, 'think less and live more.'[xxi]

In the end, Hamann's image of humanity was one of activity; as a continuous creative endeavor, a combination of *poesis* and praxis.

> ". . . they had told him grammar was a book, algebra was a book, geometry another book, geography, chemistry, physics, still others: they never told him, never permitted him, to guess for himself how these things were actually intense symbols, complex ratios, representing man's relation to Nature and his fellow man; they never told him that his mathematics, etc. etc., came into being in response to a desire in the human breast to come nearer to nature that the full moon looked round to the human eye before the circle was dreamed of."
>
> Louis Sullivan
> *Kindergarten Chats*[xxii]

The Meaning of Words: Language, Thought and Expression

For Hamann, the Enlightenment notion that society was in some way a rational construction based upon utility, the great social contract, the relinquishing of freedoms for security and prosperity was a folly. It presupposed a rational system of thought prior to the foundation of society itself. It in effect projects a later system of thought onto an earlier age. The Enlightenment idea, most strongly put forth by Kant that one could put down a codified system of rules for thought, such as those found in the *Critique of Pure Reason*, was to completely misunderstand the very nature of both thought and communication.

For Hamann, experience was a concrete fact and as such the true basis of knowledge and reality. Its true enemy was system; the construction of words and symbols which denote abstractions or numbers. Accordingly, philosophers have taught us to mistake

these things for reality itself, in the end confusing reality with idealism. Such divisions, present in most philosophical systems, he saw as imaginary or illusory. Analysis and synthesis he viewed as equally arbitrary and illusory. While accepting the notion that conventional signs were necessary, they were in the end unreal in themselves; 'cause', 'reason', 'universality', are only counters, symbols used to explain in rational terms things outside themselves. The greatest mistake man had made was to confuse such words with concepts and concepts with the reality out there.

According to Hamann, there was no non-symbolic thought or knowledge. The very idea that one could create a non-symbolic means of expression that in some way stepped outside the symbolic structure of the mind and conveyed a more objective or certain truth, such as geometry, was a nonsensical idea. While such a construction might have an internal logical structure and provide a means to truth, it could not exist outside of the symbolic system in which it participated. To lose sight of this was to lose sight of the fact that such a system had its own limitations and could have been a construction of an entirely different sort. It was no more certain than any other symbolic construction. The very idea that there was an objective world out there and that man and his tools of abstraction, language and symbol were a means of achieving a correspondence to such an objective reality was a completely false notion for him.

Hamann was one of the first to argue that thought was symbolism; to think was to employ something intentionally to denote other objects. Thought and language were the employment of a symbolic system. "Language is the first and last organ and criterion of reason."[xxiii] Language was what we use to think, not what we use to translate, it was the process of using symbols.[xxiv] For Hamann, language was the organon of thought itself

"Where there is no word there is no reason– and no world."[xxv] As language advances so too did thought and vice versa. Such a position was based on the idea of a dialectic existing between reality and the mind's means of cognizing it as experience. To reason was to use language to apply a symbolic system. "Reason is language, *logos*" said Hamann.[xxvi] To understand, to think, was to create. What was created, was the *logos* of humanity.

Language and thought are the means of communication, of expression of a given people, in a given time, their symbols stood in relationship. Society is a construction that exists within this form of exchange which permeates every aspect of it. Language bears a verisimilitude to the structure of relationships within the society itself. They are concrete relationships, which reveal the nature of reality as it is framed and understood by that people within their society. For this reason Hamann states that man can truly create only in his native tongue. "He who writes in a foreign tongue has to bend his spirit to it like a lover."[xxvii] There can be no universal language, no natural religion or natural law as the Enlightenment *philosophes* asserted. To make such a claim was to deny the real differences that existed between people as a product of their own geographical, biological, psychological, social characteristics and historical experiences.

Language, for Hamann, was 'not a mere invention but rather a reminiscence',[xxviii] since all symbols are in effect images created by passions, stimulated by external sensory experience. Language, thought, art, and religion all spring from the same root: our response to external stimulation from our continual dialogue with reality and our memory. This led him to conceive of language, and the form of art used, as indissoluble. Here art, language, and thought all become intertwined as a medium of expression, reliant

upon each other and developing as one with the cognitive faculties. Art becomes the sensual expression of either, an individual or collective personality, a form of moral commitment as opposed to a form of mimesis or imitation, detached from daily life and experience.[xxix]

The implications are important to understanding the nature of the critique of the Enlightenment and universalism. If language and thought develop from sense- experience and the passions, then the impetus for such development would, by its very definition, be affected by the geographical, biological, psychological and social characteristics of place. Hamann saw this as an organic relationship in which thought developed in response to such conditions as it shaped the creation of expressive forms of communication.

This revelation had implications on the idea of history. It implied that the history of all means of expression (and this would apply to both art and architecture) should reveal the organic relationship between place and thought. To understand any means of expression or communication was first and foremost to come to understand the mind of its creator to come to terms with his or her culture, system of thought and way of life. For Hamann history revealed facts and data about the past, but more importantly it also revealed patterns of events about what man was, what his purposes were, this was what was truly important about history. The recording of facts and events was trivial in historical scholarship, it was the broader patterns that history revealed that tell us about who we are. The inherent causality of science did not ask such questions. That was why history, as defined by the epistemology of science, could only be a listing of facts and not a vehicle to self- knowledge. This was Vico's point in the *corso* and *recorse* of history and it would also prove central to Hegel's later concept of the development of *Geist*.

> "Similarities, classes, orders stages, are only . . . houses of cards in a game. The creator of all things does not see as a man sees, He knows no classes; each thing resembles only itself."
>
> Herder
> *Samtliche Werke* [xxx]

Herder's Unity of Theory and Practice

If Hamann provided the arsenal of weapons, it was Herder who put them to use. His most original contribution lies in the doctrine that permeates his writings; 'the Unity of Theory and Practice'. Like Vico and Hamann before him, he found the dualism so common in Enlightenment thought, originating in Descartes but present in Kant's idea of Enlightenment, to be unintelligible.[xxxi] Mental experience and corporeal faculties, reason and imagination, sense and understanding were all part of the continuous flow of reality. Man had to surrender himself to the unity of his entire being; mind, intellect, will, feeling, imagination, language and action. Only under such conditions could individuality and freedom truly live and grow. That was what represented the true union of theory and practice for him.

The breakdown of orders of experience, of corporeal and mental faculties, of imagination and reason, were all artificial boundaries constructed by philosophers. As he saw it, they dissected experience and transformed it into a series of abstract concepts so alienated from reality as to be meaningless. Pushed too far and one has only abstract concepts in place of experience. Pushed even further, one has abstractions taken as objects in-and-of-themselves that are now mistaken for the thing-in-itself.

Leery of the temptation of his age to reduce the heterogeneous flow of experience to a series of homogeneous theoretical frameworks, he saw it as an attempt to impose a rational order on experience and the diversity of life for no other purpose than the aesthetic pleasure of a rationally ordered and simplified whole. Not only did this transform reality into a collection of artificial figments, but it distorted the actual facts in order to produce tidy scientific classifications and rules. This temptation could not yield knowledge or truth in any meaningful way because it was based upon the fragmentation of experience and 'being'. Following Hamann's lead, he believed that nature and history- as we come to understand them- were symbols, cryptograms of the *logos* which could not be accessed through rational metaphysics or the methodology of science.

For Herder, the quest for knowledge was a quest to see the universe as a single process.[xxxii] In 1775 he wrote: "Similarities, classes, orders stages, are only . . . houses of cards in a game. The Creator of all things does not see as a man sees, He knows no classes; each thing resembles only itself."[xxxiii] According to Herder, the world was organic, interconnected and dynamic. But he didn't stop there. Reality was made up of irregularity, incommensurability and difference that could not be subsumed under any universal law. Like Hamann, he did not wish to smooth over the irregularities of reality for the sake of a fine and ordered system. The whole of reality must be grasped in its fullness in all its particularity, complexity and historically changing manifestations. The natural state was one of creative dis-order.

His central idea was that nature was not the dead world of mass and extension described by Newton, but rather an eternal process of creation. This was fundamentally at odds with the image of nature as proposed by the epistemology of science. The very

foundation of the epistemology of science and the metaphysics of Descartes and Newton rested on the conception of nature and reality as a fixed entity constant through time. Nature existed in a fixed state of 'being'. It was the stable constitution of nature that made it possible to pursue the idea of absolute truths and fundamental laws, or principles, and to assert that knowledge was finite and fully knowable.

It was this revelation of Herder's that had the greatest impact on thought. Its' effect lay in its redefinition of truth. Once the concept of nature is re-conceptualized as in a state of constant flux, of ever changing, in the process of 'becoming', a new epistemological structure becomes necessary.[xxxiv] If nature is ever changing and dynamic then our understanding of it and truth must of necessity be understood as conditional, something to be continuously renegotiated. For Herder, there could be only one conclusion. The entire epistemological notion of a priori laws, formulas or methods in an absolute sense becomes meaningless. One has to reject the dogmatic notion that the complexity of the world could be reduced to some general law. That is only a search for the lowest common denominator, what in the end may prove to be the least important in the lives of men. It could only lead to shallowness of theory and crippling uniformity in practice.

The clarity, and rationality posed by Enlightenment philosophy and the epistemology of science, while comforting, comes at too high a price; the sacrifice of reality as experienced. Our engagement with reality and the search for truth becomes the quest for finding the *topoi* of the human *logos* one that is contingent, existing in a dynamic and fluid reality.

> "To discuss architecture as a specific art is interesting enough in a way. But to discuss architecture as the projected life of a people is another story. That is a serious business. It removes architectural thought from a petty domain the world of the book worm and places it where it belongs, an inseparable part of the history of civilization. Our architecture reflects us, as truly as a mirror, even if we consider it apart from us."
>
> Louis Sullivan
> *Kindergarten Chats*[xxxv]

The Sensus Communis: a Doctrine of Critical Regionalism

Herder's doctrine of the unity of theory and practice also served to shape his understanding of the human condition. Based on the idea of 'belonging', his thought owed much to Hamann's assertion that thought and language were inseparable and served as a unified means of expression tied to a given place and culture. To be fully human, to be fully creative, was to belong, belong somewhere to some group or historical stream, which cannot be defined outside of the notions of tradition and culture modulated by natural forces and physical and biological needs.[xxxvi] Human groups whether large or small were the products of 'climate'; the local geography, physical and biological needs etc. that essentially framed and often determined what became common traditions and common memories.

To 'belong' was for him not a passive condition, but rather an active co-operation a social action. He claimed "complete truth is always only the deed."[xxxvii] His idea was that there are certain central patterns by which each genuine culture was identified, to be a member of a given group was to think and act in a certain way.[xxxviii] The central link in encoding such traditions and memories were the means of expression, primary among

them being language. Herder once claimed: “Has a nation . . . anything more precious than the language of its fathers? In it dwells its entire world of tradition, history, religion, principles of existence; its whole heart and soul.”[xxxix]

For Herder to speak and think in words was to swim in an inherited stream of images and worlds, we must accept theses media on trust: we cannot create them.[xl] Man can purify and alter a language, but not create one from nothing. This was so because we already think within language, to create a language was to step outside of such a cognitive construct, that circle cannot be broken- all ‘new’ languages are only adaptations to existing structures. [xli]

Because we think in symbols, or language, our thoughts embody the very being of our locality and common experiences. This meant that all the arts and sciences are merely facets of one continuous pattern, as such; fact and value are not divided. Worship, poetry and ritual, all incorporate this communal experience as well, since such social events are also symbolic or use symbolic vehicles like language. It is this public use of common symbolic systems, which embody common experiences that binds men together into natural social groups. Each society, each culture produces a vision of a whole world that expresses their collective experience and is intelligible in their arts, science, crafts, and in the forms of social and political life.

Such an idea allows one to be able to conceive of being able to read, in the modes of expressivity, this central pattern of belonging. Thus language, history, art and architecture as modes of expressivity, reveal such patterns of belonging and are therefore, the actual manifestations of the unity of theory and practice, because they have more in common with the way of life of their given culture. To understand something is to see how it could

be viewed, assessed and valued in a given context, by a particular culture or tradition.[xlii] Thus to understand and explain a work is to transpose oneself into the culture and age of the people who created it to see the world as they saw it. To reveal how the work communicates the thoughts and ideas of the people who made it. This is central to understanding the expressive value of the thing, which cannot be divorced from its intentionality and studied as an isolated object. It is this aspect of his thought; that things need to be explained via an imaginative transposition into the particularity of their construction that makes Herder one of the originators of the secular doctrine of the unity of theory and practice.

In the words of Herder: 'Not a man, not a country, not a people, not a national history, not a state is like another. Hence the True, the Beautiful, the Good in them are not similar either."[xliii] Each culture is a complete world unto itself and must be valued as such. Accordingly one must not judge one culture by the criteria of another.[xliv]

This does not mean that he was a subjectivist. To the contrary he believed in objective standards that could be derived from an understanding of the life and purposes of individual societies, which were themselves objective realities. What he rejected was the notion that an objective system of judgment could be created that served as valid criteria for all societies throughout history.

The fact that one culture preceded another in time does not guarantee that the latter is superior. The effect of such a doctrine goes against any conception of a steady progress on the part of mankind as a whole.[xlv] It is a patent rejection of the notion of a perfect society, a Utopia.[xlvi] It also rejects any conception that perfectibility could ever be achieved through the perfection of technique. If each society is different and change is

inevitable and regional difference and variety abound, then there can be no single technique or means to ends that satisfies, in the sense of expression, the needs and goals of humanity. Any universal technique can only serve at best one society at a given moment in time. The universal application of a given technique can only serve to prevent the other cultures from flourishing.

True advance, or what Herder calls *'Fortgang'*, is the internal development of culture in its own habitat, towards its own goals; it is the development of human beings as integrated wholes. History reveals the great diversity of cultures, comparable but not commensurable, each developing in their own way, but in so doing reveals the myriad of infinitely diverse ways in which humanity has accomplished this. *Fortgang* reveals that there are many different ways of life and many different truths. Nothing is either true or false in the absolute sense. That each culture finds a means of poetically expressing such *Fortgang* was proof of the continued ability of humanity to create truth, freedom and happiness from the *sensus communis*.

> "And thus, when native instinct and sensibility shall govern the exercise of our beloved art;
> . . . then it may be proclaimed that we are on the high-road to a natural and satisfying art, an architecture that will soon become a fine art in the true, the best sense of the word, an art that will live because it will be of the people, for the people and by the people. ."
>
> Louis Sullivan
> *The Tall Office Building Artistically Considered*[xlvii]

The Use and Abuse of History

The ramifications of this attitude toward history are profound. To 'get it' one must step outside oneself and immerse oneself in the lives of a people, and experience the work as they must have. According to Herder one must: enter the time, the place, and the entire history of a people.[xlviii] One must "Be a shepherd among shepherds, a peasant in the midst of an agricultural people, an oriental among the primitive dwellers of the East, if you wish to enjoy these creations in the atmosphere of their birth."[xlix] Every experience for Herder, is what it is. To understand it is to grasp what it means to those who expressed it in the monuments through which we try to read it. We must learn to see with the maker's eye. All understanding is in this sense 'historical'.

As for the use of such insight, Herder believed that only through assiduous historical research- a sympathetic insight into the intentionality of a speaker- and a grasp of the organon of communication whereby humans understand one another, can one bridge the chasm of difference that separates, but does not divorce, diverse civilizations. Language expresses the collective experience of a group, but it is a medium that can be studied as such, and it is the medium that reveals the self- knowledge that humanity seeks to answer its most troubling questions, while revealing our common humanity. Because some

qualities are universal in humanity, one culture can study and admire another, even learn from it. When properly used history allows one culture to learn from another and build upon it, and to even recognize some qualities that are universal in humanity. Whether that occurs is dependent upon the events of history and the historical agents.

Herder never subscribed to the idea that Western man could return to the Greek *polis*. In this sense he openly rejected any notion of the resurrection of ancient Ideals which were value judgments from other societies just as alien to our own as their art or religion. [l] To sigh after the ancient Greeks or Romans or Egyptians like Winckelmann, was both impossible and absurd. Herder reacted against the growing 'culture' that devoured the world like a cancer.[li] He stated: "We speak the words of strangers and they wean us from our own thoughts."[lii] This option provides no salvation for the ills of humanity. Herder believed that renewal was possible, but only if man was willing to "cease to be in contradiction with himself" and not to continue to 'think in other people's thoughts'[liii] Instead, he sought to create a society in which men can live full lives and attain to self-expression.[liv]

For Herder the most improper use of history would be to use it to justify the values, ideals and goals of the contemporary society of the historian, a condition, which he believed was taking place in his day. "The general, philosophical, philanthropic temper of our age seeks to extend 'our own ideal' of virtue and happiness to each distant nation, even to the remotest ages in history . . . Those who have thus far taken it upon themselves to explain the centuries of progress have mostly cherished the notion that it must lead to greater virtue and happiness. In support of this they have embroidered or invented facts, played down or suppressed fact that belie it . . . taken words for works, enlightenment for

happiness, greater intellectual sophistication for virtue, and so invented the figment of the 'general progressive improvement of the world.'"[lv]

Herder did not advocate the imitation of a given culture by another, this was madness. Each great culture was an act. The idea of *Fortgang*, centered on two issues; the translatability of symbolic forms and their petrification. Herder did not believe that language was completely translatable and as such neither could the ideas or symbolic forms of one culture be translated fully into another. Each must be understood as a complete entity unto itself with its own beginning, middle and end. That one culture arose out of the decline of another, and in so doing took from the previous one certain; ideas, forms or techniques, did not diminish either its originality or the sanctity of the earlier culture. Even if one accepted the idea that man was continuously advancing, each stage was complete unto itself. The Greeks were not a preamble to the Romans, nor was the Romanesque to the Gothic. In this sense one culture was never a means to another. One culture could not adopt the work of another without re-presenting it through its own sense of 'belonging' and thereby transforming it into a new means of expression. Inherent in Herder's notion of translatability is its negative formulation. One culture cannot imitate the work of another and still maintain it as a valid expression of its 'belonging'. It implies that the imitation of symbolic forms, and this applies to art and architecture, did not serve the unity of theory and practice.

Herder saw language and thought as one, but he saw their eventual relationship as one of ambivalence. This led to the potentiality of language to atrophy, while thought advanced. The concretization of language in the form of writing was for Herder a petrification of language in a moment. Such petrification, he warned, led to dead corpses,

forms of expression that no longer spoke to the people who had moved on socially. He believed that against these corpses men would eventually revolt. The history of linguistic revolutions was the history of the succession of cultures, the true revolutions in human history.[lvi] It was the manifestation of the *Fortgang*.

Again, while Herder only spoke of language proper, the thesis applies to all symbolic forms; including art and architecture. The succession of cultures leads to the petrification of styles, which no longer speak of a collective experience of a people and become dead styles. The impact of such a proposition should not go unnoticed. For Herder once the petrification set in, the language is dead and of no use for the proper means of expression, it becomes a hindrance more than an aid.[lvii] Aesthetic inventions do not corrupt, only living off the inventions of others does, in so doing one becomes mechanical and devitalized.

The true use of history is not as an a priori object to be imitated, but as a source of inspiration. Past creations of the *Fortgang* inspire us to find our own center, our own means and modes of self- expression, our own poetry expressive of our national or cultural character. It can only be harmful to foist the values, ideals and means and modes of expression of one culture onto another. In this sense History becomes a dialectic between the particularity of experience and the general idea. The general ideas are abstractions, which can be dangerous and misleading, but they are also unavoidable, one must learn to see the whole no matter how unattainable this goal might appear.

Summation

The ‘Romantic’ revolt rejected the autonomy of reason and its assertion beyond the fields of science and mathematics.[lviii] The duality of the epistemology of science had lead to a breakdown of the orders of experience, creating artificial boundaries, dissecting reality and transforming experience into abstract concepts that were alienated from the actuality of the *lebenswelt*. It denied the wholeness of man and nature. We experience life and reality as a continuum, the world was a unity of thought and feeling, of subject and object. This was not some hypothetical philosophical system, but the actual condition of reality as experienced. While the unity of experience was something Hamann and Herder asserted it was not a reflection of the fixed and static world posed by science and the Enlightenment philosophers. Simple observation exposed the world as diverse and rich with variety. It was dynamic and interconnected; a continuous flow of experiences which at times proved irregular, incommensurable and replete with difference. What was needed was an epistemological structure whose propositions could uncover the pattern of continuity whether of nature, or history, through direct experience, and see reality and our experience of it, as a single process. It would require the redefinition of both Nature and Man.

This came in the re-structuring of consciousness and cognition. Our comprehension of the world was determined by our ability to project onto it a symbolic order, as a means of coming to terms with our own experiences. Those experiences were constantly renegotiated; the by-product of a dialectical exchange between the mnemonic encoding of distinctively human experiences and their confrontation with an external other.[lix]

There could be no place outside the mind and the symbolic order it is born into from which to perceive reality, to explain, justify or prove its existence. The recognition of a collective symbolic order meant that we were not passive receptors of external stimuli.

The implications were profound. Our means of accessing the world, the 'understanding', could not be a pure datum of rationality, precisely because knowledge of the world as 'thing-in-itself' cannot- or does not- truly exist as a *certum*. There were no innate ideas, or for that matter any absolute truths 'out there'. No longer the product of discovery or revelation, cognition and knowledge were now seen as the product of a creative process; a form of *poesis*.

It was this symbolic order that formed the *loci* of our common traditions, memories and culture. While such a 'climate' might over time be modulated by our actions in response to natural forces and physical and biological need, it nonetheless remains the historical stream from which the patterns of our social behavior emerge. It becomes the very fabric of our means of expression. We think and speak within this stream of images which simultaneously embody our locality and common experiences, what Herder called 'belonging'. That meant that thought and cognition could not be divorced from the particularities of place and time. The advance of cultures, what Herder called '*Fortgang'*, demonstrated that while each culture, each people, might come to construct this stream of images via a similar process, they are nonetheless distinct and at times even incommensurable.

In this sense all knowledge is historical. History becomes a case study of how humanity generates a sense of belonging, creates a truth and a means of expression serving to grasp the sense of the universal in how symbolic systems are formulated, but

simultaneously grasping the particularities of individual cultures and the myriad ways in which such fabrications can occur. It is the dialectic between the universal of the general idea and the particularity of experience. The recognition of the diversity of collective symbolic orders meant that, while the process of their creation might be the same, the actions which set them in motion were not. This implies that such cognitive acts of *poesis* required a form of praxis to both initiate consciousness, and to either maintain or alter their construction.

What men like Vico, Hamann and Herder espoused was the idea that reality, as we come to know it, within the framework of human cognition, was an ontological fabrication fashioned out of the dialectical relationship of self and other in praxis. The first task of knowledge was therefore, to grasp the world in its fullness, in the diverse particularity of its 'being'; as an ontological construction. That construction was the unity of the symbolic order. The second task of knowledge was to expose such ontological constructions, not as fallacies, but as the reality of human experience and praxis. That praxis was the work of the *sensus communis*; the communion of the self with others in a bond of 'belonging'. The structure of knowledge, the episteme, and its pursuit of wisdom was a search for how *poesis* and praxis form the unity of experience we call reality.

That was the true *Unity of Theory and Practice* and it would serve as the basis of a new epistemology as it was postulated by the writers and thinkers of the German Enlightenment. It would also change the structure of aesthetic theory and in the process provide the basis for a new epistemological parameters for tectonics.

ENDNOTES

[i] Sullivan, Louis, *Kindergarten Chats*, originally appearing in 1901 in serial form in the Interstate Architect of Cleveland Ohio, reprinted in *Louis H. Sullivan Kindergarten Chats and Other Writings*, Dover Press Toronto, 1979pg. 167.

[ii] The relationship between Hamann and Herder is troublesome in that there is no record of Hamann teaching at the time of Herder's education despite his reference to him as his teacher. It has been speculated that the relationship was one of mentor as opposed to a more formal academic student teacher relationship.

[iii] Goethe, *Dictung und Warheit*,, bk 12, vol 28, , in op. crit., Weimar, pg, 108, line 25, 1887-1919.

[iv] This idea of God's continuous creation was not new Nicolas of Cusa had asserted the same thing at the dawn of the Renaissance. He too had argued that if God were infinite and existed outside of human time the creation could not be a moment in human history but a continuous and infinite process.

[v] Hamann translated this idea to Herder who of course went on to inform the development of the human sciences and our ideas about the self.

[vi] Hamann; *Briefwechsel*, edit. Walther Ziesemer and Arthur Henkel, Wiesbaden and Frankfurt, 1955-79: Insel, 7 vols. vii 460.6.

[vii] While Hamann's work at the time was heresy it has become increasingly mainstream, Ernesto Grassi referred to the foundation of thought or what he termed the archai as a core belief which could not be proven or disproved; he referred to this as the scandal of modern metaphysics. See Ernesto Grassi, *Rhetoric as Philosophy*. Feyerabend's critique of science rests precisely on this assertion.

[viii] Hamann; *Samtliche Werke*, edit. Joseph Nadler, Vienna, 1949-57, 6 vols. ii 73.21 cf. *Briefwechsel*, edit. Walther Ziesemer and Arthur Henkel, Wiesbaden and Frankfurt, 1955-79: Insel, 7 vols. vii 167.10.

[ix] Hamann; *Samtliche Werke*, edit. Joseph Nadler, Vienna, 1949-57, 6 vols. ii 74.2.

[x] Hamann; *Briefwechsel*, edit. Walther Ziesemer and Arthur Henkel, Wiesbaden and Frankfurt, 1955-79: Insel, 7 vols. vii 460.6.

[xi] Berlin sums up Hamann's position on this matter as follows. "The contrast between faith and reason is for him a profound fallacy. There are no ages of faith followed by ages of reason. These are fictions. Reason is built on Faith, it cannot replace it; there are no ages that are not ages of both: a contrast is unreal. A rational religion is a contradiction in terms. A religion is true not because it is rational but because it is face to face with what is real: modern philosophers pursue rationality like Don Quixote, and will in the end, like him, lose their wits. Existence logically precedes reason; that is to say, what exists cannot be demonstrated by reason but must first be experienced itself, and then one may, if one wishes, build rational structures upon it whose reliability can be no greater than the reliability of the original base. There exists a pre- rational reality, how we arrange it is ultimately arbitrary." Isaiah Berlin; *Three Critics of the Enlightenment Vico, Hamann, Herder*, edit. Hardy, Princeton University Press, Princeton Oxford, 2000, pg. 283. Published in U.K. by Pimco, Random House, London.

[xii] There is a clear relationship to the thought of Vico here as both philosophers assert that our understanding of the world as the 'thing-in-itself' can only be understood via our own mind and hence is a construction of what it possibly is as our mind can conceive of it.

[xiii] Berlin, *Three Critics of the Enlightenment Vico, Hamann, Herder*, edit. Hardy, Princeton University Press, Princeton Oxford, 2000, pg. 302. Published in U.K. by Pimco, Random House, London. Berlin sums up Hamann's position in this way: "Philosophy claims to be the explanation of life, but 'life is action' not a static thing to be analyzed like a botanist's specimen. An action cannot be described in the categories provided by the Cartesians, or even the Lockeans and Leibnizians, for all their talk of movement and change. The task of true philosophy is to explain life in all its conditions, with all its peculiarities; not to smooth it out or substitute for it 'castles in the air' – harmonies, tidy beautiful and false."

[xiv] Hamann; *Samtliche Werke*, edit. Joseph Nadler, Vienna, 1949-57, 6 vols. ii 201.4. This lesson would be taken up by Hegel in the *Phenomenology of Spirit*, where he claims that we must descend into the Bacchanalian revel and understand that the beast descends upon its prey without ever thinking of it as a being.

[xv] The quote is found in an article on Fichte in *Entsiklopedicheskii* St. Petersburg, 1890- 1907 , vol. 36, pg. 50, col. 2 and is left untraced in Fichte.

[xvi] Hamann; *Samtliche Werke*, edit. Joseph Nadler, Vienna, 1949-57, 6 vols. ii 208.20.

[xvii] While not wholly original here, Pascal and Vico had asserted this before him; it was Hamann's writings that proved to give the critique its full impact.

[xviii] Goethe, *Dictung und Warheit*,, bk 12, vol 28, , in op. crit., Weimar, pg, 108, line 25, 1887-1919.
[xix] Hamann; *Briefwechsel*, edit. Walther Ziesemer and Arthur Henkel, Wiesbaden and Frankfurt, 1955-79: Insel, 7 vols. vi 108.24.
[xx] Ibid. 9: Insel, 7 vols. iv 288.29.
[xxi] Ibid.9: Insel, 7 vols. ii 330.30.
[xxii] Louis Sullivan, *Kindergarten Chats and other Writings*, Dover Books, New York, 1979 pg. 198.
[xxiii] Hamann; *Samtliche Werke*, edit. Joseph Nadler, Vienna, 1949-57, 6 vols. iii 284.24.
[xxiv] Berlin has summarized Hamann's position on this matter in the following way: "The notion that there is a process called thought or reasoning that is an independent activity 'within' man, in some part of his brain or mind, which he can choose at will to articulate into a set of symbols that he invents for the purpose, but which, alternatively, he can also conduct by means of un-verbalized or un-symbolized ideas in some non- empirical medium, free from images, sounds, visual data, is a meaningless illusion." Berlin, *Three Critics of the Enlightenment Vico, Hamann, Herder*, edit. Hardy, Princeton University Press, Princeton Oxford, 2000, pg. 315. Published in U.K. by Pimco, Random House, London.
[xxv] Hamann; *Briefwechsel*, edit. Walther Ziesemer and Arthur Henkel, Wiesbaden and Frankfurt, 1955-79: Insel, 7 vols. v 95.21.
[xxvi] Ibid., Insel, 7 vols. v 177.18.
[xxvii] Hamann; *Samtliche Werke*, edit. Joseph Nadler, Vienna, 1949-57, 6 vols. ii 126.9.
[xxviii] Ibid., 7, 6 vols. iii 41.11.
[xxix] This attitude was translated to both Herder and Goethe and is in many ways the very foundation of our contemporary attitude to the work of art and in particular architecture as a reflection of the *Zietgiest* of an age.
[xxx] Herder, *Herder's sammtliche Werke*, edit. Bernhard Suphan, Berlin, 1877- 1913, Weidmann, vol. viii , pg. 315.
[xxxi] Herder took to task the idea of duality in Kants *Anthropologie* where he identifies a distinction between individual morality, universal, absolute, free from internal conflict and based on rationality and unconnected to nature, history and empirical reality on the one hand and the disharmonies of nature. See Isaiah Berlin, *Three Critics of the Enlightenment*, Princeton University Press, Princeton & Oxford, 2000, pg. 188.
[xxxii] This point was first brought to the fore by Hamann as a key aspect of his thought. Herder took this and made it the central feature of his philosophy.
[xxxiii] Herder, *Herder's sammtliche Werke*, edit. Bernhard Suphan, Berlin, 1877- 1913, Weidmann, vol. viii , pg. 315.
[xxxiv] The shift from a static fixed and permanent definition of nature to a one that was dynamic and ever changing was first proposed in the Renaissance philosophy Nicholas of Cusa who successfully argued that if God was infinite that the conception of God's creativity and hence nature must also be infinite. This implied a more dynamic and changeable definition of creation and nature. In fact Cusa argued that nature was constantly changing and that the creation of the Bible existed outside the construct of human time and was continuous.
[xxxv] Louis Sullivan, *Kindergarten Chats and other Writings*, Dover Books, New York, 1979 pg. 65.
[xxxvi] Such an idea lies at the heart of his rejection of the emptiness of cosmopolitanism.
[xxxvii] Herder, *Herder's sammtliche Werke*, edit. Bernhard Suphan, Berlin, 1877- 1913, Weidmann, vol. viii, pg. 261. Herder wrote this in 1774 long before Fichte or Hegel.
[xxxviii] Herder's ideas here are similar to those of Foucault and his idea of episteme, a specific means of thinking that frames not only ones means of thinking but also of conceiving of taking action.
[xxxix] Herder, *Herder's sammtliche Werke*, edit. Bernhard Suphan, Berlin, 1877- 1913, Weidmann, vol. xvii , pg. 58.
[xl] Ibid., vol. xiii , pg. 362.
[xli] In his *Sprachphilosophie* Herder identified Logic as that which was approximate to what is common in language. The key to understanding man was anthropology not metaphysics or logic. Logic was only an abstraction from language itself. There was no deep logical structure presupposing all logical thought as proposed by Descartes or Kant. Like Vico and Hamann, he did not believe language to be a sudden miraculous gift from God nor a deliberate invention at a specific point in human development designed as a tool to improve life. It was a natural growth, a mental capacity for generating symbols of communication

and intentionality, given man by God but one that developed overtime with humanity. It should be noted that at times during his life, Herder a Lutheran clergyman, recanted and claimed language a full gift from God but such instances were more likely due to his religious affiliations and not his actual beliefs. He continuously reasserted the notion of language as a developing skill in humanity throughout his life. In the end he returned to the notion that language was an essential pert of the natural growth of consciousness and that all human solidarity rests on our ability to communicate, society would be inconceivable without it.

[xlii] Berlin states "differing civilizations are different growths, pursue different goals, embody different ways of living, are dominated by different attitudes to life; so that to understand them one must perform an imaginative act of empathy into their essence, understand them 'from within' as far as possible, and see the world through their eyes . . ." Isaiah Berlin, *Three Critics of the Enlightenment Vico, Hamann Herder.* Edit. Henry Hardy, Princeton University Press, Princeton and Oxford. 2000, pg. 236.

[xliii] Herder, *Herder's sammtliche Werke*, edit. Bernhard Suphan, Berlin, 1877- 1913, Weidmann, vol. iv, pg. 472.

[xliv] Isaiah Berlin sums up Herder's attitude on this very issue "No writer has stressed more vividly the damage done to human beings by being torn from the only conditions in which their history has made it possible for them to live full lives. He insists over and over again that no one milieu, group or way of life, is necessarily superior to any other, but it is what it is, and assimilation to a single universal pattern, of laws or languages or social structure, as advocated by the French *lumieres*, would destroy what is most living and valuable in life and art. Hence the fierce polemic against Voltaire, who, in his *Essai sur le moeurs*, declared that 'Man, generally speaking, was always what he is now.', or that morality is the same in all civilized nations." Isaiah Berlin, *Three Critics of the Enlightenment Vico, Hamann Herder.* Edit. Henry Hardy, Princeton University Press, Princeton and Oxford. 2000, pg. 222- 223. Published in U.K. by Pimco, Random House, London.

[xlv] The Idea of progress so much a part of the modern thinking was already a tenet of thought at the time from France, Italy and Germany. Hegel's teleological notion of the advancement of spirit is part of this trend, which Herder rejected.

[xlvi] Isaiah Berlin, *Three Critics of the Enlightenment Vico, Hamann Herder.* Edit. Henry Hardy, Princeton University Press, Princeton and Oxford. 2000, pg. 238-239. Published in U.K. by Pimco, Random House, London.

[xlvii] Louis Sullivan, 'The Tall Office Building Artistically Considered.', (1896) reprinted in *Louis Sullivan the Public Papers*, edit. Robert Twombly, Chicago University Press, Chicago London, 1989, pg. 104-5.

[xlviii] Herder, *Herder's sammtliche Werke*, edit. Bernhard Suphan, Berlin, 1877- 1913, Weidmann, vol. v, pg. 502.

[xlix] Ibid., vol. x, pg. 14.

[l] Such a dissent into nostalgia was also chastised by both Vico and Hegel.

[li] Herder, *Herder's sammtliche Werke*, edit. Bernhard Suphan, Berlin, 1877- 1913, Weidmann, vol. xxv, pg. II.

[lii] Ibid., vol. iv, pg. 389.

[liii] Ibid., vol. xxv, pg. II.

[liv] His conception of a good society was closer to that of Thoreau and his idea of culture to that of Goethe. His ideas are close to those of Ruskin, Lamennais and Morris in that he protests against mechanization and vulgarization. Herder favored self- sufficiency in artistic creation and natural self- expression.

[lv] Herder, *Herder's sammtliche Werke*, edit. Bernhard Suphan, Berlin, 1877- 1913, Weidmann, vol. v, pg. 511.

[lvi] Isaiah Berlin explains this point as such: "the art of writing, the incorporation of thought in permanent forms, while it creates the possibility of a continuity of social awareness, and makes accessible his own and other worlds to an individual. Also arrests and kills. What has been put down in writing is incapable of that living process of constant adaptation and change, of the constant expression of the unanalyzable and unseizable flow of actual experience, which language, if it is to communicate fully, must possess. Language alone makes experience possible but it also freezes it. Isaiah Berlin, *Three Critics of the Enlightenment Vico, Hamann Herder*. Edit. Henry Hardy, Princeton University Press, Princeton and Oxford. 2000, pg. 194. Published in U.K. by Pimco, Random House, London.

[lvii] Such a concept in architecture increasingly gained prominence during the 19th century as classicism and Gothic were increasingly seen as modes of expression of previous civilizations which no longer bore

relevance to the contemporary condition. What may have prevented the wholesale rejection of historical styles was the philosophy of history both of Herder and Hegel that argued that the collective historical pattern revealed the development of human consciousness a collective self-knowledge of humanity. Value was still placed on the awareness of the historical styles as a means of revelation of such truths. IT wasn't until Nietzsche and his rejection of history that such a revelation of truth was abandoned.

[lviii] All abstraction by its very nature must remove some element of reality from the thing in question. Some level of generalization is necessary for us to be able to codify the world in a sense that makes it intelligible. There can be no symbols, language or thought without abstraction at some level. To forbid it is to forbid thought and self- consciousness. Neither Hamann nor Herder ever meant that all abstraction or universality was to be eliminated, neither for that matter did any of the other critics of the Enlightenment and the epistemology of science ever intend to put forward such an absurd proposition.

What was at stake was the degree and nature of abstraction, the level to which it was taken and the object to which it was applied. Each level of abstraction, each move toward universality removes the concept, further from reality transforming the concrete into the purely theoretical. At some level it becomes completely divorced from the real. This may at some point be necessary to formulate a scientific hypothesis from which one then later descends to concrete reality.

[lix] For Vico this was the innate experience of the body as it was troped onto external perceptions of reality in the formation of the *Imaginative Universal*. For Hamann the self was the mirror of our intercourse with the other. Man, more specifically human cognition, was a product of human communication, interaction and expression. And for Herder this came in the form of 'belonging'; the idea that we are always already born into a preexisting symbolic order that shapes and helps to define our perceptions of reality and means expression.

Chapter 13: The Unity of Theory and Practice

> ". . . behind every form we see there is a vital something or other which we do not see, yet which makes itself visible to us in that very form. In other words, in a state of nature the form exists *because* of the function, and this something behind the form is neither more nor less than a manifestation of what you call the infinite creative spirit, and what I call God."
>
> Louis Sullivan
> *Kindergarten Chats*[i]

Nature as Poetic Unity

One of the key propositions in the work of Hamann and Herder was that the world was in a constant state of flux and change, full of incommensurability and opposition. It was central to the doctrine of the *Unity* of theory and practice, and it influenced later philosophers and writers of the Counter Enlightenment.[ii] At the heart of their worldview was precisely this assertion; nature was the continuous process of *poesis*, an evolving unity of life in all its forms and diversity, in its connectivity and its ability to recreate itself. This was the true subject matter of its study.

It was in his studies of botany that Johann Wolfgang von Goethe (1749-1832) began to rethink the definition of nature along these lines. In *The Metamorphosis of Plants* of 1790, Goethe proposed the idea of the *Urpflanze*, a theory in which all the parts of the plant were seen as variations and developments from one seminal element or organ that was then transformed into the subsequent parts. Such transformation Goethe conceived, were regulated by laws, but the overall strategy did not have the character of the mechanical laws found in Newton's vision of nature. The result was a vision of nature

different from that of the epistemology of science and its coherent systematic laws. What Goethe proposed was a vision of nature that was essentially teleological in character. His intention in the *Morphologie* was "to get to know living forms as such, to grasp the coherence between external parts that we can touch, to study them as indications of their interior, and to grasp thereby the organism as a whole as we observe it"[iii].

As Caroline van Eck explains it: "In order to understand the connection between parts of organisms, their functioning and the relation between exterior and interior [in short, to grasp what makes them living beings] it is not sufficient to separate their parts as the chemist or anatomist does. Instead, we must search for the unifying idea that regulates their growth and form."[iv] For Goethe, Nature was composed of the relationship, between the concrete physicality of a particular living organism and its morphology. Individual organisms in their particularity may be identical, similar or dissimilar in their outward appearance as they reflect the conditions of their 'climate'. The ever-changing nature of the relationship between the particularity of appearance and morphology is what nature and life consist of.

Goethe's emerging theory of nature bears all the hallmarks of the *Unity* of theory and practice. There is an over-arching unity that pervades all of nature; its sense of continuous dynamic creation that does not override its diversity and incommensurability. Each species is the product of its own unity, itself a by-product of its 'climate', which generates its 'belonging' or 'morphotype', which is then communicated in its external expression. Nature for Goethe was a dynamic will toward creation and development.

The ideas of the *Morphologie* essentially began to formulate an understanding of Nature and her forms as derived from within, from the idea of the 'thing-in-itself'. This

is, in one sense, a return to the Aristotelian concept of essences, but it also brings to it the idea of development. For Goethe, nature was in perpetual transformation and change, leading to diversity and infinite variety, but still guided by essential ideas or purposes. What this led to, as Caroline Van Eck asserts, was the reformulation of the idea of 'purposive unity'.[v]

In Aristotle, the idea of purposive unity was the aspect of living nature that was the subject of *mimesis*.[vi] Both man and nature engage in action that is purposeful, or teleological, in the sense that there is a given end that determines the purpose or appearance of the thing. Art and *praxis* likewise bear a verisimilitude to nature in their purposefulness. Historically, both Western philosophy and theology assumed a divine a priori plan. Prior to the epistemology of science, knowledge of it was considered inaccessible to man, while at the same time the ability to identify its presence was assumed. After the development of the epistemology of science this knowledge was viewed as directly accessible to man through the use of the scientific method.

The idea of purposive unity permeated much of the philosophical discourse in Germany at the time. It had been a part of Kant's epistemology where it was used as a regulative principle that operates as a function of the reflective judgment. For Kant, it served as the basis of the idea of system. In the *Critique of Reason* he stated; "I consider a system to be the unity of manifold knowledge under one idea. This is the idea formed by reason of the form of a whole, in so far as such a concept determines a priori both the size and the position of the parts in respect to each other."[vii] Nature operates as if a mind had formed its unity independent of its physicality. But it also means that such a regulative notion is a fixed concept or idea. According to Kant the actual constructive

process was only a copying of an idea preformed, it is an imitation of a transcendental idea. Purposive unity, as found in Kant, was an extension of the platonic notion of the *eidos*. Kant's nature was still the fixed and static nature of Descartes and Newton.

But following Hamann and Herder, the notion of a fixed idea cannot be reconciled with the empirical observation of nature which is more dynamic and diverse. The notion of 'purposive unity' in nature was then subsequently taken up by later philosophers, but transformed, as Goethe had done, into the idea of a dynamic will to *poesis* in which a unity is continuously renegotiated within the exigencies of Nature and 'climate', what I will refer to here as *Poetic Unity*.

I have chosen to use the term *Poetic Unity* instead of 'purposive unity' for several specific reasons: the first is that the term purposive unity was used by both Aristotle and Kant in reference to Nature only, and secondly because as they used it, it referred to a conception of Nature that was teleological and served a fixed and stable end. Hamann, Herder, Goethe and the Idealist philosophers in Germany did not accept this definition of Nature. Thirdly, the term purposive unity refers to the creative force of the ideal and not its actual manifestation in sensuous form. Furthermore, the concept of *Poetic Unity* was applied in a broader form including the definition of man, knowledge and art, and therefore a new terminology is warranted.

The idea of *Poetic Unity* can also be found in the writings of Friedrich Wilhelm Joseph von Schelling (1775-1854). In *Naturphilosophie* of 1797 he proposed that the Kantian dualism of opposition between nature and appearing nature was due to the objectification of nature as it is theorized in the cognitive process as an opposition to the self. As he saw it, the objectification was the result of the epistemology of science's

search for fixed laws which failed to account for the living dynamic forces in nature, including those in the self. [viii]

If nature, as object, is never absolute, or unconditioned, then there must be something non-objective within it. That non-objective aspect of nature was its original productivity. Schelling's term is translated as 'productivity', but it is essentially what I am calling *Poetic Unity*. He postulated that the dualism of nature's productivity and 'appearing' nature was the result of the fact that nature's 'productivity' cannot appear as itself, but is only manifest in the products of its existence. Furthermore, such products, while exhibiting such productivity, exhibit only one interpretation of it, a given *Poetic* particularity, and thereby inhibit the appearance of the productive force as a continuous or infinite aspect of nature- the universal of nature's *Unity*. As productivity, nature cannot be conceived of as an object, since it is the subject of all possible real predicates. But this means that there is always a dialectic between subject-productivity, and object- nature as predicate or particularity, which prevents nature from ever reaching a state of stasis. Nature for Schelling is grounded in the universality of its productive force, its' will to *poesis*, but full of contradictions and incommensurability in its particularity. It is a dynamic *Poetic Unity*.

This new conception of nature as a *Poetic Unity* was not limited to Goethe and Schelling, but was present in the work of many of the Idealist philosophers in Germany. They abandoned the idea of a preordained plan, that is to say, one that had established a priori ends such as Reason, Harmony, Virtue and the Good. They all viewed nature, at least as we come to understand it, as a dialectical construct between man and reality. That meant that 'nature' was constantly renegotiated and potentially different in the eyes of

diverse cultures. 'Nature' was in a constant state of 'becoming'. This also meant that ends were not fixed, but fluid and negotiated. Yet they still held to the idea of unity. The content of the form 'nature', its essence, was no longer an a priori harmony or reason, but the will to, or stratagem of, *poesis* as a creative act that coursed through all of nature and life. Its manifestation in the exigencies of matter was what I have termed *Poetic Unity*.

> "Nature gave man reason, and freedom of will based upon reason, and this in itself was a clear indication of nature's intention as regards his endowments. For it showed that man was not meant to be guided by instinct or equipped and instructed by innate knowledge; on the contrary, he was meant to produce everything out of himself. Everything had to be entirely of his own making . . ."
>
> Immanuel Kant
> *Idea for a Universal History with a Cosmopolitan Purpose*[ix]

Freedom and the Autonomous Self

The image of man as proffered by the epistemology of science and the metaphysics of Descartes was one of *homo rationis,* an image challenged by men like Vico, Hamann and Herder.[x] They had conceptualized man along the lines of *homo fabricanus* or *homo artifex.* In their eyes, all human action was in essence a creative act in which man laid his or her stamp on the world. Our very engagement with reality was a form of *praxis* which simultaneously brought forth both, our own understanding of reality, and our own sense of identity as both individual and collective. In this sense all forms of *praxis* not only transform reality and our perceptions of it, but also form the basis of our interpretation of 'reality' that serves as a unified framework for the communication of intentions and free

will. By the end of the century this concept was beginning to reshape the definition of man along the lines of what I have referred to as *Poetic Unity*. [xi]

A key impetus for this redefinition came from an unlikely source, the writings of one of the Enlightenments greatest philosophical proponents Immanuel Kant (1724-1804).[xii] One does not think of Kant as a 'Romantic' or Idealist philosopher, he was more of a rationalist and certainly a firm believer in science. He viewed the writings of Herder with suspicion, seeing his generalizations as far too vague and his thought lacking in logic. That feeling was mutual, as Herder viewed Kant as too pedantic, dividing all of experience into categorical fragments. But it was in Kant's moral philosophy, specifically his concept of freedom that they found the justification for the redefinition of man along the lines of the emerging definition of Nature as *Poetic Unity*.

According to Kant, man is 'man', not because he has to be, but because he chooses to be. Other things in the world may be subject to causality, or follow some rigorous schema of cause and effect, but free will allows man to be the human he wishes. Kant, like Vico before him, had insisted that the most significant aspect of man was his free will, not his reason. It was Vico who claimed the will was ". . . the property of human nature which not even God can take from man without destroying him."[xiii] That meant that man chooses freely between right and wrong. Virtue, and the values it constructs, was the result of human choice and action.

Kant came to this not through Vico, but through Rousseau's *Emile*. For Rousseau all men are experts in moral matters, all men can clearly identify what was right and what was wrong. This of course assumes first that there was a clear and identifiable a priori right and wrong and that there was an innate a priori faculty in all men that served as a

moral compass. Kant certainly agreed with this and it led him to assert that what was the manifestation of individual morality was what proceeded from individual choices, only those actions of which the individual was author.

It also meant that no matter the circumstances, no matter how hemmed in by the constraints of the world, man always possesses some degree of innate freedom. In this sense man was not so wholly determined by either nature, or culture, as the French *philosophes* had asserted. Reality served only as a datum within which man operated and exercised his innate freedom. It was this idea that underlay his famous essay '*What is Enlightenment?*' If I am made to do what I do by someone else, regardless of intentionality, I am being deprived of the innate freedom that exists within me and serves as the primary quality of my humanity. For Kant it was the very concept of freedom of will, of the power to choose, that was what makes man, 'man'.

For Kant, the adherence to the rules of nature presents an ethical dilemma. If I am to obey some form of natural morality, if I am to obey some rule of social behavior, if I am to obey some mechanistic precept, then I must relinquish my freedom of will. According to Kant; "By 'Personality' I mean freedom and independence of the mechanism of nature. If I am the plaything of nature, if causal forces which operate on trees and stones and animals operate on me too, how can I be said to be free?"

With Kant our relationship to nature changes, no longer the model or ideal to follow, the ground from which truth was to be found, it now became the indifferent stuff upon which man enacts his will. For Kant nature was at best a neutral surround, at worst an enemy of man, even if he was a part of it. Clearly man was a part of nature and a natural object, his emotions were 'natural', and what makes man, 'Man' was 'natural'. In his

philosophy we find the beginning of the concept of nature as a force- at times hostile to man's will- set over and against the self, as opposed to the idea of the self as coterminous to, or reflective of nature's harmonious order. It is in his voluntary acts that man was truly free and in so rises above nature's necessity. If man was to be free, then he must obey only those laws and rules that he himself has made. Man was freest, and rose to his greatest height when he stood over nature, when he molded it to his own will, transforming it to reflect his sense of being.

It was this aspect of Kantian thought that had the greatest impact; the idea of the autonomy of the self, that I am the author of my own actions. The result was that what humanity works for was not happiness or efficiency, but the dignity of man, freedom and respect for men as choosers of their own destiny, even if that choice was wrong. Kant's position led to the idea that any form of domination over an individual's free will was a form of evil. Any use of individuals for purposes that are not their own, but that are of the user, was a form of degradation and as such a maiming of their very being. [xiv] This was so because it prevented their becoming what they both can and wish to be. It was the removal of their self- determining liberty, an important God-given aspect unique to men.

Kant had demonstrated that value, right or wrong, was the product of our choices, not an intrinsic quality of the thing-in-itself. We chose our actions and in the process create value. Man freely commits to pursue a given kind of existence. It is therefore unjust to use men as a means to ends since they are ends in themselves. And if a man was to sacrifice, it must be to something higher.

Not only did this inadvertently support Herder's insistence on the plurality of ideals and the determination of such ideals by a given group of individuals. But it also dealt a

blow to any form of determinism; mechanical or cultural.[xv] Free will was, at least for Kant, a primary datum of human consciousness, therefore liberty was not a given status, rational or otherwise, but rather rested in the value itself, that is to say, in the ability to choose. Kant's premise meant that Virtue was not a fixed a priori to be discovered, but rather a value structure that was created. And this meant, intended or not, that both Virtue and Man could not be the fixed a priori asserted by the epistemology of science and the Enlightenment *philosophes.*[xvi]

Kant's writings proved highly influential on the writings of Johann Gottlieb Fichte (1762-1814) and Friedrich Schiller (1759-1805), they would use his moral philosophy to redefine the nature of Man along the lines of *Poetic Unity*. This would be accomplished in Fichte's theory of knowledge and the self and Schiller's theory of free will and Man. Together they would formulate the ontological ground of human cognition and consciousness along the lines of *Poetic Unity*.

> "Action, action is the soul of the world, not pleasure, not abandonment to feeling, not abandonment to reasoning, only action; only by action does one become the image of God, the God who creates ceaselessly and ceaselessly rejoices in his works. Without action, all pleasure, all feeling, all knowledge is nothing but a postponed death."
>
> Jakob Micheal Reinhold Lenz
> *Uber Gotz von Berlichingen*[xvii]

Life = Praxis

Like Herder, Johann Gottlieb Fichte (1762-1814) saw the world as one of difference, but to an even greater extent. According to him, we do not approach the world from the

perspective of a neutral episteme, but rather a certain attitude or framework. What one kind of person wants of the world was different from what another wants, while there are commonalities, the relationship of things will always appear as distinct, if not at times contradictory. Things are not as they are independent of me, but are as they are because I make them such. Goethe made this point in *Faust*; the beginning is not knowledge, but *logos*, not understanding, but our attempt to adapt the world to our will. We know because we are called upon to act. While related to Kant's idea of will, Kant never went that far. For Fichte and others in the Counter Enlightenment, the will of man was to take action in the world. We are not passive observers, but active creators. As such nature is not the thing-in-itself for me to examine, but rather nature was what it was because I take it to be that. Our understanding of the world was what it was, because it was conceptualized as an answer to an unformulated question; what was its purpose in terms of my will. It was through this filter that the world was comprehended, every object, the thing-in-itself, was defined in terms of the purposive behavior of Man. It was this aspect of our reality; that it was constituted by our own sense of purpose that becomes the very source of the self for Fichte, as the idea of *Poetic Unity* was introduced into the definition of Man.

One thing that he accepted from the 18th century empiricists, Hume in particular, was the idea that when one speaks of the self there was a problem in that the self was not a thing, an object of direct perception, but rather a concatenation of experiences from which both the human personality and history were formed. Fichte proposed the doctrine that it was natural for the self to emerge in cognition. As opposed to the concept 'me'

which is something introspective, the 'I', he asserted, was formed through what he called *Anstoß,* or 'impact'. It was this category that dominated all experience for him.

Accordingly, there was an external resistance to the self, and it was in the recognition of it that the idea of the 'self' and the 'not self' emerged. Without the 'not self' there could be no 'self' experienced, cognition and reality existed within this dialectic.[xviii] I am who and what I am, because I am aware that I am seeking something from that which is outside me. This same confrontation of the 'potential self' with the 'other' served as the motivation for Vico's *Imaginative Universal,* and Schelling's understanding of the objectification of nature that lead him to identify that Nature must be composed of both an objective and non-objective aspect; its 'productivity' or *Poetic Unity*. It would also serve as the basis of Hegel's double-*Ansich* in the *Phenomenology of Spirit.*

Like Herder and Hamann before him, Fichte comes to the conclusion that consciousness does not begin with disinterested contemplation, but rather with action or praxis. For Fichte: "We do not act because we know, we know because we are called upon to act."[xix] I 'am' not because I 'think', as Descartes asserted, but because I take action. No longer the passive state of Cartesian reason, knowledge becomes a practical instrument provided by nature for the purpose of effective life and was always knowledge in relation to some action, whether it was survival, adaptation etc. In response to Descartes *Cogito ergo sum,* Fichte proclaimed *volo ergo sum,* 'I act therefore I am'.

The ramifications of this growing distinction had profound significance. Up until that time the idea of ends or goals (of life, or art or morality) were for the most part conceptualized as something found, discovered in nature or the world around us. Fichte asserts that such ends are not discoverable, but rather made- the by-product of a creative

act. If Nature impinges upon our being, forcing us to take action, it then, according to Fichte, becomes the material out of which we create our freedom again. Fichte asserted that our world is what we dream out of our inner life, our experiences are determined by our actions. "I am not determined by ends, ends are determined by me."[xx] Praxis, ideals and ends are necessary objects of human manipulation if man is to be man. I in a sense invent, or create, them. If they are made, then they were no longer propositions as science defines them. The idea of truth or falsehood, or compatibility drops away precisely because such things as ends and goals are not answers per se, but forms of praxis. While not derived from Vico's axiom *verum ipsum factum*- the true is convertible with the made- it was nonetheless reminiscent of it.

What men possess is an indomitable will, much like nature, and that meant that knowledge was not of values, but of their creation, this was what men achieve. What humanity does was create values, create goals, create ends, and in the end creates its own vision of reality, in a process that most closely follows that of creation and *poesis*. Since *Poesis* is the bringing into being of that which previously did not exist, there can be no copying, adaptation, or learning of rules, no external checks and balances, no a priori structure that must be learned in order to proceed. The process is one of invention, creation and making in which ends, or goals, are established and materials and means are adapted to suit such ends. Means and ends are developed simultaneously in accordance with desire and imagination. In this way we make our world as we see fit.

For Fichte, and his friend Schiller, the end of man was self- development and he was thus constituted by his own *Poetic Unity*. The important thing was to act. The true function of man was to realize his own vocation to constantly seek, overcome obstacles

and realize ones full potential. In Fichte man, like nature according to Herder, was defined as being of necessity in a state of 'Becoming'. This led him to distinguish between those who are alive in the fullest sense and those who are dead, those who are only echoes of 'self' and those who are speaking voices. Pushed to its end Fichte's postulation implies that an individual was wholly identifiable, wholly alive, only in the moment of resistance, in opposition. To be alive was essentially to be constantly engaged in the creation of the self and world. For Fichte anyone who does not create, who simply accepts what life, or nature, has to offer, was dead.

The result was a new definition of man. If Vico, Hamann and Herder had postulated a world as a dialectic creation of the self and reality, Fichte gave it ontological grounding in a new theory of self. Man is generated in action- *praxis*, the continuous creation of 'self' and world. For Fichte, if man was to fully achieve the unification of theory and practice, to be complete and fulfill his potential, he must take action and be a creator, he must first engage in *Poetic Unity*.

> "Reason indeed demands unity, but Nature demands multiplicity, and both systems of legislation lay claim to Man's obedience. It will therefore always argue a still defective education if the moral character can assert itself only through the sacrifice of what is natural; and a political constitution will still be very imperfect if its is able to produce unity only by suppressing variety. "
>
> Friedrich Schiller
> *On the Aesthetic Education of Man*[xxi]

Poetry as a Form of Resistance

The Enlightenment thinkers looked to nature as a moral and aesthetic guide. Rousseau and Laugier even chastised culture for leading us away from it. Friedrich Schiller (1759-1805) would have none of it, as he conceived it, Nature was amoral, and fully willing and capable of destroying man, often in the most ruthless and hideous manner. It was this fact that was the constant reminder for him that we are not truly a part of nature. He once claimed: "The very circumstance that nature, regarded as a whole, mocks all the rules that our understanding prescribes for her, that she proceeds on her free and capricious career and treads in the dust the creations of wisdom without regard for them, that she snatches up what is significant and what is trivial what is noble and what is common . . . she often dissipates man's most arduous achievements and indeed her own most arduous achievements in one frivolous hour and devotes centuries to work of unnecessary folly."[xxii] Schiller regards this as the essence of nature. It was typical of how it operated. This was nature and it was not man.

Fig. 22 Image: Gasper David Friedrich, The Arctic Sea (The 'Hope' in Pack Ice) [xxiii]

Humanity, and its system of culture, were morally directed, had a distinction between right and wrong, between desires and will, duty and interest and acted accordingly. There was in Schiller a sense of the necessity of man reshaping the sense perceptions of the external world in a form that was unique to him that placed him in a constellation of thought along with Vico, Hamann, Herder and Fichte. "Nature begins with Man no better than with the rest of her works: she acts for him where he cannot yet act as a free intelligence for himself. But it is just this that constitutes his humanity, that he does not rest satisfied with what Nature has made of him, but possesses the capacity of retracing again, with his reason, the steps which she anticipated with him, of remodeling the work of need into a work of his free choice, and of elevating physical into moral necessity."[xxiv]

Man's nature was his free will, which compels him to move beyond nature and transform it in conformity with his inner will. He must remake sense perception in his own image for man to first emerge as self, but it was in this act, the construction of self and intellection, that freedom was first achieved. It was also the key to where the essence of man was to be found. For Schiller, man was only man if he was given the opportunity to rise above nature and mould her to his morally directed will. The question was *'How?'*

Fichte provided the ontological grounding of the 'self' in resistance to nature as the 'other'. It was Schiller who provided the ontological structure of that resistance by extending the idea to free will and the development of Man. In a move that shows his allegiance to his friend Fichte he says "We exist because we exist; we feel, think and will because there is something other besides ourselves."[xxv] In his *On the Aesthetic Education of Man in a Series of Letters* of 1794, he gave us an image of man similar to that of Goethe's image of Nature in *The Metamorphosis of Plants* and Schelling's *Naturphilosophie.* For Schiller man was both 'self' and 'condition'. While the 'conditions' of our material being may change, the 'self' persists. If the self persists then it cannot be grounded in its 'conditions', but must be grounded in itself.[xxvi] Since the 'conditions' do not persist they must result and must be grounded in something other than the self. According to Schiller, this ground was time, as 'Time is the condition of all becoming'. As he sees it the self cannot have a beginning in time, but the conditions, must begin with time. If there was a constant, of reality, it is not an external order, or harmony, but the absolute self of human consciousness that served as its *morphology* or *productivity*.

Schiller comes to the conclusion that the subject matter of activity is received in the self as an external other, as something that is changing within and through time. It is the realization of this ever-changing 'condition' accompanied by the never changing 'self' that transforms experience into a unity. "Only as he alters does he exist; only as he remains unalterable does he exist. Man conceived in his perfection would accordingly be the constant unity which amidst the tides of change remains eternally the same."[xxvii] It is the 'conditions' of our being that are the source of the diversity of our being, while it is the persistence of the self that serves as the source of the unity of our being. Like Goethe before him, Schiller was attempting to grasp the coherence between the external parts of man that we can touch, to study them as indicators of his inner self and thereby grasp Man as a whole.

For Schiller, this duality of 'condition' and 'self' is manifest in the dialectic of two basic impulses the material, or sensuous, impulse, and the formal, or rational, impulse. The first proceeds from the physical existence of man and concerns itself with his setting within the bounds of time and the determinations of material reality. Schiller sees this impulse as the necessary phenomena in which mankind is ultimately rooted. While it is the source of the arousal of mankind's potentialities it is simultaneously the medium which makes their potential impossible. The formal impulse emanates from man's absolute 'self', his rational nature. "Every individual man, it may be said, carries in disposition and determination a pure ideal man within himself, with whose unalterable unity it is the great task of his existence, throughout all his vicissitudes, to harmonize."[xxviii] It is the absolute indivisible unity of the self as it strives to set the self at

liberty by bringing unity to the diversity of its manifestations. This is *Poetic Unity* in Man as defined by Schiller.

For Schiller, both impulses are necessities of mankind, and he repeatedly notes the importance of their balance. “Every exclusive domination of either of his two fundamental impulses is for him a condition of constraint and of force, and freedom consists solely in the co-operation of both his natures.”[xxix] And again; “Nature should not rule him exclusively, nor Reason conditionally. Both systems of law should subsist in complete independence, yet in complete accord with one another.”[xxx] It is when man sublates both to each other, that he is free. But this is not always the case. The quest for their unity in sublation was the true purpose of man and the will. It is therefore the precondition for Self-knowledge.

Like Vico before him, Schiller conceived of humanity as having gone through three fundamental stages in its development.[xxxi] Each governed by a different relationship between the impulses. In their development it was the material impulse that emerged first. This was a savage stage where Man was governed by the material impulse driven by the nature of matter, the sensuous, necessity, passion and desire, without any sense of ideals. “So long as Man in his first physical condition accepts the world of sense merely passively, merely perceives, he is still completely identified with it, and just because he himself is simply world, there is not world yet for him. Not until he sets it outside himself or contemplates it, in his aesthetic status, does his personality become distinct from it, and a world appears to him because he has ceased to identify himself with it. Contemplation (reflection) is Man’s first free relation to the universe which surrounds him.”[xxxii]

The second stage of human development was one in which humanity turns to the formal impulse and reason in order to improve its lot in life. This barbarian stage was not an improvement, but a mere substitution of one impulse for the other. It was the domination of the formal impulse and reason over the material impulse and nature. Schiller called it the *Vernuftstaat;* the rational state, when man adopted rigid principles, worshiping them like idols, as if they came from some unquestionable authority. It was reason turned into fetish.

The third state for Schiller, and the one to which he aspired, was an ideal state where passions were not divided from reason, necessity not divided from freedom. It was this third stage, and the necessary conditions for it to emerge, that was not only the focus of Schiller's writings, but the very basis of Idealism in both philosophic and artistic terms.

In Schiller's construct once we accept the idea of the antagonism of the dual impulses we must confront the reality that there are no means of returning to a unity without the sublation of the material impulse to the formal. But this was not an answer. The sublation of the material impulse to the formal impulse resulted in perpetual uniformity, not a true unity. This was the condition of the *Vernuftstaat*, and as he saw it, the condition of his own age.

He had Kant in mind when he chose his nomenclature. The *Verstand*, is often translated as the 'understanding' in Kantian terms.[xxxiii] But it is clear that the attack was against the entire rational project of the Enlightenment as outlined by the epistemology of science. "The intuitive and the speculative understanding took up hostile attitudes upon their respective fields, whose boundaries they now began to guard with jealousy and distrust, and by confining our activity to a single sphere we have handed ourselves over

to a master who is not infrequently inclined to end up by suppressing the rest of our capacities. While in one place a luxuriant imagination ravages the hard-earned fruits of the intellect, in another the spirit of abstraction stifles the fire at which the heart might have warmed itself and the fancy been enkindled."[xxxiv] The very idea that Man, Virtue and Art, that the entirety of human existence was conceptualized as an imitation of precepts and laws supposedly found in nature as the Enlightenment *philosophes* espoused, was abhorrent to Schiller. This was a form of determination, a hindrance to free will, and it represented an oppressive state of being.

The problem of the *Vernuftstaat* is that it suppresses the material impulse leaving man only a fragment of his potentiality. "Man himself grew to be only a fragment; with the monotonous noise of the wheel he drives everlastingly in his ears, he never develops the harmony of his being, and instead of imprinting humanity upon his nature he becomes merely the imprint of his occupation, of his science."[xxxv] For Schiller this is the real problem with the epistemology of science. It is not in its inherent duality, but in its tendency toward determination and suppression, as man is reduced to only one aspect of his being.

The determination and suppression took place in both early stages as each was dominated by only one of the impulses. But for Schiller the suppression in the *Vernuftstaat* was the least tolerable. "But Man can be at odds with himself in a double fashion: either as savage if his feelings rule his principles, or as barbarian if his principles destroy his feelings. The savage despises Art and recognizes Nature as his sovereign mistress; the barbarian derides and dishonours Nature, but- more contemptible than the savage- he continues frequently enough to become the slave of his slave."[xxxvi]

Kant had argued if society was unjust- if it inhibited human freedom and man's ability to be distinctly human- then it should be resisted. If a society was not given to a healthy morality, if everything one did was obstructed, then resistance to such a society was justified even warranted. Schiller used this; the Ideal of Freedom came in the form of resistance to any form of oppression. This peppers all of his writings.[xxxvii] He called for a resistance to the Enlightenment project and the epistemology of science, which if they did not create the condition of the *Vernuftstaat*, served to keep it in place. How does one become liberated from the *Vernuftstaat*?

There must be sublation, but that sublation must be reciprocal. "When therefore Reason introduces her moral unity into physical society, she must not injure the multiplicity of Nature. When Nature strives to maintain her multiplicity in the moral structure of society, there must be no rupture in its moral unity; the triumphant form rests equidistant from uniformity and confusion. Totality of character must therefore be found in a people that is capable and worthy of exchanging the State of need for the State of freedom."[xxxviii] It is therefore not enough to possess reason if one wishes to achieve enlightenment and freedom. [xxxix] Freedom can never be dependent on time, but conditions in time cannot be dependent on Freedom. Both conditions react to each other, without form there can be no matter and without matter there can be no form.[xl] There must be a sublation of Reason and Nature; of man's dual impulses.

For Schiller this condition only existed in totality in the creative act of *poesis*. This is the moment of free self-expression where man escapes the oppression of the material impulse and necessity and rises above it. But it is also where man escapes the oppression of the formal impulse and reason. It is the moment when man is most free. When he

moves beyond Nature and transforms it in conformity with his will. It is when the soul is completely free to exist in a world of pure praxis.

Schiller sees *poesis* as a form of 'Play' in which man invents the rules and then chooses to follow them and this is the ultimate freedom and the state in which humanity is most fully human. The material may be given by nature, but it is transformed by human ideals and its value is derived from that. Schiller argues for a position in which human ideals, ends and objectives are not to be discovered by intuition, by scientific means, by sacred texts, by listening to experts. They are not to be discovered at all, but are to be invented, generated in and through the creative process. There is a similarity here to Vico and Hegel on this point. For Schiller, these ideals are invented and as such are in opposition to nature. They are directed against her idealism and serve to transform nature and educate ourselves. *Poesis* becomes the means of resistance from the shackles of necessity in the *Vernuftstaat*. It comes through the act of *poesis* in which man re-accesses his own *Poetic Unity*.

> "Nature is constituted by the organic union of all her forces, humanity by the organic unity of all individual wills."
>
> Johann Gottlieb Fichte[xli]

The Return of the Sensus Communis

By the 1780's the increasing skepticism regarding the notion of harmony, reason and good sense began to led to a view of the world devoid of any order or morality. Ironically it was the result of the very idea of Kantian Morality as it developed in philosophical circles. Kant had asserted that man had an aspect that allowed him to understand good

and evil and that given the choice would choose the good. But this notion of a universal desire for good was increasingly viewed with some skepticism. Did all men seek the good? Surely in history there were some that must have seen that their choices were evil. If man is free to exercise his will for either good or evil, if life provides more than a single option in terms of both means and ends, if some of these options are not compatible, then tragedy and chaos are inherently built into the very fabric of reality and human existence. This lead to the increasing belief that man needed to remove, or detach himself from the reality of the lived world in order to exist in the pure world of the imagination, creativity and art. Historically, it is this position that is often referred to as 'Romanticism'. In the work of Schiller such figures are seen as heroic precisely because they are willing to give up, or do battle with, the world for the sake of their principles and ideals. The retreat into one's own inner world was not a solution. Such individualism could only lead to inaction in the face of opposition. Complete individualism and the pursuit of the self had the potential to lead to nihilism and destruction. It needed to be countered if man was to learn to accept the necessity of the material world, mould it to his will and to return to a more balanced acceptance of the lived experience as one unity.

Sometime around 1803 there was a change in Fichte's writings regarding individual freedom. If the world was full of inconsistency, incompatibility and violence, then the only way to combat that was through moral regeneration, the production of an ethic: to take action in the world. If his earlier writings are more influenced by Kant and Schiller he now was more directly influenced by Herder and the notion of 'belonging'. Man was not solely an individual acting out of the individual will, but the product of the actions of other men just as surely as his own. Thus the individual was a part of a continuous stream

of humanity, no longer an empirical being in space, but a particular member of a larger group or nation. Such an individual was an imperfection in its particularity; the only perfection of humanity could come from the collective unity of a group, or humanity as a whole. Fichte now turns to the *sensus communis*, where the individual will is sublated to the collective action of the whole. According to him; 'The life of reason consists in this, that the individual forget himself in the species, that he must risk his life for the life of all and sacrifice his entire life to theirs."[xlii] And also "The individual does not exist; he should not count for anything, but must vanish completely; the group alone exists."[xliii] In his writings there is the idea that behind the empirical individual is a transcendent self, a kind of spirit running through the universe, as a great unifying principle to which all individuals seek to unite. If Schiller had provided an understanding of the unity of the self, Fichte now posited it for humanity as a whole. The self must take its place among this collective consciousness.

For Fichte this was the *Beruf*, the purpose of man was to become a contributor to the collective, over and above the nihilistic tendency of individualism and the self. According to Fichte "Nature is constituted by the organic union of all her forces, humanity by the organic unity of all individual wills."[xliv] In Fichte, the *sensus communis* becomes the *loci* of the truth of mans' *Poetic Unity*. This sense of the creative collective will puts him more in line with the developing ideas of Hegel, Schelling and Holderlin in the *Systemmprogramm* of 1796, which I shall return to later. The world of man, like the world of nature, was in a constant state of 'becoming', continuously recreated as a conscious or unconscious collective action of the a people. Man emerges in *poesis*, but if

mankind is to fulfill the full potential of *Poetic Unity*, it must be but a moment of *praxis;* the collective activity of the *sensus communis*.

> "The very essence of spirit is action. It makes itself essentially what it is; it is its own product; its own work."
>
> G.W.F. Hegel
> *Reason in History*[xlv]

Poetic Unity and the Image of the World

The Idealist philosophers challenged the idea that the philosophical problem began with the rational definition of being. Instead they proposed that the more central question was that of 'being' itself or '*How does being originate in cognition*?' From Vico to Fichte the answer lay in the passions. Our visceral response to phenomena elicits a reaction in the form of an emotion, fear, pain, anger, love, etc. It is the reminiscences of such reactions in time that bring about the sense of awareness. That meant that the passions proceeded reason within the construct of cognition, a point clearly asserted by both Vico and Schiller in their constructions of the development of man.

But this only raises the question of the *logos* of being; '*How do we experience the objectivity of being*?' It is not enough to recollect a sensory experience, true self-awareness requires a response to such recollections. It is in the recognition of the emotion as an oppositional response to an 'other'; I fear this (as in Vico's *Imaginative Universal*) or I resist this (as in the case of Fichte) that the 'self' emerges objectively. Such recognition implies action or praxis; 'I must fear', 'I must resist'. The *logos* of being, is not brought about by the other, but by the specific act. Thus cognition is not the result of

ratio, but of praxis as a generative movement/moment, that creates the *logos* of consciousness.[xlvi]

The ontology of cognition therefore, is rooted in the historicity of experience. The *logos* emerge in a concrete reality, the particularity of experience. As Ernesto Grassi has noted; "All beings, in their openness to being, are expressions of a call, an appeal that must be answered in the urgency of every moment. The appeals, in whose realm we exist, are ever changing and new, and the meaning of beings is transformed according to the modality of our responses to the appeals."[xlvii] It is this condition that underlies Herder's 'belonging' and it results in the *sensus communis*. But it is also what underlies the idea of *Fortgang* and the emerging primacy of history as a means of expression and coming to terms with the advance of consciousness. Nowhere is this more evident than in Hegel where praxis is the agent of *Geist* in history. In Hegel, *Geist* is reason, but not in the abstract of the *Verstand,* but as *Vernunft*; as a self-actualizing spirit in history. "The very essence of spirit is action. It makes itself essentially what it is; it is its own product; its own work."[xlviii]

If the self emerges in a dialectic of self and other, we are still left with a series of lingering questions. '*What of the logos of the other, where is it to be found?*' The other, the phenomena of external stimuli emerges from the senses in so far as they serve as the instruments of cognition and not from *ratio*, in an abstract manner. Thus reality, as we come to cognize it, emerges in the passionate historicity of experience and originary praxis. The source of its objectivity therefore does not reside in itself, but in our own construction of self. It therefore possesses both objectivity and subjectivity. Reality cannot therefore be understood as the thing-in-itself independent of man. This is what

Fichte implied when he claimed Nature is only Nature in terms of its purposefulness for man. The meaning of Reality or Nature cannot be said to be demonstrative or for that matter a *certum,* precisely because knowledge, *scientia,* originates in the concrete situation of man's historicity.[xlix] Reality and Nature find their meaning as human constructs; the dialectic is yet another form of action; *poesis*, the act of making.

In classical thought, most notably in Aristotle's *Nichomachean Ethics, poesis* and praxis are distinct. [l] While both are clearly activities in their formulations they differ. Their distinction lies in their ends. Grassi explains it thus; "Although *poesis* is an action, it is not an originary action. It is a means for the realization of a product, of an *ergon*, which however, is not peculiar to it. That is why the action comes to an end once the work is carried out, its purpose accomplished. *Poesis* is not an activity with an end in itself; it is an instrument and its goal lies not within it, but without it. Praxis, instead is an originary activity whose product, *ergon*, dos not come into being on account of something else but only of what is proper to it."[li] Neither *poesis* nor praxis can be said to possess objectivity in any form. As an action *poesis* is only evident in the product and not as a stratagem independent of it. Praxis exists solely in the exigencies of a moment of time; it is only evident in the resultant action and its effect. Their existence therefore, is only evidentiary in their resultant *ergon*.

But what of their products? The *ergon* of praxis as defined by the Idealist philosophers is not the polis as it was for the Ancient Greeks, but the resultant dialectic of self and other; *poesis*. The ergon of *poesis* is the ontology of reality as we make it, but it is also the ontology of the self within the dialectic. *Poesis* and praxis are part of the same historical moment. It is the contiguity of the two; praxis as the originary moment of

poesis, as stratagem, that represents the *Poetic Unity* at the center of their worldview. For the Idealist philosophers *poesis* and praxis are part of every entity of our coming to terms with reality. Nature, Man and life were defined as action in both its formulations as a *Poetic Unity* which serves as the logos of being.

The unity of theory and practice must be understood through a cognizing of the structure of *poesis* within an historical moment of praxis. That is to say the *loci* of reason, of philosophy, lies in understanding the *organon* of expression as a condition of the particularities of time and place of the genus loci and a given situation. As Richard Bernstein has noted; "*Geist* as activity itself is praxis. *Theoria* in its purest form, as philosophy, is nothing but the articulation of the rationality ingredient in praxis. There is then the ultimate harmony of theory and practice, *theoria* and praxis, not in the sense that philosophy guides action, but rather in the sense that philosophy is the comprehension of what is; it is the comprehension of the *logos* ingredient of praxis, i.e., praxis as the self activity of *Geist*. There is then the ultimate unity of theory and practice, a unity that becomes intelligible when we understand that *Geist* is at once praxis, and in its self reflective form *theoria*."[lii] *Theoria* is the knowledge of how praxis becomes evident in the stratagem of *poesis*. Such knowledge is brought about through the analysis of *erga*, i.e. thought, language and art, as they emerge in history as concrete particularities.

ENDNOTES

[i] Sullivan, Louis; *Kindergarten Chats and other Writings*, Dover Books, New York, 1979 pg. 46.

[ii] This idea of nature was not entirely new. The shift from a static fixed and permanent definition of nature to one that was dynamic and ever changing had its roots in the Renaissance philosopher Nicholas of Cusa who successfully argued that if God was infinite that the conception of God's creativity and hence nature must also be infinite. This implied a more dynamic and changeable definition of creation and nature. In fact Nicolas of Cusa argued that nature was constantly changing and that the creation of the Bible existed outside of the construct of human time and was continuous.

[iii] Goethe, *Morphologie. Die Absicht eingeleiteit* (1817) pg. 55

[iv] van Eck, Caroline, *Organicism in 19th century Architecture: An Inquiry into its Theoretical and Philosophical Background*, Architectura and Natura Press, Amsterdam, 1994, pg. 107. See also Goethe, Goethe, *Morphologie. Die Absicht eingeleiteit* (1817) pg. 54 ff.

[v] van Eck, Caroline, *Organicism in 19th century Architecture: An Inquiry into its Theoretical and Philosophical Background*, Architectura and Natura Press, Amsterdam, 1994, pg. 56.

[vi] This point was made by Caroline van Eck, in her book Organicism in Nineteenth-century Architecture, An Inquiry into its Theoretical and Philosophical Background, Architectura & Natura Press, Amsterdam, 1994, pg. 56.

[vii] Kant, *Critique of Pure Reason*, (1787), Frankfurt am Main 1980, 860-61.

[viii] Kant himself had become concerned with this in his third *Critique* and later writings and it was also a concern with Liebnitz. Schelling was attempting to resolve the issue by accounting for the necessary objectification.

[ix] Kant, Immanuel, "Idea for a Universal History with a Cosmopolitan Purpose", reprinted in *Kant Political Writings*, edit. Hans Reiss, Cambridge Texts in the History of Political Thought, Cambridge, New York, 1970, pg. 43.

[x] For Vico, man's coming to terms with the world was based upon the poetic logic of the *Imaginative Universal*. While this may have developed later into an *Intelligible Universal* as a system of thought, knowledge was still a fabrication of human consciousness. His famous axiom *verum ipsum factum*- the true is convertible with the made- was a testament to his idea that at the heart of mans existence was his will to create the world in his image. It was Hamann who asserted that God was the infinite and eternal *artifex*, a poet, whose actions were the ultimate manifestation of *poesis*. And it was he who claimed that what man wants is to create, to make and if this lead to clashes, wars or struggle, then so be it, they were part of life. Creativity was the most ineffable, indestructible, un-analyzable human action. It is an action in which an individual lays his or her stamp on nature, allowing him or herself to soar, to speak and express their inner reaction to their life experience. The entire Enlightenment project appeared to Hamann at least to kill the very essence of humanity at its core, providing a pale substitution for the natural creative energies of humanity and the rich world of sensory experience. And for Herder, we exist within a stream of images, to think is to dwell within a symbolic order, one that creates our sense of 'belonging' and provides us with our identity. To be fully human is to express that sense of identity.

[xi] Isaiah Berlin has argued that there was a noticeable change in the definition of man stating after 1780. He identified that change from one of adaptation to conditions to one of commitment to ideals. I do not disagree with Berlin in the rising commitment to ideals that occurred with the rise of Idealism in Philosophical discourse. But I am more interested here in asserting that a fundamental change in the worldview occurred that reformulated the definition of Man, Nature, Reality, Knowledge and Art along a coherent line of thinking what I have termed *Poetic Unity*. According to Berlin; ". . . this is the great break between what might be called the rationalist or the enlightened tradition, or the tradition that there is a nature of things which must be learnt, which must be understood, which must be known, and to which people must adjust themselves at the cost of either destroying or making fools of themselves- between that tradition and the tradition where, on the contrary, man commits himself to the values to which he commits himself, and if need be, perishes in their defense heroically. In other words the notion of martyrdom, heroism as a quality to be worshipped for its own sake." Berlin, Isaiah, *The Roots of Romanticism*, edit. Harvey, Princeton University Press, Princeton & Oxford, NJ, 1999, pg. 84.

[xii] A major contributor to the Romantic Revolt was Kant's notion of Freedom, an irony Isaiah Berlin has pointed out. See Berlin, Isaiah, *The Roots of Romanticism*, edit. Harvey, Princeton University Press, Princeton & Oxford, NJ, 1999. He identifies him as one of the Fathers of Romanticism, not because he was

a great promoter of it , to the contrary Kant detested it. Rather he dedicated his life to the explanation of the foundations of scientific logic and method. He disliked anything that was rhapsodic or confused, mystical or vague. Yet he contributed to its very foundations in the formulation of his Moral philosophy.

[xiii] Giambattista Vico, *The New Science of Giambattista Vico*, trans Bergin and Fisch, Cornell University Press, Ithica and London, 1988. par. 388.

[xiv] Berlin tells us that according to Kant: "the whole notion of degradation, reification, mechanization of life, the alienation of human beings from one another or from their proper purposes, the use of men as things, the use of human beings as raw material for people to wreak their will on, the general view of human beings as entities which can be pushed about or determined or educated against their will. The monstrosity of that, the notion that this is morally the worst thing that one human being can do to another, stems from this passionate propaganda by Kant." Berlin, Isaiah, *The Roots of Romanticism*, edit. Harvey, Princeton University Press, Princeton & Oxford, NJ, 1999, pg. 71.

[xv] According to Berlin: "In other words, for Kant determinism, particularly mechanical determinism, is incompatible with any freedom and any morality and must therefore be false. By determinism he means any kind of determination by outside factors, whether by the material factors- physical or chemical factors- about which the eighteenth century spoke, or by the passions, seen as irresistible to men." Berlin, Isaiah, *The Roots of Romanticism*, edit. Harvey, Princeton University Press, Princeton & Oxford, NJ, 1999, pg. 73.

[xvi] For all their disagreements virtually all the Enlightenment thinkers agreed on the view that virtue was ultimately consistent with knowledge. If knowledge is a quantifiable thing, found or discovered in the world of things, then it is our virtuous duty to seek out that knowledge, and use it as a means of formulating an ethical means of living. Knowledge would lead automatically to virtue and more importantly to a virtuous society. Science eventually becomes that form of knowledge and also that form of ethics.

Inherent within such a position was the idea that virtue was stable and fixed entity, that all societies agreed upon what constituted virtue, and that any reasonable person not only could recognize such virtue but also seeks it. Virtue like the concepts of justice, freedom and truth had become abstract in their formulation, no longer the product of human relationships and values but of pure reason. Virtue, like everything else, was a general proposition obtainable by the dependable method namely that of the natural sciences. In this way science became a form of ethics, mathematical calculation and efficiency became a value structure, in and of themselves. The Romantic Movement challenged this very premise. True Virtue was not 'knowledge' of values, but of their creation.

[xvii] Lenz, J.M.R., Uber Gotz von Berlichingen': vol 2,pg. 638, in *Jakob Micheal Reinhold Lenz, Werke und Briefe in Drei Banden*, ed. Sigrid Damm, Munich, Vienna, 1987.

[xviii] Fichte's thesis here bears a strong resemblance to the formulation of the 'self' by Jacques Lacan. In his seminal text 'The Mirror Stage as Formative of the Function of the 'I' as Revealed in Psychoanalytic Experience' of 1937, Lacan rejected the idea of the formation of the self in the *cogito*. Lacan posited the three stage development of the individual: the mirror, the imaginary and the symbolic. He asserted that in the mirror stage the child discovers its own image, which becomes other to the 'self' and in this way establishes subjectivity. "This development is experienced as a temporal dialectic that decisively projects the formation of the individual into history."

[xix] Fichte, *Die Bestimmung des Manschen: Samtliche Werke*, edit. I.H. Fichte, Berlin, 1845- 6, vol. 2, p. 263.

[xx] Ibid., vol. 2, p. 264-5.

[xxi] Schiller, Friedrich, *On the Aesthetic Education of Man in a Series of Letters*, reprinted in *Friedrich Schiller On the Aesthetic Education of Man in a Series of Letters*, trans Snell, Frederich Ungar Publishing Co. New York, 165, pg 32.

[xxii] Schiller, Friedrich, 'Uber das Erhabene': vol. 21, pg. 50, lines 7-17, in *Schiller's Werke*, Nationalausgabe, Weimer, 1943-.

[xxiii] This image of nature emerged in the work of the Romantic Painters Gasper David Friedrich in particular. His *The arctic Sea (The 'Hope' in Pack Ice)* shows a field of pack ice shards, only after careful observation does one perceive the fragments of the sailing ship the Hope crushed between them. Gasper David Friedrich, *The Arctic Sea (The 'Hope' in Pack Ice)*, 96.7 x126.9cm Oil on Canvas, 1823/24 Hamburg Kunsthall. Image reprinted here from *Gasper David Friedrich*, The World of Art Series, Angelo Walther, Henschelverlag, Kunst und Gesellschaft, Berlin, 1985, plate 21.

[xxiv] Schiller, Friedrich, *On the Aesthetic Education of Man in a Series of Letters*, reprinted in *Friedrich Schiller On the Aesthetic Education of Man in a Series of Letters*, trans Snell, Frederich Ungar Publishing Co. New York, 165, pg 28.
[xxv] Ibid., pg 61.
[xxvi] For Schiller as for the other Idealist philosophers the 'self' as individual is only a particularity of the absolute spirit, *Geist*, of humanity. In the Letters Schiller speaks in terms of both the particularity of the 'self' as a constant state of 'being', the 'absolute' self and as the universal *Geist* of humanity which is the return of the 'self' to the unity of the 'absolute'. There is a great affinity here to the philosophy of Plotinus and his concept of the 'One' the singularity of human spirit or the soul of which each individual is both a particular and distinct part and which it seeks to some day return.
[xxvii] Schiller, Friedrich, *On the Aesthetic Education of Man in a Series of Letters*, reprinted in *Friedrich Schiller On the Aesthetic Education of Man in a Series of Letters*, trans Snell, Frederich Ungar Publishing Co. New York, 165, pg 62.
[xxviii] Schiller, Friedrich, *On the Aesthetic Education of Man in a Series of Letters*, reprinted in *Friedrich Schiller On the Aesthetic Education of Man in a Series of Letters*, trans Snell, Frederich Ungar Publishing Co. New York, 165, pg 31. Schiller inserts a note after this remark referring the reader to Fichte's *Lectures on the Vocation of the Scholar*, inferring that either the idea comes from his friend or that they are both working on the same idea here.
[xxix] Ibid., pg. 86.
[xxx] Ibid., pg 119.
[xxxi] Schiller's three stages of man bear an unusual verisimilitude to those of Vico in their structure. The first two the savage akin to Vico's barbarism of Sense, the Barbarism with Vico's Barbarism of Reason. Both see man as achieving his full potential only when both are brought into balance in a third stage.
[xxxii] Schiller, Friedrich, O*n the Aesthetic Education of Man in a Series of Letters*, reprinted in *Friedrich Schiller On the Aesthetic Education of Man in a Series of Letters*, trans Snell, Frederich Ungar Publishing Co. New York, 165, pg 119.
[xxxiii] It should be noted that Hegel too rejected the *Verstand* in his writings for much the same reason.
[xxxiv] Schiller, Friedrich, *On the Aesthetic Education of Man in a Series of Letters*, reprinted in *Friedrich Schiller On the Aesthetic Education of Man in a Series of Letters*, trans Snell, Frederich Ungar Publishing Co. New York, 165, pg 39.
[xxxv] Ibid., pg 40.
[xxxvi]Ibid., pg 34.
[xxxvii] This side to Schiller's condemnation of nature united with Kant's notion of liberty and justice eventually lead to the idea of great sinner in Dostoevsky, superman in Nietzsche and the great Romantic Hero figure who is willing to destroy an unjust world for the sake of humanity. Ayn Rand's Howard Roark is an architectural example.
[xxxviii] Schiller, Friedrich, *On the Aesthetic Education of Man in a Series of Letters*, reprinted in *Friedrich Schiller On the Aesthetic Education of Man in a Series of Letters*, trans Snell, Frederich Ungar Publishing Co. New York, 165, pg 34.
[xxxix] "It is, therefore, not enough to say that all intellectual enlightenment deserves our respect only insofar as it reacts upon the character; to a certain extent it proceeds from the character, since the way to the head must lie thought the heart. Training of the sensibility is then the more pressing need of our age, not merely because it will be a means of making the improved understanding effective for living, but for the very reason that it awakens this improvement." Schiller, Friedrich, On the Aesthetic Education of Man in a Series of Letters, reprinted in Friedrich Schiller On the Aesthetic Education of Man in a Series of Letters, trans Snell, Frederich Ungar Publishing Co. New York, 165, pg. 50.
[xl] This same idea was also found and expounded in Fichte's *Foundation of the Whole Theory of Science*.
[xli] This quote is taken from a transcript of Isaiah Berlins lectures on The Assault on the French Enlightenment, Part 3 Fichte and Romantic Self-Assertion, posted on The Isaiah Berlin Virtual Library. While quoted by Berlin there is no reference given to its exact location. If Berlin's reference to post 1803 is correct then it comes from Fichte's Berlin period and is most likely a quote from either *The Characteristics of the Present Age* or from *Addresses to the German Nation*.
[xlii] Fichte, *Fichtes Werke*, ed. Immanuel Hermann Fichte, Berlin 1971, SW vii 35.
[xliii] Ibid., SW vii 37-8.

[xliv] The romantic love of Gothic is based in Fichte on the harmony of medieval society in which all individual souls worked for the greater good of society. It is this appreciation for the harmony of the purposive unity of the Gothic society that became the source of Gothic appreciation. It is present in the writings of Pugin, Ruskin and Morris. Gothic is viewed as the cultural expression of a society in which the collective wills of its individuals freely subjugate themselves to the collective purposive unity of the *sensus communis*.

[xlv] Hegel, *Reason in History* trans. Hartman, Prentice Hall, , 1995, pg. 89.

[xlvi] Grassi argues that this point was made by Plato in the *Cratylus*. The point was in reference to the origins of names as Plato challenges Cratylus on the idea that nomenclature is an arbitrary sign. For Plato language begins with action or praxis. Grassi notes that this is also the case with Herder. See Grassi, Ernesto, *The Primordial Metaphor*, Medieval and Renaissance Tests and Studies, Birmingham, New York, 1994, pp 24-27.

[xlvii] Ibid., pg 10.

[xlviii] Hegel, *Reason in History* trans. Hartman, Prentice Hall, , 1995, pg. 89.

[xlix] A point made earlier in the writings of Coluccio Salutati (1331-1406) and a key principle of Italian Humanism. For a summary on Salutati's ideas on this subject see Ernesto Grassi *The Primordial Metaphor*, Medieval and Renaissance Tests and Studies, Birmingham, New York, 1994, pp 10- 14.

[l] "Making and acting are different . . . so that the reasoned state of capacity to act [i.e. *phronesis*] is different from the reasoned state of capacity to make [i.e. techne]." Or again "*phronesis* cannot be . . . techne . . . because action and making are different kinds of thing." Aristotle, *Nichomachean Ethics*, 1140a 2-5 &1140b 1-4. The traditional interpretation of Aristotle's discourse on poesis and praxis is that they are distinct, but taken as a whole his theory of action becomes problematic. As D.F. Pilario has noted in his book *Back to the Rough Grounds of Praxis* there are three general interpretations of Aristotle on this point. The maintenance of a distinction, proposed in the interpretations of Charles and Reeve. The possibility that some events could be double- faced and considered both from different perspectives as proposed by Ebert following Penner. And the third proposed by Askill that Aristotle has no coherent theory of action and so the point is mute. See Pilario, D.F., *Back to the Rough Grounds of Praxis Exploring Theological Method with Pierre Bourdieu*, Peters Publishers, Leuven, 2006, pp. 14-15.

[li] Grassi, Ernesto, *The Primordial Metaphor*, Medieval and Renaissance Texts and Studies, Binghamton, New York, 1994, pg 27-28.

[lii] Richard Bernstein, *Praxis and Action: Contemporary Philosophies of Human Activity*, University of Pennsylvania Press, Philadelphia, 1971, pg 34.

Chapter 14: Art and Human Knowing

Imbedded within *Poetic Unity* and the idea of poetry was the notion of *poesis* as both s*tratagem* and praxis. Inherent within it were certain aesthetic precepts. They were:

- Art was experiential, originating in the particularity of life.
- Art was an originary act, a conscious or unconscious generative activity that set in motion the process of self-actualization.
- Art had a cognitive function, producing signification and meaning.
- Art was an expression of a given people in a given age in a given location, a manifestation of the *sensus communis.* As such its' signification was historical.
- Art was a vehicle to the truth of human consciousness.

That meant that art was not a representation of an external other (nature or otherwise) precisely because it was the source of the generation of our cognition of that external other and our worldview. The writings of Schiller, Goethe and Hegel were an extension of the notion of *Poetic Unity* from a theory of nature and cognition, to consciousness and aesthetics. All saw art as an originary act, as a means of expression and a manifestation of the *sensus communis* and spirit of the age. And in each of their Aesthetics art was defined as a generative activity and therefore could no longer be seen as representative. That formed the basis of a rejection of the aesthetic tradition. Goethe and Hegel's work would challenge the theory of imitation, so central to Enlightenment aesthetics. While they took

direct aim at the theory of 'la belle nature' their attack applied equally well to all theories of art that posed an ideal model, including *mimesis*.

Both Goethe and Schiller would challenge the notion that art was a vehicle to rationality. Schiller would instead define it as the means to overcome the *Vernuftstaat.* Both would draw a parallel between consciousness and art that would restructure aesthetics. This new definition of Art would find its metaphysical grounding in Hegel's *Lectures on Fine Art* and *The Phenomenology of Spirit* as it was given prominence in the discourse of knowledge. Art now became a primary vehicle to the comprehension of Truth in the philosophical sense.

"A poet is a creator of a people; he gives it a world to contemplate, he holds its soul in his hand."
Herder
Sammtliche Werke[i]

Poetry as the Novum Organum of Philosophy

With *Poetic Unity* the imagination was no longer a human faculty that built up the world of art, it was the human faculty that provided access to a whole metaphysics, one that would transform the perception of art and its relationship to truth. This can certainly be seen in the philosophical texts of the time.

For Hamann, life was action, a continuous creative endeavor, a combination of *poesis* and praxis. And it was also part of Herder's philosophy. One of his central tenets that he never abandoned was that thought and language, were forms of action.[ii] For him, the purest form of action was poetry, because it stimulated, directed and spurred one on to praxis. [iii] This idea of poetry/action was embodied in his idea of *Fortgang*, of advance

(the central concept in creating the *Unity of Theory and Practice* out of the disparate histories of civilizations). It was this central idea that prompted him to make the claim that; "A poet is a creator of a people; he gives it a world to contemplate, he holds its soul in his hand."[iv] At issue was not specifically the art form of poetry, but rather the concept I have termed *Poetic Unity* as an originary creative act; a conscious or unconscious generative activity composed of praxis and *poesis* that set in motion the process of self actualization. It was in the creative act that a people were created and a world given to contemplation. This idea was echoed by Fichte in his *volo ergo sum*. This was the work of the Poet; it was the essence of art.

In his critique of reason, Goethe did not reject science or functionalism, but the inherent abstract reason of the epistemology of science. He once claimed: "It was, in short not in my line, as a poet, to strive to embody anything *abstract*."[v] Abstract reason what Kant called *Vernunft*, the "*Understanding"*, was in Goethe's mind, anathema to art. "I am rather of the opinion, that the more incommensurable, and the more incomprehensible to the understanding, a poetic production is, so much the better it is."[vi] In the words of Novalis; "Poetry is what is absolutely and genuinely real. That was the kernel of my philosophy. The more poetic, the more true."[vii] In his 1795 text *On the Aesthetic Education of Man*, Schiller would make the following statement; "In a word, there is no other way to make the sensuous man rational than by first making him aesthetic."[viii] Fichte's idealism was based upon his conception of the 'productive imagination', and in Schelling's *System of Transcendental Idealism* art was the culmination of philosophy. This idea found resonance in Friedrich Schlegel. For him, the task of the poet was to strive for what he called 'transcendental poetry'.[ix]

In the *Systemprogramm* of 1796 Schelling, Holderlin and Hegel had set that as their goal, to make poetry philosophical and philosophy poetic.[x] While historically overlooked, it has proven to be the most important philosophical text of the 1790's. In it they claimed that the idea that unites all the rest was the idea of beauty in the Platonic sense. "I am now convinced that the highest act of Reason, the one through which it encompasses all Ideas, is an aesthetic act, and that truth and goodness only become sisters in Beauty- the philosopher must possess just as much aesthetic power as the poet." And latter on; "Until we express the Ideas aesthetically, i.e. mythologically, they have no interest for the *people,* and conversely until mythology is rational philosophy must be ashamed of it." What the *Systemprogramm* asserted was that art had to become philosophical in order for the people to become rational, but conversely philosophy had to become aesthetic if philosophers were to be profound. Accordingly, "Poetry gains thereby a higher dignity, she becomes at the end once more, what she was in the beginning- the *teacher of mankind*; for there is no philosophy, no history left, the maker's art alone will survive all other sciences and arts."[xi]

As Cassirer noted, Goethe titled his autobiography *Poetry and Truth* (*Dichtung und Wahrheit*) not because it was in anyway meant to be imaginary, but because he believed that in order to formulate a truth about his life he needed to give to the disparate facts of his existence a poetic or symbolic form.[xii] The poet does not provide us with momentary fragments of data, or outbursts of emotion and impassioned feeling. He or she provides us with an image of human life as a whole, in its greatness and in its weakness. "Art does not undertake to emulate nature in its breadth and depth. It sticks to the surface of natural phenomena; but it has its own depth, its own power; it crystallizes the highest moments

of these superficial phenomena by recognizing in them the character of lawfulness, the perfection of harmonious proportion, the summit of beauty, the dignity of significance, the height of passion."[xiii] Goethe's fixation on the 'highest moments of phenomena' is not the imitation of things, or the overflow of emotion. It is an interpretation of reality, not by conceptual thinking, but by intuition, not through abstract thought, but through sensual medium.[xiv] Art had to be imminent, it had to be what Schelling called 'the infinite finitely presented', and what Hegel referred to as a 'concrete universal'. In Idealism the boundary between art and philosophy grew thin and transparent, as Reason- the subject matter of philosophy- was increasingly associated with the aesthetic act. Art became elevated to a new role; it became a *Novum Organum*.[xv]

> "Has, creation a final goal? And if so, why was it not reached at once? Why was the consummation not realized from the beginning? To these questions there is but one answer: Because God is *Life*, and not merely Being."
>
> Friedrich Wilhelm Joseph von Schelling
> *Philosophical Inquiries into the Nature of Human Freedom*

The Overturning of an Aesthetic Tradition

With *Poetic Unity* we began to see emerge a new definition of art that would eventually overturn the existing tradition of Western aesthetics. It would begin with an outright challenge to 'Subjective' aesthetics and its growing focus on emotion and aesthetic pleasure, but it would quickly proceed to an attack on 'Objective Aesthetics' and the idea that the role of art was to reveal the underlying a priori laws of Nature. At

it's core, and this is a point often lost, was the Idealist philosopher's challenge to the abstract reasoning of the epistemology of science.

In his *Nouvelle Heloise,* Rousseau proposed a new conception of art as the ideal of 'character'. For him, art was not the description or reproduction of the empirical world; it was an overflow of emotions and passions. Additionally, there was the emerging idea of art as the creation of beauty for the purpose of appreciation, or aesthetic pleasure. This was derived from 'Subjective' aesthetics, particularly as espoused by Kant and Baumgarten. These conceptions of art as emotive or subjective have often been referred to as Romanticism and are associated with the *Sturm und Drang*[xvi] movement in German literature and music. The criticism of these conceptions has been that they went too far in postulating the idea that the infinite, metaphysical truth was a personal vision of spirit and that art was the singular expression of it. This view of art comes with a risk; art can become too subjective and lose contact with the real, with the concrete exigencies of matter. It opens itself to the same charges of nihilism and destruction examined earlier. Idealist aesthetics are often lumped into this category and summarily dismissed as Romanticism. I intend to show that the aesthetics of Idealism in no way subscribed to this idea of art as wholly emotive or subjective. Furthermore, such critiques are more the by-product of a superficial reading of certain texts, then a studied examination of the collective writings of the period.

Goethe and Hegel played a key role in the dissolution of traditional theories of art, challenging them and the growing trend toward aesthetic appreciation outright in their writings. As Goethe commented in his '*Von deutscher Baukunst'*; "Do not let a misunderstanding separate us, do not let the effeminate doctrine of our modern

esthetizisers so enfeeble you that you can no longer bear what is meaningful but rough, lest in the end your sickly sensibility can tolerate only what is polished but meaningless. They would have you believe that the fine arts sprang from our supposed inclination to beautify, to refine, the things around us. That is not true! . . . Art is creative long before it is beautiful, And yet, such art is true and great, perhaps truer and greater than when it becomes beautiful. For in man there is a creative force which becomes active as soon as his existence is secure. When he is free from worry and fear, this demigod, restless in tranquility, begins to cast about for matter to inspire with his spirit."[xvii]

The only true art for Goethe was the one that sprang from the creative impulses of man's primal being.[xviii] "And so the savage decorate their coconut-fiber mats, their feathers, their bodies, with bizarre patterns, ghastly forms and gaudy colors. And even if this creative activity produces the most arbitrary shapes and designs, they will harmonize despite the apparent lack of proportion. For a single feeling created them as a characteristic whole. This characteristic art is in fact the only true art. If it springs from a sincere, unified, original, autonomous feeling, unconcerned, indeed unaware of anything extraneous, then it will be a living whole, whether born of coarse savagery or cultured sensitivity."[xix] As Cassirer has noted we must be careful not to interpret Goethe's statements to mean that art is merely the expression of emotion and inner life. If it were, it would only be imitative of an inner subjectivity.[xx] Art was expressive, but it was also formative, as applied in a sensual medium. This was the true origin of art.

For Hegel, 'Subjective' aesthetics proved a major concern. Its very nature lies in the conception of art as tied to the individual human mind in possession of the powers of creativity. As such, art was relegated to an autonomous subjective realm of existence.

One need only recall that such a subjective realm lies within the *res cogitans* to realize that it ran the same risk of internalized abstraction as the *Vernuftstaat*. It was on this point that he leveled his attack.

In the *Lectures on Aesthetics* he came to the conclusion that the aesthetic theories of his time no longer saw art as a means of expressing or even revealing the truth of reality.[xxi] "We have got beyond venerating works of art as divine and worshipping them. The impression they make is of a more reflected kind . . . Thought and reflection have spread their wings above fine art . . . The development of reflection in our life today has made it a need of ours, in relation both to our will and judgment, to cling to general considerations and to regulate the particular by them, with the result that universal forms, laws, duties, rights, maxims, prevail as determining reasons and are the chief regulator. . . Consequently the conditions of our present time are not favorable to art. . . Art, considered in its highest vocation, is and remains for us a thing of the past. . . Art invites us to intellectual consideration, and that not for the purpose of creating art again, but for knowing philosophically what art is."[xxii] According to Hegel, aesthetics had become a denigrated form of philosophical reflection, a form of abstract thought; a moment in the *Vernuftstaat*. It was the death of art. It comes then as no surprise that he would outright reject the entire aesthetic tradition, including that of Kant and Baumgarten in his own time. [xxiii]

Goethe and Hegel's attacks were not limited to 'Subjective' aesthetics; they were also directed towards 'Objective' aesthetics and the theory of 'la belle nature'. But it should be noted that, here, their attacks applied equally well to all theories that saw art's role as

reflective of a priori laws existing in either nature or an ideal model, and that included *mimesis*.

For Goethe, the insistence that art was an imitation of nature was an unsophisticated connoisseurs' approach. In his dialogue *'On Realism in Art'* of 1798 he claimed that: "the unsophisticated art lover demands that a work of art be natural and true to life so that he can enjoy it in his 'natural', often primitive and unsophisticated way."[xxiv] Art was not the imitation of nature, no matter how that was to be understood. Because the human mind was a product of nature the work of art could be said to reflect nature's rule, but it was a rule of human cognition as a part of nature, not nature understood from a mechanistic vantage point. According to Goethe the artist must move beyond the scientific definition of things to capture what it means to 'be' in the world of things. He implied that the rationalist approach toward aesthetics by-passed reality as understood by the human mind, literally factoring out the human will in the process. The key to artistic expression lay in the artist's ability to learn from nature, while at the same time endowing that knowledge with a decidedly human character.

He came to this interpretation of art not from his knowledge of modern aesthetics, but rather from his studies of ancient art. In his 1798 essay *On the Laocoon Group* he claimed: "The artists of antiquity were not laboring under our present-day misconception that a work of art must appear to be a work of nature; rather, they identified their works of art as such by a conscious arrangement of components, employed symmetry to clarify the relationship among these components, and so made a work of art comprehensible."[xxv] His analysis of the most famous of Hellenistic sculptural groups reveals deep insight into his own formulation of aesthetics.

Goethe notes that nature in her formulation of things exhibits multiple variations in the form of particulars. It is the very particularity of the objects of nature that are the source of its beauty and vitality. The artist learns from this observation of nature the concept of 'Individuation', which Goethe defines as knowledge of the variations in appearance and function of the parts, where particular qualities are isolated and highlighted. From this, individual components can exhibit significant relationships among themselves, as individual characters emerge.[xxvi] The concept of 'Individuation' of the particular appears throughout Goethe's writings and is the cornerstone of his aesthetics. It is the relationship of individual members to each other and the articulation of their difference in unity that appears as the source of the greatest form of expression.

Underlying Goethe's rejection of the theory of 'la belle nature', and 'Objective Aesthetics', was his critique of Enlightenment reason which he saw as anathema to art. The abstract reason of the epistemology of science moves from the universal to the particular as a mater of course in its system of classification. He saw artistic creation and the poetic as a move in the other direction; from the particular to the universal.

According to Goethe the artist must be profound, thorough and persevering and possess the intellectual breath necessary to fully grasp the subject matter in order to locate the moment to best portray it.[xxvii] It is in this way that the artist raises the subject above the particular and carries it into the realm of the *Ideal*, or universal. The *Ideal* is therefore not a set of rules or parameters, nor an ideal type or model, as professed in 'Objective' aesthetics. It is not an eternal concept. Rather it is the selection of a particular moment that the individual subject raises to the level of the universal. The implication is

that in all cases this moment is present, but it is the great artist, or poet who is able to recognize it. For him, the artist actively transforms the particular into a universal.

That Goethe saw the universal arising from the particular and that this was the very essence of artistic creativity is evident in his *Conversations of Goethe with Eckerman*. In it he wrote: “A particular event becomes universal and poetic by the very circumstance that it is treated by the poet.”[xxviii] Latter on in the same text he claimed: “apprehension and representation of the individual is the very life of art. Besides, while you content yourself with generalities, everybody can imitate you; but in the particular, none can- and why? Because no others have experienced exactly the same thing.” It was the representing of the particular that was the beginning of composition for him.

This is perhaps most clearly stated in his *Maxim 278*, written in 1825. “It makes a great difference whether the poet starts with a universal idea and then looks for suitable particulars, or beholds the universal in the particular. The former method produces allegory, where the particular has status merely as an instance, an example, of the universal. The latter, by contrast, is what reveals poetry in its true nature: it speaks forth a particular without independently thinking of or referring to a universal, but in grasping the particular in its living character it implicitly apprehends the universal along with it.”

For Goethe, art was not an imitation of nature, nor was it derived from universal ideas. It was formative, the creative expression of a people, that gathered the diverse particularities of existence into a universal whole, itself a manifestation of a universal truth. The insistence that art was a particular that manifests the universal along with it would find resonance and epistemological weight in the writings of his friend Hegel in both his philosophy and aesthetics in what he would refer to as a ‘concrete universal’.

Hegel's aesthetics were integral to his broader philosophical project and should not be addressed independent of it. That project stood in contradistinction to traditional philosophy which opposed concepts such as reason and sensibility, imagination and logic. He viewed the western philosophical tradition as one immersed in what could be seen as either an existentialist or essentialist attitude toward the concrete.[xxix] In both positions the tendency toward the separation of particular and universal resulted in opposition, establishing a real epistemological chasm within the structure of our comprehension of lived experience. Hegel saw their inherent opposition as the main problem with both historic positions. The problem extended to a critique of Enlightenment reason. Cartesian rationalism and the epistemology of science, defined the relationship between the particular and the universal through the opposition of the *res extensa* and the *res cogitans*.

Like Hamann and Herder before him, Hegel believed knowledge had its origins in sense perception, universal concepts were secondary productions derived from only those features, or characteristics, held in common, as such, they had less reality than the particulars of sense perception. Abstract reason, which sought truth in universal concepts, failed to grasp that they were an abstraction from the particular, an abstraction produced by the removal of intelligible information from the particular. When pushed to the extreme, as Hegel believed Newton had done, the universal became divorced from the particular. Because of this it could have no ontological weight. It was only the by-product of our innate ability to abstract.[xxx]

For Hegel, like Hamann and Herder, reality was not the other of thought; hence any opposition between appearance and understanding was not a valid one. In *The Philosophy*

of Right he would assert that the existing forms of logic had become inadequate.[xxxi] As Gadamer notes; "The point is that the *chorismos* and the Platonic hypostasizing of ideas needs to be dispensed with just as does the claim that nature can be explained by 'principlia mathematica'. Ontologically, the difference between idea and appearance is as invalid as that between the understanding and what it explains. . . . The dichotomization of reality into universal and particular, idea and appearance, the law and its instances, needs just as much to be eliminated as does the division of consciousness into consciousness on the one side and its object on the other."[xxxii]

According to Hegel, this was the central concern of philosophy in the modern era. Where philosophy in the Ancient world sought to free man from the constraints of particularities of reality, philosophy in the Modern world had to free man from the constraints of the universal; the abstract reason of the *Vernuftstaat*. There had to be a reformulation of the definition of reason.[xxxiii]

For Hegel true Reason, as opposed to Kant's *Understanding*, was the unity of thought and reality. In the *Philosophy of Right* He called this 'unity' a 'concrete universal'; a unity of form and content. In it he claimed; "What is rational is actual, and what is actual is rational. . . . The great thing is to apprehend in the show of the temporal and transient the substance which is immanent and the eternal which is present. For since rationality (which is synonymous with the Idea) enters upon external existence simultaneously with its actualization, it emerges with an infinite wealth of forms, shapes and appearances."[xxxiv] And again; "for the form in its most concrete signification is reason as speculative knowing, and content is reason as the substantial essence of actuality, whether ethical or natural. The known identity of these two is the philosophical idea."[xxxv]

It was essentially a reformulation of the philosophical concept, or *Begriff* and it proved central not only to his philosophical project, but to his aesthetics as well, proving to be the vital link between the two in formulating his new definition of truth, a point I shall return to later.

If the fundamental problem with the philosophical tradition had been its duality and its inherent opposition, the aesthetic tradition faired no better. *Mimesis,* 'Objective' and 'Subjective' aesthetics were based upon the duality of image and original that generated an inherent opposition between what was perceived as truth and what was perceived as a lesser vehicle to it. In each case they were constructed on an opposition.

In classical *mimesis,* art emulated nature in its forms, its orders and its underlying organization. It was a re-presencing of creation, where the work of art served as a microcosm of the macrocosm. It conceptualized the role of the artist as working to analogically emulate the central guiding principle of creation found in nature, aesthetically defined as harmony.

It was replaced with a new aesthetic theory, known as 'la belle nature' that sought to represent the rationality found in nature as an idealized model. 'La belle nature' was a theory that saw art as indicative of the physical set of rules of operation in nature defined mechanistically. In the case of 'Objective' aesthetics art's goal was to reveal the mechanistic laws that govern Nature as defined by the natural sciences. In the case of 'Subjective' aesthetics the goal was to reveal how the mechanisms of the rational subjective mind operated. In both cases art was beholden to the structure of the epistemology of science and the Cartesian duality of mind that established the framework of the *res extensa* and the *res cogitans*. The work of art was therefore a representation of

the mechanistic organization of nature in its physical components. The model being the purity of reason exemplified in nature, not Nature herself as an organism or system of relationships. Enlightenment aesthetics was based on the idea that Nature was first rational and that the function of art was to reveal that rationality.

Both *mimesis* and 'la belle nature' were aesthetic theories in which the work of art was conceptualized as a copy, image, or re-presencing of an external other: Nature. Or more accurately the criteria of judgment was structured on how precisely the work, as object, replicated the idea of nature as defined by the epistemology. In the former it was a mimetic gesture of natures' underlying harmony, in the later it was an indicative gesture of natures' rationality.[xxxvi] In both, aesthetics served to answer the question *'how does art reveal the a priori laws discovered in nature?'* In this way Art became a vehicle to truth, but via the paradigm of Nature as idealized model.

Hegel saw such theories as the demise of art. If art only revealed the a priori laws of nature, as in *mimesis* and "la belle nature", then it would appear to add nothing significantly new to nature's own presentation. Moreover, art ran the risk of being presumptuous in being unable to match the diversity and manifoldness of nature; it had to be seen as lacking. According to him, such theories could not provide the 'reality of life but only the pretense of it'. They only brought 'forth technical tricks, not works, of art', whereas art's true aim was 'to bring home to our senses, our feelings, and our inspiration everything which has a place in the human spirit'.[xxxvii] He could not accept that this was the end or highest achievement of art.

William Desmond notes Hegel's basic critique lies in the inherent duality of the premise. All such theories (this includes *mimesis* and 'la belle nature') seek to articulate a

basis from which the claims of art can be either supported or refuted. “This view seeks to ground Art in an extra-artistic paradigm or model which, if revealed or portrayed by the artistic imitation, might lend its weight to the cognitive claim of art. In the artistic imitation we may perceive what is imitated; in art’s portrayal we may recognize its paradigm.”[xxxviii] Such aesthetic theories present art as an alternative means by which to access the concept of truth found in the paradigm or model. In the case of *mimesis* it was nature understood through the filter of Ptolemaic cosmology. In the case of ‘la belle nature’ it was understood through the filter of the natural sciences. This inherently leads to either a positive or negative view of art in relationship to truth; the negative asserts that the work is a distortion, lacking the complexity of the original, while the positive asserts that the work reveals or manifests a truth heretofore concealed.[xxxix]

That this structure contains an inherent duality between the paradigm and the work is an aspect that needs to be examined more thoroughly. The work of art is placed within the context of a non-artistic reality to which it must make reference. Within this asymmetrical relationship is an inherent hierarchical structure that is metaphysically composed of image and original. In point of fact, the original exists unto itself, but the image cannot exist outside its reference to the original to which it can never be identical. The result is that the original possesses a dimension that resists its complete appropriation. While the original may have been imminent in the work of art it is still transcendent in relation to it. It is this duality, with its inherent disjunction and asymmetry (between the image and the original) that is the source of the negative interpretation. Any possession of, or claim to, truth or virtue depends on the external original, making art derivative and of secondary importance. At its core, such theories

maintain a position in which the work of art has no real epistemological existence outside its relationship to the model. This relationship exists in all dualistic theories including those whose paradigm are nature, an historical period or 'Golden Age', a perfected 'Style', work or 'model' (such as the 'Primitive Hut)'. They all include this disjunction and asymmetry. This is certainly the negative formulation of such theories. But as Desmond points out, it does not fare much better in relation to the positive formulation either. Within these theories the work of art is always already an image of the other. It is not an original act in itself.

What stands then as the inherent condition of all such theories of art is that the work of art must be denied any real autonomy, it cannot be addressed on its own terms as a human activity, as a creative act, nor can the work of art, or art in general, have any real access to truth independent of the model, art fails to be a vehicle to truth distinct from that of the model, as it derives its cognitive dimension from the epistemological definition of the model. Art becomes a lesser vehicle to understanding truth, one that, as in Plato's allegory, is prone to providing less access to knowledge and hence lacking in significance.[xl]

But the idea of *Poetic Unity* asserts that Truth in the form of human knowing emerges from the aesthetic act. Hegel's intention was to prove that art was not an imitation, either objectively or subjectively, that it was an autonomous discourse on truth that contained within itself its own end and intrinsic worth. In the Introduction to the *Aesthetics Lectures on Fine Arts* he claimed; ". . . art's vocation is to unveil the *truth* in the form of sensuous artistic configuration, to set forth the reconciled opposition just mentioned [that of image and reality, paradigm and work], and so to have its end and aim in itself, in the very

setting forth and unveiling."[xli] The aesthetic quest proved the same as that of philosophy; *'How to reconcile opposition?'*

Desmond poses the question; "however positive a conception of imitation we have, is it sufficient to do justice to what appears as the *creative* dimension of art? Even if imitation is positive, is it positive enough? Since, relative to the problem of dualism, positive imitation does not totally overcome the disjunction between image and original must we not instead seek a conception of art in which creation instead of imitation dominates?"[xlii] This was precisely what Idealist aesthetics, based on *Poetic Unity* and its aesthetic precepts, set out to do. Enlightenment aesthetics posed the question '*How does Art reveal the a priori laws discovered in Nature?'* The question was based on the idea that Nature was first rational and that arts function was to reveal that rationality as a priori law. The aesthetic precepts of *Poetic Unity* challenged traditional aesthetics, instead posing the question; '*How does Art create human meaning and expression within the exigencies of man's material existence?'*

> "Art must abandon actuality and soar with becoming boldness above necessity; for Art is a daughter of Freedom, and must receive her commission from the needs of spirits, not from the exigency of matter. But today Necessity is master, and bends a degraded humanity beneath it tyrannous yoke. Utility is the great idol of the age, to which all powers must do service and all talents swear allegiance."
>
> Friedrich Schiller
> *On the Aesthetic Education of Man*[xliii]

Art and Self Actualization in Schiller

Nowhere was this more evident than in Schiller's *On the Aesthetic Education of Man*, where Art became the means by which man re-accessed the *Poetic Unity* of theory and practice. It was in the creative act of *poesis*, what he called the play impulse, were the mutual sublation, of the material and formal impulses occurred, allowing man to resist the *Vernuftstaat* and advance to a higher state of unity. "It is then no mere poetic license, but also philosophical truth, to call Beauty our second creator."[xliv] By allowing for the unification of the opposing impulses in man, *poesis* served as a precondition for man's self determinacy and the creation of meaning and expression. "The transition from the passive condition of perceiving to the active one of thinking and willing is only effected, then, through an intermediate condition of aesthetic freedom, and although this condition in itself decries nothing in respect to our judgment or our opinions, and consequently leaves our intellectual and moral values completely problematical, it is yet the necessary condition by which alone we can attain to a judgment and to an opinion. In a word, there is no other way to make the sensuous man rational than by first making him aesthetic."[xlv]

While art did not produce freedom, virtue or justice, it allowed man to be a whole unto himself, such that he was the source of his own means and ends.

Schiller went further, the aesthetic not only allowed for man to be a whole unto himself, but it was a whole in itself. "[Art] combines in itself all the conditions of its origin and of its continued existence. Here alone do we feel ourselves snatched outside time, and our humanity expresses itself with a purity and integrity as though it had not yet experienced any detriment from the influence of external forces."[xlvi] His conception of art was not a reflection, or copy, of some external material exigency, but rather a new creation in itself, a new reality, precisely because it embodied both material and form. It was the manifestation of a particular human potentiality as material nature was transformed through the rational impulse in the form of an idea. Its reality therefore, was not a reflection on an a priori other, i.e. Nature, but the production of a uniquely human world. For Schiller, as it was for Herder, Art was the expression of man. It was the manifestation of a particular in Man's self-determinacy.

The *Poetic Unity* necessary for the *Unity of Theory and Practice* played into the aesthetic not solely in terms of the development of consciousness, but of the actual work of art. According to him, the object of the sense impulse was life, while the object of the form impulse was shape, in the figurative and literal sense. Their combination in the play impulse resulted in his idea of *living shape*, a concept that denoted all aesthetic qualities and what may be referred to as Beauty. ". . . there shall be a partnership between the formal and the material impulse, that is to say a play impulse, because it is only the union of reality with form, of contingency with necessity, of passivity with freedom that fulfills the conception of humanity."[xlvii]

Necessity and want cannot be overlooked in his construction of self, but neither can they be overlooked in the work of art, particularly in architecture, but if they dictate they become shackles and restrict both freedom and the development of *Poetic Unity*. “for as long as necessity dictates and want impels, imagination is bound with strong chains to the actual; only when want is satisfied does it develop its unrestrained capacities.” While Schiller never wrote on architecture specifically, his impact on it was clear; necessity and want, the utility of the epistemology of science, needs to be satisfied, but if it was the totality of the work then there was no true imagination and no true development of the art form, because there is no true development of the self, of Man. There must be more to the work.

For Schiller, the form (*verba*) was, in his terms, the *Ideal*. By the term ‘*Ideal’* neither Schiller nor I, are referring to the contemporary aesthetic term ‘concept’. Rather the use of the term ‘*Ideal’* references that creative force in man found in any symbolic form. It is the expression of the human Spirit as a reflection of its particular ‘Climate’.

I quote him at length here so that his point is made clear. “And the artist must not only overcome, by his treatment, the limitations which are inherent in the specific character of his type of art, but also those belonging to the particular material with which he is dealing. In a truly beautiful work of art the content should do nothing, the form everything; for the wholeness of Man is affected by the form alone and only individual powers by the content. However sublime and comprehensive it may be, the content always has a restrictive action upon the spirit, and only from the form is true aesthetic freedom to be expected. Therefore, the Real artistic secret of the master consists in his annihilating the material by means of the form and the more imposing, arrogant and

alluring the material is in itself, the more autocratically it obtrudes itself in its operation, and the more inclined the beholder is to engage immediately with the material, the more triumphant is the art which forces back material and asserts its mastery over form."[xlviii] Schiller asserted that it was not the material and its value that contributed to the value of the work of art, but the form; the *Ideal*. More importantly, its value as a work of art lay precisely in just how much the material was transformed. It was our ability to read in the work the overlay of the human spirit on the material in its transformation that provided it with its power to inspire us.[xlix] Goethe had made a similar assertion when he claimed that "all great works of art portray some aspect of man."[l]

In Schiller's construction of the self, the dialectical relationship between the material impulse and the formal impulse, was resolved in unity, but not at the expense of the first two terms. The material and the formal still exist as independent impulses, but they are subsumed within a greater unity by their mutual sublation. The same holds for the work of art. While the work of art was a whole unto itself, a world, it nevertheless was still comprehended as both material and *Ideal*. The similarity here to Vico's conception of the poetic metaphor that holds together its divergent components - as a unity in difference - is palatable.

For Schiller, it was the mistake of the *Vernunft* to see only the material, when it was the ideal that was the source of its transformation. In the critique of art, ignorance and intellect are not far apart as each attached its intelligence to the perception of art, the former to its sensual aspect the immediate presence of the object, the latter only through the referring of its concepts to the data of experience. In both cases the focus of interest and reflection was on the material aspect and not the form of the work, its appearance or

‘shape’, which according to Schiller was the presence of man’s will enacted on the material of nature, making *‘living shape’* as he called it. This was not the logical appearance of the thing-in-itself, but the appearance of spirit in the work of art that makes it a whole.

Schiller’s understanding of art placed him in direct conflict with the definition of architecture, as formulated by the epistemology of science and its Mechanisms of Structure and Disposition. Both were shackled by the domination of need and necessity in their simulation of reality at the expense of the development of the potential of the art form to be expressive of the *‘Ideal’*.

According to Schiller; “Since all actual existence derives its origin from Nature, as an extraneous power, but all appearance comes originally from Man, as percipient subject, he is only availing himself of his absolute proprietary right when he separates the appearance from the essence and arranges it according to his own laws. With unrestrained freedom he can join together what Nature sundered, as soon as he can think of it together, and sunder what Nature combined, as soon as he can separate it in his intellect.”[li] What Schiller here distinguished was the difference between the outward form, its shape- what should be understood as the aesthetic means of expression, style or ‘art-form’- and the necessary material form- the actual material and its construct which lay at the core of it as object, as the thing-in-itself- what should be understood as the means of fabrication and craft, what we might refer to as its ‘core-form’.[lii] Schiller asserted the necessity of this art-form in both its presence, but also its authenticity. “As soon as it is deceitful and simulates reality, as soon as it is impure and requires reality for its operation, it is nothing but a base tool for material ends and can prove nothing for the freedom of the spirit.”[liii]

There was an introduction of an ethic of truth in the art form, as well as a requirement to ascend above the mere expression of material need.

But one must be careful. While Schiller asserted the centrality of the formal impulse in the identification of art, as in the development of man it must not become dominant and suppress the material impulse. This again would only lead to a *Vernuftstaat* in art. Rather, Schiller believed that the material must be given honor and its properties taken into account. “When the fine artist sets his hand to this same block, as little does he hesitate to do it violence, only he forbears to show it. He respects the material at which he works not in the slightest degree more than the mechanical artist does; but he will try to deceive the eye which takes the freedom of this material under its protection, by an apparent deference towards the material.”[liv]

It was the unity of the material and the formal in the work of art, their mutual sublation to each other that produced the *‘living shape’* the true work of art. As he himself stated; “But as with the enjoyment of Beauty, or aesthetic unity, there occurs a real union and interchange of matter with form, and of passivity and activity, by this very occurrence the compatibility of both natures is proved, the practicability of the infinite in finiteness, and consequently the possibility of a sublime humanity.”[lv] Schiller saw beauty and art as midway between matter and form, passivity and activity. It was this *locus* that allowed it to combine the conditions of perceiving and thinking. Its ability to combine oppositions, and in effect cancel them out, gave it a dialectical structure. In beauty the impulses still exist, but in a greater whole whose existence was the *Poetic Unity* necessary for the *Unity of Theory and Practice*.

This was the source of his critique of the aesthetic theories of the Enlightenment. 'Subjective' aesthetics fails to arrive at a concept of beauty because it cannot distinguish the particularity of the thing-in-itself in the sensuous impression. While 'Objective' aesthetics can never arrive at a concept of beauty precisely because it cannot comprehend the work of art in its totality forever seeing it in parts. According to Schiller; "The former want to think of beauty as it operates; the latter want to have it operate as it is thought. Both must therefore miss the truth, the former because they seek to rival infinite Nature with their limited intellectual capacity, the latter because they are trying to restrict infinite Nature to their own intellectual laws."[lvi] Goethe and Hegel had begun to lay the ground work for a rejection of all such theories in art, but Schiller closed the deal.

For Schiller, it was through the mutual sublation of material and formal, the creation of a dialectical unity that was true Art. In its final form, true Art embodied in its formal impulse the emergence and forward movement of the human Spirit in the form of the *'Ideal'*, which served as the expressive component of the actual work of Art. But it also manifested the properties of its materiality, its craft and its process of coming into being.

Within the structure of his aesthetics there was an inherent connection between the advance of consciousness and the advance of artistic styles. Both the self and the work of Art were unities that contained both a formal and material impulse, whose mutual sublation was the source of the dialectic of being. As man progressed from one state of being to another the foci of art moved from material, to formal, to dialectical. It was this connection between art and consciousness that served as the basis of his assertion that "there is no other way to make the sensuous man rational than by first making him aesthetic". The key here is to understand that his definition of rational is not that of the

Vernunft, but that of the higher state of man in the *Ideal*. It is in the creative act of generating the dialectical unity of material and formal impulses that moves man from the state of consciousness in the *Vernuftstaat* to the ideal state where consciousness accesses the *Unity of Theory and Practice*.

It must be noted that Schiller's connection between the advance of consciousness and the advance of artistic styles would also be found in Hegel's aesthetics. It implies that one could 'read' in the progression of artistic forms the movement of consciousness and the Human Spirit. This places it as the heir to Herder's concept of '*Fortgang'* the internal development of culture in its own habitat, towards its own goals; the development of human beings as integrated wholes. As I intend to show, it was also in line with Hegel's reformulation of the *Begriff*, the unity of thought and reality, of form and content, or what he would term a 'concrete universal'.

It also squares with Goethe's categorization of the movement toward true art six years earlier in *'Simple Imitation, Manner and Style'*, where the movement was from a focus on the material aspect of nature, to the subjective expression of spirit, to a third stage that embraced both the essence of the work in its materiality and the expression of spirit. A point I shall return to shortly.

Schiller's ideas became a standard of Idealist aesthetics and philosophy and should not be under-estimated. Art was increasingly seen not only as a means of accessing man's potentiality, but as a necessary guide to reason. Two years after the publication of *On the Aesthetic Education of Man*, G.W. F. Hegel (1770- 1831) along with Friedrich Wilhelm Joseph von Schelling (1775-1854) and Friedrich Holderlin (1770-1843) would assert a similar idea; that reason must be made poetic in the *Systemprogramm* of 1796. Friedrich

Schlegel too sought to dislodge logic as the '*organon* of truth' when in a series of lectures delivered between 1800 and 1801 at the University of Jena he claimed that science relied on experimentation and constructions that are a creative methodology and hence more tuned to the artistic impulse then was acknowledged.[lvii] Shortly afterwards Schelling would expound on the idea in his *System des Transentalen Idealismus* of 1800 and the *Philosophie der Kunst Vorlesung* of 1802. Like Schiller, Schelling believed that *Poetic Unity* was manifested in the work of art. True knowledge of the 'Absolute' for him was based on an understanding of both the conscious and unconscious motivations of the self. Philosophy and reason served as poor vehicles for such an exploration precisely because reason was likely to bias the consciousness of which it was a part. The work of art on the other hand, was a conscious work, but one that also revealed the unconscious will of the artist and thus combines both conscious and unconscious. Thus it was through the study of art that philosophy gained access to the nature and construct of *Poetic Unity* and thereby the *Unity of Theory and Practice*, a point later echoed by Hegel in the *Phenomenology of Spirit.*

> "I am rather of the opinion, that the more incommensurable, and the more incomprehensible to the understanding, a poetic production is, so much the better it is."
>
> Goethe
> *Conversations of Goethe with Eckermann*[lviii]

Art and Self-Actualization in Goethe's Faust

There can be no doubt that Goethe's aesthetic theory was influenced and worked out in conjunction with his friend Schiller and we can find important similarities in their work. Most notably in the three stage development of art and the concept of sublation that

is part of Schiller's notion of both the development of consciousness and the genesis of art. According to Schiller, the oscillation between the material and formal impulses, and their eventual sublation to each other proved to be the dialectical structure of *Poetic Unity*.

In his 1789 essay 'Simple Imitation, Manner and Style', Goethe categorized the movement toward true art as a three- step process that began with the simple imitation of nature. But this only brought the artist of moderate talent to the threshold of style. Manner was the stage at which the artist had managed to express 'what he has grasped with his soul'. At this stage the artist developed his art into "a language that expresses his spirit directly and characteristically . . . he will approach the things of the world with a greater or lesser degree of deliberateness or spontaneity and will accordingly recreate them. . . "[lix] But style according to Goethe was different it "rests on the most fundamental principle of cognition, on the essence of things- to the extent that it is granted us to perceive this essence in visible and tangible form."[lx] Style emerged only when the artist managed to capture the essence of the thing, that very characteristic that distinguished it from all others. Most significant in Goethe's three step process is the movement from a focus on the material aspect of nature, to the subjective expression of spirit, to a third stage that embraces both the essence of the work in its materiality and the expression of spirit.

In his book *Goethe's Theory of Poetry Faust and the Regeneration of Language*, Benjamin Bennett argues that a similar structure and conceptual framework underlies Goethe's *Faust*. His analysis reveals how Goethe saw the process as both human experience and art form, claiming that Goethe's masterpiece is a poetic image of the

struggle of the levels and movements of consciousness, what he terms the 'rhythm of consciousness'. If his argument is to be accepted, and I believe it is, then one can make the argument that *Faust* is an application of what I have termed *Poetic Unity*, to the work of art. Moreover, it may be argued that it serves as an example of what the work of art, as a self-reflective form of philosophy, is.

Bennett argues that we must not view *Faust* through the concept of reality. That is to say, any examination of it in terms of which individual scenes are grasped as corporeal facts, mental entities, or fictions, misses the point. For Bennett, *Faust* must be understood as a series of relations as opposed to the establishment of positions. According to him there is no overall continuity. As he sees it; "Goethe in the end prefers not to smooth his fiction into a semblance of unfolding human experience. Ordinarily we expect in drama a system of physical, social, and psychological relationships that make up the basic fictional world. Subtle symbolic or verbal relations, echoing patterns of image or action, literary and topical allusions, all exist on a different plane, as commentary upon the basic world, as means of universalizing it and bringing it into life poetically. But in *Faust* the fragmentation of the work's 'world' aspect has the effect of nullifying the distinction between those different planes on which relationships are established."[lxi] Instead he argues one must 'read' it as a series of relations between levels of consciousness.

I find Bennett's argument compelling for three reasons. First, the sense of fragmentation of experience implies an intentional awareness on the part of Goethe to address the disjunction and diversity that underscores the lived experience as argued by Herder. It should be noted that Goethe used a similar strategy in his work *Wilhelm Meister* where he continuously shifted between scientific and poetic literary structures,

and in his own autobiography *Dichtung und Wahrheit*. Second, if, as Bennett argues, the relations between what might be understood as reality and fantasy are instead relations of consciousness, then *Faust* as a work of art may be read both as a manifestation of Schiller's definition of both consciousness and self-consciousness in the creation of self and as a manifestation of the true work of art. Thirdly, and this gets more specifically to Bennett's argument, *Faust* is a reading of how consciousness becomes self-conscious and hence it is a vehicle to truth. As I intend to show, this last point brings the work in line with Hegel's understanding of the relationship of art and truth.

According to Bennett's analysis of *Faust* the structure of Goethe's text reveals the process of ascending and descending consciousness. ". . . the normal direction of reflective consciousness is upward; the availability of my earlier consciousness as an object of my present consciousness ordinarily constitutes my experience of time. But if the process were irreversible, its content would become insupportable . . . Therefore there must also be in our experience an opposing or simplifying movement, a movement downward, by which the process of consciousness is resolved into a kind of oscillation, the natural 'pulse' of 'self-establishment' and 'self- relinquishment' that Goethe speaks of in *Dichtung und Wahrheit*."[lxii] The point here made is that if the self were constantly on the ascension to a higher level of consciousness the content of that consciousness would become too great, too complex for the reflective mind. Thus the reflective mind must at times descend or submerge itself in a downward movement narrowing its horizon to the point where life as activity becomes possible again. This movement is from the general to the particular, toward embodiment and the concrete. Bennett's point is that Goethe is arguing that all of life is this constant oscillation, or pulse, between these two

moments. It is the upward movement to the self-reflective consciousness that looks back upon consciousness to assess, understand and 'articulate' it. This movement is the movement of reflection, a move in the direction of philosophy. But it is the downward movement, the submergence', into the particular, the concrete, self-consciousness' return to its own activity, that generates a sense of the whole as a unified image. It is a poetic act that in the end makes the reflection of the self-consciousness possible as an image of truth. But it must also be recognized that such a movement is actually initiated by the self-consciousness. Thus philosophy and art become opposite poles of consciousness, but not in a hierarchical structure. True human experience and knowledge is the continuous movement between the poles of consciousness, between reflection and submergence, between praxis and *poesis*. As Bennett states; "The notion of consciousness as a pulse helps elucidate, among other things, the idea in *Faust* that precisely man's 'erring' provides him with a privileged relation to nature and truth. On the one hand error, or the alienation of thought from nature, is unavoidable, since consciousness itself is ceaselessly in flux, never achieves an un-shifting perspective upon things. Consciousness, regarded purely as perception, is knowledge of the truth; but consciousness is itself by nature process or change, and so must 'err' from the truth. On the other hand, however, precisely the flux or pulse of consciousness turns out to be a participation in nature's own creative activity; nature thinks through us, in that our thoughts are a 'thinking in the path' of hers. Thus truth is 'revealed', but in a form other than knowledge."[lxiii] This recollection of the movement of consciousness toward self-consciousness and truth is central to the philosophy of Goethe's friend Hegel.

Schiller's concept of sublation to a higher unity reestablishes the relationship between nature and intellect. Nature, no longer a concrete entity existing in contradistinction to intellection, is conceptualized as a pulse-like interaction between consciousness and phenomena. Its essence is revealed in our own conscious experience of erring that both establishes and enacts that interaction. A point made by Goethe in the Poem "*Im ernsten Beinhaus war's*"; "What can man achieve in life more than that divine nature reveal itself to him? The way she lets all solid things melt away into spirit, the way she presents herself as preserving solidly all that the spirit creates."[lxiv] Bennett sees this as an indication that consciousness does not move in a single direction, that the movements themselves are the experience of consciousness.

It is this that suggests the connection between Goethe's theory of consciousness and Schiller's *On the Aesthetic Education of Man.* For Goethe, like Hamann, Herder, and Schiller, all thought begins with experience as an operation of consciousness. It is the oscillation between the two poles of consciousness, material and formal to use Schiller's terms, that is the experience of consciousness. This oscillation is not a momentary event, but a continuous rhythm, an opposition that in the end must be mediated by human community in an attempt to perfect human nature.

For Schiller the achievement of human totality comes in aesthetic play when both basic drives are active together. This same concept is present in Goethe where the idea of human consciousness, composed of two opposing tendencies which imply each other, oscillates as one becomes dominant and calls forth the other. It is the pulsing oscillation that gives us access to our own consciousness and totality. For both it is in the practice and experience of art that this is most evident. Thus art provides us with the most ready

intuition of our total human nature and its purpose therefore, is to provide us with such intuition. Bennett explains the theory of poetry in Goethe thus; “The truth conveyed by poetry cannot be grasped as a possession; it must be experienced as an intuition of our total humanity, proceeding from a combination of opposed conscious movements. Therefore both the creation and the proper understanding of poetry require that we relinquish the standpoint of conceptual knowledge, which we normally associate with truth, in favor of involving ourselves in a particular type of experience; and from the point of view of the abstract knowledge that human nature is constituted by two opposed tendencies the consciousness that directly experiences those tendencies together is an object, hence approachable only by submergence. . . . the duty of poetry with respect to truth is to ‘veil’ it, that the truth is more fully true in its poetically submerged form.”[lxv] The point here is not that ‘poetry’ represents a lower level of consciousness or that it denies the oscillation, rather that ‘poetry’ serves to objectify the experience of consciousness, to manifest it as a particular presence or concrete experience. It is this ‘objectification’, the creation of an *ergon* that reveals the stratagem of *poesis* as the experience of consciousness. It is this that underlies the idea of poetry in Idealist philosophy and serves as an important aspect of *Poetic Unity*.

> ". . . nothing is known that is not in experience, . . . that is not felt to be true, not given as an inwardly revealed eternal verity, as something sacred that is believed . . . For Experience is just this, that the content- which is Spirit- is in itself substance, and therefore an object of consciousness. But this substance which is Spirit is the process in which Spirit becomes what it is in itself; and it is only as this process of reflecting itself into itself that it is in itself truly Spirit."
>
> G.W.F. Hegel
> *Phenomenology of Spirit*[lxvi]

Hegel and the Experience of Consciousness

As with his philosophy, Hegel's aesthetic quest was a search for reconciliation and he found his inspiration in Schiller; "It was Schiller who must be given great credit for breaking through the Kantian subjectivity and abstraction of thinking and for venturing on an attempt to get beyond this by intellectually grasping the unity and reconciliation as the truth and by actualizing them in artistic production."[lxvii] Hegel had been close with both Goethe and Schiller and so it is no surprise to find that they shared similar views on the experience of consciousness and art. What underlay his most ambitious work, the *Phenomenology of Spirit,* was the concept of a continuous rhythmic oscillation of consciousness that served as both the origin and method of his 'science of the experience of consciousness.'

Like Vico and Fichte, Hegel began with an examination of how the mind had anything before it at all. According to him, there was a distinction between the absolute (that which exists beyond our understanding of reality) and cognition, the act of knowing in its basic sense. Cognition required an object as its function and therefore, implied an opposition between that object and the knowing subject. If this distinction was always

already present in any conception of cognition, then all forms of knowing had to contain a correspondence between two moments that were not reducible to each other. The originary moment of cognition was therefore, the generation of 'this' as 'I' and 'this' as 'object for the comprehension of the 'I'. As with Vico's 'Imaginative Universal' and Fichte's *'Anstoβ'*, they only came into existence in the presence of the other. Thus, consciousness began with the division of being, a doubling of what Hegel called the *Ansich*, the 'in-itself'. The *Ansich* served as the method of the *Phenomenology,* and was the key to understanding Hegel's conception of the experience of consciousness as it moves through its stages of development from consciousness (sense-certainty, perception, and understanding, the *verkehrte Welt*), to self-consciousness, and finally to the state of 'Absolute Knowing'.[lxviii]

For Hegel this origin is troubled. At the first phase of consciousness, what he refers to as 'sense certainty', the *Ansich* is not yet graspable to consciousness. As Verene has noted, consciousness cannot hold both moments of this *Ansich* before it at once, we either experience the object or feel our apprehension of it.[lxix] Consciousness attempts to assign to one of the *Ansichen*, one of the 'This', the concept of certainty. It first asserts that the object before the 'I' must be a certainty, but this upon reflection would mean, that the object exists independent of the 'I'; that the 'I' is inessential. But while it struggles to hold on to this within the tension of the generative activity that created the division it falls back upon the assertion that the 'object' is there for the 'I'. The objects of experience are there because we sense them to be there. In the stage of sense certainty there is still the conception that one must predetermine the other. According to Hegel; "One of the terms is posited in sense-certainty in the form of a simple, immediate being or as the essence,

the object; the other, however, is posited as what is unessential and mediated, something which in sense-certainty is not *in-itself* but through the mediation of an other, the 'I', a knowing which knows the object only because the object is, while the knowing may either be or not be."[lxx] What the self has done is to forget that the two are mutually dependent, a condition that reoccurs throughout the stages of consciousness and self-consciousness.

According to Hegel, the next phase, perception, occurs after consciousness has secured the external 'object' and the 'I' in sense-certainty. The original *Ansich* is now the 'being for consciousness' that initiates yet another doubling creating a new *Ansich*, as consciousness identifies this first *Ansich* as something for consciousness to perceive. Consciousness gets to this new stage not by sensing, but by recollecting the first *Ansich*.

This now generates the desire not just to sense the object, but to comprehend it as thing and its properties. This is a movement toward abstract reason, as the object becomes something to be understood. For Hegel, this is the most dangerous stage of consciousness, if the self forgets its own past it retreats into itself, becoming what he called the 'Beautiful Soul'. This is the dawn of what Schiller called the *Vernuftstaat*, and what Vico referred to as the 'Barbarism of Reflection'. Here the Understanding (*Verstand*) defines the object, not by our sensual relationship to it, but by its qualities or abstract concepts. "This true essence of Things has now the character of not being immediately for consciousness; on the contrary consciousness has a mediated relation to the inner being and, as the Understanding looks through this middle [*Mitte*] of the play of forces into the true background of Things. The middle [*Mitte*] which unites the two extremes, the Understanding and the inner world, is the developed being of Force which,

for the Understanding itself, is henceforth only a vanishing."[lxxi] In the process it engenders a sense of alienation from the particularity of being creating the opposition between appearance and the supersensible world that severs the particular from the universal.

For Hegel, this brings on the, *verkehrte Welt* or inverted world, the questioning of the certainty of the Understanding. Consciousness has forgotten its own recollection of the first doubling within the *Ansich* and once again dissolves itself into the object, once again believing that one of the 'this' of consciousness must precede the other. For Hegel, this is the founding of self-consciousness and its' parallel with the Cartesian cogito; as the 'understanding' now asserts the only certainty is itself. The result, as in the previous stage, is an assertion of the 'I'.[lxxii] Reason therefore, comes onto the scene as a kind of forgetting, as consciousness returns to the 'this' as 'I'. It forgets the image of the world is its own construction.

For Hegel, this is the ultimate problem for philosophy; the tendency to forget the course of consciousness and believe that truth is accessible directly at the level of either the 'this' as 'I' or the 'this' as object for the comprehension of the 'I'. The first holds that truth exists in the object independent of the 'I'. The second holds that truth exists in the reflective reasoning of the subjective 'I'.

At the stages of consciousness (sense-certainty, perception or understanding), the *verkehrte Welt*, and of self-consciousness, the *Phenomenology* reveals the failure of the self to bring the two moments together. Like Schiller's oscillation between the rational and the formal impulses, the *Ansich* proves to be a continuous oscillation between the two moments of the 'in-itself'. The experience of consciousness moves from the rational

fixation on the object; as 'thing in-itself' with its own inner properties[lxxiii], to the subjective inner of the self as 'I' divorced from the external world with its own inner subjectivity.[lxxiv] In these two moments the object is either objectified and meaning projected onto it as an external other, or the object is eliminated as something outside the self.

But if the experience of Consciousness were only the continuous oscillation between the 'in-itself' and the 'in-itself for consciousness' there would be no movement of Spirit. There must be another action that takes place. As Bennett noted in Goethe, there must be submergence. According to Hegel; ". . . what first appeared as the object sinks for consciousness to the level of its way of knowing it, the latter is now the new object. Herewith a new pattern of consciousness comes on the scene as well, for which the essence is something different from what it was at the preceding stage. It is this fact that guides the entire series of the patterns of consciousness in their necessary sequence."[lxxv] As consciousness reaches the end of one stage it exhausts itself. As the moments of experience accrete and become laden with new experiences, it must stop and grasp again its own form.

For Hegel, consciousness must re-collect its own experience. It must descend or submerge toward embodiment and the concrete. It must move from the universal back to the particular. Each descent and submergence establishes the necessity of the re-cognition that engenders a new return to immediacy, a new, generative activity. It generates the sublation of the 'this' of the 'I' and the 'this' of the object for the comprehension of the 'I' of the previous *Ansich.* This sublated image, or *Bild*, becomes the new object for consciousness that generates yet another doubling of the *Ansich*. Hegel calls this action

'Erinnerung', or recollection, and it is part of the necessary sequence of the experience of consciousness.

The similarity of Hegel's *Ansich*/*Erinnerung* to Schiller's opposition between material and formal impulses and the 'rhythm of consciousness' in Goethe's *Faust,* should not be missed. It is this combination of oscillation, submergence and sublation that defines the human experience for all three.

> "It is this too which constitutes the more concrete meaning of what was described above rather abstractly as the unity of form and content; for the form in its most concrete signification is reason as speculative knowing, and content is reason as the substantial essence of actuality, whether ethical or natural. The known identity of these two is the philosophical idea."
>
> G.W.F. Hegel
> *The Philosophy of Right*[lxxvi]

Art and the Concrete Universal

Both Schiller and Goethe saw the oscillation between the material and formal impulses as having an established parallel with art. Both were forms of *Poetic Unity.* Hegel too would see this parallel, but he would transform it into the basis of his metaphysics and a new epistemology.

For him, the universal need for man to produce art, lay in the self's need to elevate the inner and outer worlds into a spiritual consciousness, in the production of a sensuous form in which man could recognize himself. The process of presencing is a struggle for the manifestation of Spirit in the realm of appearance; because of this the artwork always makes present some aspect of it. According to Hegel; ". . . the concrete content itself

involves the factor of external, actual, and indeed even sensuous manifestation. But then in return this sensuous concrete thing, which bears the stamp of an essentially spiritual content, is also essentially for our inner [apprehension]; the external shape, whereby the content is made visible and imaginable, has the purpose of existing solely for our mind and spirit."[lxxvii] The work of art transcends itself as material without losing the sense of the materiality of the sensuous object itself. Material is spiritualized and Spirit is given material form. There is a strong affinity here with Schiller's idea of sublation, the mutual submission of the formal and material impulses into a unity, found in his conceptions of both man and art.

As Desmond explains; "The self objectifies itself in the sensuous, but this is not a loss of self. Rather the self recovers itself in the sensuous; and so only by losing itself does it begin to find itself as articulate."[lxxviii] Hegel saw this as what lay behind the artistic claim that; the work determines itself. The individual artist begins by determining a work, but then must struggle with Spirit itself, which begins to necessitate its own self-determination. Eventually, leaving the artist determined by it. The aesthetic experience of the work of art is the perception of just this dialectic of determination.[lxxix] For Hegel, this is art's fundamental role as a human activity. "Art has no other mission but to bring before sensuous contemplation the truth as it is in the spirit, reconciled in its totality with objectivity and the sphere of sense."[lxxx]

Like Schiller, Hegel called this manifestation of the truth of Spirit, the *Ideal* and it was for him the essence of Art. Unlike the Platonic *eidos* that exists as a transcendental abstraction that can only be mirrored in sensuous form, the Hegelian *Ideal* can only become manifest in sensuous form. As Desmond has noted; "the art work makes

concretely articulate a complex process of emergence both in the artist and his expressive powers, and in his material and its susceptibility to aesthetic form."[lxxxi] The *Ideal* only becomes actualized as the beautiful when it is made objective externally as a particular sensuous form giving 'immediate vision to sense and sensuous imagination'. As Hegel himself asserts ". . . what is objectified here is the Idea of the beautiful in the totality of the world- views implied by it [the work of art]. The work of art therefore is even now still to be regarded as an inherently articulated totality, yet as an organism."[lxxxii] And again: ". . . the content of art is the Idea, while its form is the configuration of sensuous material. Now art has to harmonize these two sides and bring them into a free reconciled totality."[lxxxiii] True art was the reconciliation of the idea with a concrete particularity. The nature of artistic concreteness lies in its internal complexity and differentiation which contains the manifestation of some universal significance embodied in sensuous form. In Hegel's view the work of art exists in the between of pure intellection and materiality. This space of the between is a world unto itself, that in itself is a making of a truth. The 'unity in difference' of the dialectic is identical to what I have referred to as *Poetic Unity*.

According to Hegel "This unity of universal and particular, freedom and necessity, spirit and nature, which Schiller grasped scientifically as the principle and essence of art and which he labored unremittingly to call into actual life by art and aesthetic education, has now, as the *Idea itself*, been made the principle of knowledge and existence, and the Idea has become recognized as that which alone is true and actual."[lxxxiv] He would credit Schiller for the idea, that the work of art in its particularity manifests an apprehension of the universal, but a similar argument was also made by Goethe in his *Conversations of Goethe with Eckerman* and in his *Maxim 278*. In this way the artistic process saved

particularity from arbitrariness and universality from irrelevancy. This was what Hegel meant when he referred to art as a 'concrete universal', and it would serve as his model for reason.

> "The goal, Absolute Knowing, or Spirit that knows itself as Spirit, has for its path the recollection [*Errinnerung*] of the Spirits as they are in themselves and as they accomplish, the organization of their realm. Their preservation . . . is History, but on the side of their comprehended organization [philosophy], it is the Science of Knowing in the sphere of appearance [Phenomenology] . . ."
>
> G.W.F. Hegel
> *The Phenomenology of Spirit*[lxxxv]

Absolute Knowing in Hegel's Philosophy

For Schiller and Goethe, the endless combination of oscillation, submergence and sublation was the experience of consciousness. But this was not the endpoint of either consciousness or cognition. Likewise for Hegel, the experience of consciousness did not stop at self-consciousness this was not the termination of the *Phenomenology.* There was yet another stage, a more 'comprehensive' one that he called 'Absolute Knowing.'[lxxxvi] It was Spirit that knows itself as Spirit. [lxxxvii]

At the heart of Absolute Knowing is Hegel's concept of *Erinnerung*, or Recollection. It is what originates the submergence within consciousness, its' return to the concrete particularities of experience to re-collect them. Throughout the stages of the *Phenomenology* Spirit forgets this submergence leading to the creation of yet a new doubling of the *Ansich*. But not in Absolute Knowing, here the self, as Spirit, has full

recollection of its own experience. According to Hegel, "Through this movement of action, Spirit has come on the scene as a pure universality of knowing, which is self-consciousness, as self-consciousness that is the simple unity of knowing. It is only through action that Spirit *is* in such a way that it is *really there*, that is, when it raises its existence into *Thought . . .*"[lxxxviii]

At this stage, Thought makes itself the basis of itself. It questions the duality of the *Ansich*; that the object, as appearance is distinct from consciousness. It recognizes that the 'in-itself' *and* 'in-itself for consciousness' are the reality of being; that the '*and'* is the essential element. According to Verene; "Absolute knowing freely releases itself into the world of metaphysical thought not because it has attained a unity between the two moments within the being of the subject, but because it has overcome all illusion that there is such a phenomenon. It takes up the quest for unity in different terms; it attempts to think the 'and' of its two moments as a unity."[lxxxix] Spirit recreates the image of its experience of being; as "both in essence and in actuality, or *in and for itself*."[xc]

This new image is dialectical, one that does not seek a third term because it is the realization of the 'and-ness' of this relationship, the two moments of the *Ansich* exist in conjunction, they cannot be reduced to the other nor can they be compressed into another moment. Like Fichte before him, Hegel makes the point; there is no synthesis, no reduction to singularity, the two moments are reliant on each other for their existence they cannot be thought of independently. According to Hegel, in order to achieve this realization there has to be a resolution of opposition, not in the form of a synthesis, but of a *coincidentia oppositorum*, what he termed *Aufhebung*.[xci] It is the sublation within a 'unity in difference' that serves as the structure of the Hegelian dialectic. Absolute

Knowing is the sublation of the subject and object; a 'unity in difference'. The self as Spirit, has come to recognize the *Ansich* for what it is; a *Poetic Unity*.

Absolute Knowing is brought on by the submerging action of *Erinnerung* and the sublating of the duality of the *Ansich.* They are two actions and their analysis reveals two modes of thought, two modes of speech that redefine Truth and arts relationship to it within a dialectic of art and philosophy.

The method of the *Ansich* is the generative action that creates the image of the self, the *arché* of 'Being'. Verene sees it as a form of *ingenium*. He claims; "*Ingenium* connotes at once the power both to form imagistically and to form through an intellectual principle. It contains both a sense of imagistic and conceptual forming. Through ingenuity a new and needed object is produced through a reshaping of what is already at hand. In other words ingenuity is a way of doing something that gets its method immediately from the content before it. Each time it makes up its method immediately."[xcii] The resulting image, or *Bild,* is what brings meaning to experience. Thus the experience of consciousness in its origin and method, takes the form of artistic ingenuity.[xciii] This is a poetic act, a form of *poesis*. The *Ansich* of the *Phenomenology* reveals that the same activity- *poesis*- operates in two areas of our being; cognition and expression. It is the same action applied in different directions. Thus we find in Hegel, like Schiller and Goethe, a parallel between the oscillation of the moments of consciousness and their sublation in the stratagem of *poesis*.

But the creation of the image, the *Bild,* requires the action of *Erinnerung* to formulate a dialectical image of itself as a 'unity in difference'. This is not simple memory or mental retention, but rather a more complex power to recall what is already in

consciousness to make it known again. It therefore carries with it a sense of inner awareness, where consciousness is both inside the memory being recalled and outside it as the very power calling it forth. It is this aspect of self-awareness and calling forth that makes it a form of praxis.

In Aristotle praxis is a voluntary or goal-oriented action, in Kant it is practical reason. Both senses are present here as *Erinnerung* is the action of submergence, the conscious attempt to re-collect the experience of consciousness, to make sense of it and in that process to return to the practical aspect of experience. Contained within it is both contingency; the particularities of experience, and the conceptually-grasped organization of them as history. The creation of this conceptually grasped history Hegel calls a *Begriff*.[xciv]

Erinnerung is not the same form of logic as the logical syllogism. It is not a form of abstract reason, precisely because of its inherent submergence. It requires the ingenuity of the *Bild* for its renewal. It must return to the particularity of being, the sensual experience of consciousness. As such, it is not a mere symbolic image, a picture thought (*Vorstellung*). In the new memory-image the concept appears in conjunction with the image, resembling the structure of Vico's poetic metaphor, the 'Imaginative Universal'. [xcv] It is a form of 'concrete' thinking, thus distinct from the abstract reason of the *Verstand*.

As Verene notes the *Begriff* is a concrete universal in which the particular is formed in a dialectical, non-abstract manner and by a means of which consciousness can think or know a thing as it actually is. For Hegel everything that was true was concrete. In the *Philosophy of Right* Hegel asserted; "the great thing to apprehend in the show of the

temporal and transient is the substance which is immanent and the eternal which is present."[xcvi] And "It is particularity reflected into itself and so brought back to universality, i.e. its individuality."[xcvii] As T.M. Knox has noted, for Hegel "The essence of thought is its concreteness, and the concrete thought is what Hegel calls the *concept*. . . . Again, the concept is the universal which particularizes *itself*, the thought which actively creates and engenders itself." [xcviii]

For Hegel, the image and concept; the *Bild* and the *Begriff* are two forms of thought and speech. As consciousness moves, the *Begriff* comes to an end point only to be renewed through the ingenuity of the *Bild*. This renewal comes in the form of a new metaphor born of the memory of consciousness that generates a new doubling of the *Ansich*. The metaphor is given conceptual life as a new *Begriff* ensues within the resulting movement of consciousness.

As Verene has noted, Hegel's dialectic is not a method in the sense of a formula, but rather a stratagem, a form of ingenuity, it is the continuous activity of creating the *Bild* that leads to the *Begriff*. This stratagem is necessary for Spirit as it moves, it must always stop and recollect itself, reformulate its image of itself, and cognize that image before it can move on.

It is this back and forth oscillation of metaphor and reason, of poetic and discursive logic and poetic and discursive speech that is the very structure of consciousness according to Hegel. But it also serves as the foundation of his epistemology. Truth in its ultimate form as 'Absolute Knowing' is the union of the *Bild* and *Begriff*, the sublation of sensuous and rational thought.

> "Mnemosyne, or the absolute Muse, art, assumes the aspect of presenting the externally perceivable, seeable, and hearable forms of spirit. This Muse is the generally expressed consciousness of a people. The work of art, of mythology propagates itself in living tradition. . . . This work of art is a general possession, the work of everyone. Each generation hands it down embellished to the one that follows; each works further toward the liberation of absolute consciousness."
>
> G.W.F. Hegel
> *On mythology, 'National Spirit' and Art*[xcix]

Kunst-religion: Art and the Sensus Communis

In Hegel's philosophy *poesis* was given epistemological weight as art and reason were redefined as a concrete universal. No longer a revelation of, or a means toward truth, art became a model for it, as art and reason were re-conceptualized as two forms of *Poetic Unity;* one in expression and the other in cognition. But we must be careful not to assume that Hegel saw art as the highest form of knowledge. Art provides us with an image, or *Bild* of the creation of meaning within the particularity of time, but in Absolute Knowing, there must be a union of the *Bild* and *Begriff.* Art must become self-conscious of its own self-actualization. If Aristotle asserted that techne was a *poesis* that then needed to be analyzed, retraced in reverse to find the principles of its own formulation, Hegel applied a similar concept. To truly enter into the discourse of knowledge and reach its own fulfillment in Absolute Knowing, Art must sacrifice its own aesthetic characteristic. It must re-collect the particularities of its being as a conceptualized history. Art must create a *Begriff.* This was the basis of Hegel's 'science of art', or Aesthetics.[c]

For Hegel, what unites all forms of knowing; philosophy, art and religion, is the creative articulating power of *Geist* that serves as their motivator. [ci] It is given sensuous

form in art and serves as the source of arts creative expressiveness. This is art's true content, and it transforms the work of art into a dialogue between man and the divine. Desmond gives us Hegel's definition of great art as: "attempting to realize this double aim: to reveal the dignity and glory of man in his original and creative powers; and to strain to display the bond between these powers and what is absolute. Great art strains both inwards and upwards . . . [it] both gives us images of the divine in man, and thus in man gives us images of the divine."[cii] In this sense, art takes on a dimension akin to religious phenomena; a point made by Hegel in the *Phenomenology,* when he spoke of art as a *Kunst-religion.*[ciii] He was not the only one to assert this position in fact the entire circle of Idealist thinkers saw art in this way including Schiller, Goethe, Von Humbolt and Holderlin.

The idea of *Kunst-religion* exposes a dialectical relationship between *poesis* and historical signification that is the key to understanding Hegel's Aesthetics. Because art is the manifestation of *Geist*- its literal presencing- its' development is also present and readable in the historical development of art. In the *Lectures on Fine Arts,* Hegel tells us *Geist* moves through three different relationships of meaning and shape.[civ] "The forms of art are nothing but the different relationship of meaning and shape, relations which proceed from the Idea itself and therefore provide the true basis for the division of this sphere."[cv] Because such relationships proceed from the *Ideal,* their movement is Spirit's self-awakening, not at the level of the self as individual, but at the level of *Geist* as universal signification.

Hegel identifies these different relationships as Symbolic, Classical and Romantic.[cvi] In the first stage the Symbolic, Spirit searches for expression in the external forms of

nature, in the material. In this sense it is abstract. In the second stage the Classical, Spirit manifests a form appropriate to it; there is a true unity of form and idea. In the third stage the Romantic, Spirit dissolves the unity of the Classical as it recognizes the true subject matter of art is the universality of the Spirit. But it searches for meaning in the abstract once again.[cvii] Unlike that of Winkelmann, Hegel's tripartite division is not referring to a simple evolution of aesthetic refinements or styles. He is not, as is often asserted, providing a rigid prescription of teleology or progress, nor is he asserting an ideal age. Like Vico and Schiller before him, he is postulating three unique means of expressivity that are reflective of three different stages in the development of consciousness and *Geist*. For Hegel, there is a correspondence between the state of consciousness and the type of relationship. It would be a mistake to see the Romantic as arts culmination; a perfected style or epoch. The term Romantic does not designate a style of art from the late 1700's. It would also be a mistake to see the Romantic as the synthesis of Symbolic and Classical. He is referring to a state of consciousness in the post-classical world, a period dominated by Christianity and its emphasis on the spiritual over the physical.

It must be remembered that it was in the Romantic age that Hegel claimed the death of art, because it 'invites us to intellectual consideration and not for the purpose of creating art'. This was also the age of Vico's 'Barbarism of Reflection' and Schiller's *Vernuftstaat*. It was the age that Hegel sought to overcome in his philosophy. In fact we sense in Hegel the necessity for a dialectic of Classical and Romantic; an age when *Geist* knows art as its own manifestation as *in and for itsel*f, and once again able to manifest the physical form appropriate to it. While Hegel uses the term Classical to refer to the age when form and content are one, he is not espousing Classical art as an ideal model.

Rather he is identifying the ideal state of consciousness within which to create art that was a true concrete universal.

Goethe had made the same point. Unlike classicists of his age, who viewed the Ancients as superior in their artistic ability, and hence should be imitated as a model, Goethe saw a people whose fundamental means of conceiving the world made them superior poets. His interest in classicism was less an interest in antique art as a model, but in antique culture as a model for the production of great artists. According to Goethe, the reason for our appreciation of the ancient works of art lay in the nature of their creative drive, their cognitive processes and their minds. In answer to the question why do we appreciate their poets and historians he stated: "Because the figures they put before us restrict themselves in the range of their interest to such subjects as themselves, their nation, their own lives and those of their fellow citizens. Because they concentrate all their thoughts and desires and energy on immediate reality. Hence it was not difficult for the like-minded poet to immortalize their reality. For them actuality had the unique significance that the imagination and emotions have for us today. The ancient poet lived in his imagination, just as the ancient historian lived in the political world, and the ancient scientist in the world of nature. They all adhered to the immediate, the true, the real; even the products of their imagination have bones and marrow. . . . Emotions and thinking were not yet fragmented, and the all but irreparable rift in the healthy oneness of man had not yet occurred."[cviii] His fascination with the antique was a reflection of his interest in the way in which the ancient peoples lived in the 'immediate reality' in the concrete. If there was any reason to hold the work of the Ancient world in high esteem is was not because it was an ideal model to be imitated, but because the structure of the

society was such that it created the most ideal conditions for art to flourish. For Hegel this was the age when the unity of form and content was most easily attainable.

Hegel's philosophy was in many ways a philosophy of history, in truth it was an assault on History as defined by the Enlightenment. That definition was the by product of the epistemology of science's definition of time as understood by Galileo and Newton; the disintegration of time into a series of disconnected moments. History becomes the mere recording of the particularities of time, a vehicle in which the past is relegated to the 'past', to be imitated perhaps, but not lived as a vital force. For Hegel, this understanding of history provides no access to the Absolute. This was why he called for the end of history.[cix]

Hegel used art as a means of combating this definition of time and history. Aristotle had claimed poetry was more philosophical than history.[cx] The same premise underlies Hegel's understanding of art and time. He claimed: "Just as little can the representations of art be called a deceptive semblance in comparison with the representations of historical narrative, as if that had the more genuine truth. For history has not even immediate existence, but only the intellectual presentation of it, for the element of its portrayals, and its contents remains burdened with the whole mass of contingent matter formed by common reality with its occurrences, complications and individualities. But the work of art brings before us the eternal powers that hold dominion in history, without any such superfluity in the way of immediate sensuous presentation and its unstable semblances."[cxi]

Unlike histories descent into the ever-changing flux of and fragmentation of time and particularity, Art is the attempt to gather essential meaning from life itself, by providing a

universal significance to man's historical existence uncluttered by the insignificant contingencies of everyday life. In this way it reveals the essential strivings of humanity through the course of time.

Hegel saw the advance of art through history as the movement of *Geist*; the collective spirit of a given culture. "Those who are called geniuses have acquired some special skill or other whereby they make the general forms of a people their work . . . What such geniuses produce is not their invention, but the invention of a whole people, or the *finding* that a 'people' has found its essence."[cxii] The meaning inherent in the process of artistic production was not derived from the individual work of art as in *'What does it mean?'*, but rather in art's relationship to the larger economy of the human Spirit. It was this relationship that revealed an important element in the constitution of humanity as a whole, and it was precisely this knowledge that founded a greater awareness of the self. In this way, Hegel's aesthetics, deals with both the particular and the universal as the basis of self-knowledge. Just as the given work of art represents an end in itself, so too does the larger development of a given art form in the course of a culture's history.

The German *Aufhebung* comes full circle. Following Herder's sense of 'belonging', Fichte asserted that the individual forget himself in the species, his purpose was to become a contribution to the collective. It was in the *sensus communis* that the loci of man's *Poetic Unity* was to be found. For Hegel the same was true for art, the artist must sacrifice his own individual expression to the expressive will of the *sensus communis*. "[the artist] is like someone who finds himself among workers who are building a stone arch, the scaffolding of which in invisibly present as an idea. Each puts on a stone. The artist does the same. It happens to him by chance to be the last; in that he places the last

stone, the arch carries itself. By placing the last stone, the artist sees that the whole is one arch; he declares this to be so and thereupon is taken to be the inventor. . . . So is the work of art the work of all. There is always one who brings it to its final completion by being the last to work on it and he is the darling of Mnemosyne."[cxiii] Herder's notion of *Fortgang,* the advance of symbolic form and thought in a given culture, becomes the means by which to answer the question of how aesthetics presents the *Begriff.* Art reveals not only the originary activity of *Poetic Unity* in the creation of individual work, but the development of meaning and expression as *Geist* moves through the *sensus communus,* presenting us with a concept of humanity as a whole.

For Hegel, Aesthetics is a form of *Erinnerung,* a re-collecting of the processes of signification at the level of both particular and universal. Its task is both the examination of the process of *poesis,* as a *Bild* and its historical manifestation as an expression of the *sensus communis;* as a *Begriff.* In order to transcend to the level of 'Absolute Knowing', to reach its own fulfillment, art must become both *Bild* and *Begriff.* Art must grant an Absolute dimension to man. When this is achieved it becomes metaphysics and the true ground of philosophy as self-knowledge.

> "The minstrel is the individual and actual spirit from whom, as a subject of this world, it [the world] is produced and by whom it is borne. His 'pathos' is not the stupefying power of Nature but Mnemosyne, recollection and a gradually developed inwardness, the remembrance of essence that formerly was directly present. He is the organ that vanishes in its content what counts, is not his own self but his Muse, his universal song."
>
> G.W.F. Hegel
> *The Phenomenology of Spirit*[cxiv]

The Dialectic of Art and Philosophy

As has been pointed out by several commentators on his writings, Hegel's philosophic system has a decidedly aesthetic ring about it due to its emphasis on dynamic form, organic unity and wholeness. What He had done was establish a dialectic of Art and Philosophy, and the two means of human activity they represent; expression and cognition. Their relationship was dialectical. But it also implied permeability.

Hegel's system sought to examine man's struggle to bring the concrete from obscurity to articulation. It was this process that in the end prevented philosophy from launching off into abstraction, from becoming esoteric and autonomous. According to Hegel it was the philosophical examination of the artistic process and what was learned from it that opened philosophy to the realm of concreteness, giving it a richness that was otherwise lost. What Hegel took from art was its ability to manifest the concrete. It was this ability that for him was the ultimate goal of philosophy, to match the imaginative unity present in art, through the manifestation of a comparative conceptual unity. Hegel referred to this as speculative reason, and it was his answer to the *Vernuftstaat*. In the end, art and philosophy are complementary modes of human articulation, one a form of

imaginative concreteness and the other a conceptual concreteness. Philosophy gained its ground through its' opening to art.

Art was the articulation of meaning as imaginative emergence and it was this that made it a means toward truth in its own right. The lesson learned from art was the significance of the process of origination and it was central to his philosophy. Just as the work of art was an emergence in sensuous form, a concrete universal, so too was the philosophical concept a process of emergence from the interplay between the knower and the known. The philosophical concept, the *Begriff,* must contain the self-awareness of its own origination in the process of dialectical articulation.

Art embodies the concept of concreteness or finality in a process of becoming. And this too, must also be true for the philosophical concept. Hegel used the image of the circle to imply a continuous dynamic movement of perfecting in which the ends, always returns to the origins. For Hegel there are particular experiences that from the start represent the unity of particular and universal and therefore embody this notion of beginning and end. The real philosophical concept is circular, not in the sense of its logic, but in that it reaches out to both origins and finality as it embodies an articulate recollection. As Desmond pointed out "The philosophical concept is the teleological recollection of a process of origination within which the concrete world comes to appear as an articulated and rich whole. As a kind of microcosm of articulation that gathers and recollects the significance of such a world, the philosophical concept, like the art work, is itself a kind of world."[cxv]

In this sense, his philosophical quest was similar, if not the same, as Hamann and Herder's quest for a continuity of the *lebenswelt*. It was Hamann who first asserted that

thought and language, reason and expression, were inseparable and served as a unified means of expression of the *sensus communis*. This served to shape Herder's understanding of the human condition based on the idea of 'belonging'. According to him, man must surrender himself to the unity of his entire being.

The true Unity of Theory and Practice was the search for how *poesis* and praxis form the unity of experience we call reality. Hegel provided an epistemological answer with the dialectic of Art and Philosophy. In the end there must be *Aufhebung,* Art and Philosophy must sublate themselves to each other, bringing thought and expression together in a unity. This was the real meaning behind Hegel's statement that 'art becomes in the end what it was in the beginning-the true teacher of mankind.' The philosopher gains a greater understanding of the nature of truth by examining the means of self-actualization first found in the creative activity of artistic making. The philosopher must become artistic, likewise the artist must become philosophical, a point first made in the *Systemprogramm*.

ENDNOTES

[i] Herder, *Herder's sammtliche Werke*, edit. Bernhard Suphan, Berlin, 1877- 1913, Weidmann, vol. ii, pg. 160-161.

[ii] Herder derived this idea from Ossian. The reference here is *The Works of Ossian* a book written in 1761 by Scottish poet James Macpherson who claimed to have found an epic work on the hero Fingal written by Ossian. The works gained international success and were influential on both Herder and Goethe. Herder at the beginning of the Sturm und Drang wrote *Extract from a Correspondence about Ossian and the Songs of Ancient Peoples* of 1768. Goethe's own German translation of a portion of the work figures prominently in his *Sorrows of Young Werther* a key text of the period and influential on the writers of the Strum und Drang.

[iii] Herder rejects the idea of poetry as a description of nature or anything else for that matter. When poetry and other forms of art were codified in writing they lost some of their inherent magic. Poetry here subsumes the concepts of imagination, feeling, and expressivity which collectively embody national character not as a form of political nationalism, but more along the contemporary lines of regionalism. While today these ideas might be commonplace aside from Vico, Herder was wholly original in this position.

[iv] Herder, *Herder's sammtliche Werke*, edit. Bernhard Suphan, Berlin, 1877- 1913, Weidmann, vol. ii, pg. 160-161.

[v] Goethe, *Conversations of Goethe with Eckermann*, first published in 1836 in *Gespeache mit Goethe*, trans. Oxenford, Everyman's Library Edition 1930, E.P. Dutton & Co. Inc., The conversations took place between 1822 and 1832. See also Hazard Adams, *Critical Theory Since Plato*, Harcourt Brace Jovanovich College Publishers, 1992, pg. 531.

[vi] Ibid., pg. 531.

[vii] Novalis, ed. J. Minor, III 11.Cf. O. Walzel, *German Romanticism*, English trans. Alma E. Lusky, New York 1932, pg. 28.

[viii] Schiller, Friedrich, *On the Aesthetic Education of Man in a Series of Letters*, reprinted in *Friedrich Schiller On the Aesthetic Education of Man in a Series of Letters*, trans Snell, Frederich Ungar Publishing Co. New York, 1965, pg 108.

[ix] See Schlegel, 'Athenaumsfragmente' 238, in *Prosaische Jugendschiften*, ed. by J.Minor 2nd ed. Vienna 1906, II, 242.

[x] The reference here is to the text written by Hegel, Holderlin and Schelling in 1796 entitled the 'Earliest System-programme of German Idealism', see H.S. Harris, *Hegel's Development: Toward the Sunlight 1770-1801*, Oxford, 1972.

[xi] Ibid.

[xii] Cassirer, *An Essay on Man*, Yale University Press, New Haven and London, 1944, pg. 52.

[xiii] Goethe, Notes to a translation of Diderot's "Essai sur la peinture', *Werke*, XLV, 260.

[xiv] Cassirer, *An Essay on Man*, Yale University Press, New Haven and London, 1944, pg. 146.

[xv] Ibid., pg. 156.

[xvi] Translated as Storm and Stress, it was an artistic movement in German literature and music between the 1760's and 80's. The movements' ideologue was Hamann, but it was the writings of Herder, Goethe and Schiller that formed the basis of it as an artistic movement. Underlying it was a strong focus on subjectivity and emotion in art that served to counter the extreme rationalism of the Enlightenment.

[xvii] Goethe, 'Von deutscher Baukunst', *Werke* XXXVII, 148 f. English trans. John Gearey in *Goethe The Collected Works Vol. 3 Essays on Art and Literature*, Princeton University Press, Princeton, 1986 pg. 8.

[xviii] In a move not unlike Vico's assertion that the closer language was to its primal form the more beautiful it was, Goethe asserted that the closer art was to its primal roots the more true and hence more beautiful it was.

[xix] Goethe, 'Von deutscher Baukunst', *Werke* XXXVII, 148 f. English trans. John Gearey in *Goethe The Collected Works Vol. 3 Essays on Art and Literature*, Princeton University Press, Princeton, 1986 pg. 8.

[xx] Cassirer, *An Essay on Man*, Yale University Press, New Haven and London, 1944, pg. 141.

[xxi] Hegel uses the term aesthetic when discussing this, it is part of his critique of what he terms Romantic art and it is derived from the aesthetics of Kant. I am here using the 'subjective' for reasons of clarity in my argument but it is the very subjective nature of Kantian aesthetics that Hegel is critiquing.

[xxii] Hegel, *Hegel's Aesthetics, Lectures on Fine Arts*, vol. I trans. Knox, Clarendon Press, Oxford, 1975, pg 10-11.
[xxiii] In the *Lectures on Fine Art* Hegel credits Kant with identifying that in the "beautiful the universal and particular, ends and means, concept and object perfectly interpenetrate one another" but chastises him for coming to the conclusion that such reconciliation is 'only subjective in respect of the judgment and the production [of art], and not itself to be absolutely true and actual." See *Hegel's Aesthetics, Lectures on Fine Arts*, vol. I trans. Knox, Clarendon Press, Oxford, 1975, pg 60.
[xxiv] Goethe, On Realism in Art 1798, in *Essays on Art and Literature vol. 3*, edit. Gearey, trans. von Nardroff, Princeton University Press, Princeton, NJ. 1986, pg. 77.
[xxv] Goethe, *On the Laocoon Group*, 1798, in *Essays on Art and Literature vol. 3*, edit. Gearey, trans. von Nardroff, Princeton University Press, Princeton, NJ. 1986, pg. 15
[xxvi] Ibid. pg. 15
[xxvii] Ibid. pg. 16
[xxviii] Goethe, *Conversations of Goethe with Eckerman*, first published in 1836 in *Gespeache mit Goethe*, trans. Oxenford, Everyman's Library Edition 1930, E.*P. Dutton & Co. Inc. The conversations took place between 1822 and 1832. See also Hazerd Adams, Critical Theory Since Plato*, Harcourt Brace Jovanovich College Publishers, 1992, pg. 530.
[xxix] In the existentialist attitude thinking was seen as antithetical to the concrete, in fact a hindrance to our understanding of it. This was the position of the Platonic idealists who saw reality as a copy of the *eidos*, or idea which had an existence independent of the particularities of this world. There was a genuine separation of universal and particular, known as the Platonic *chorismos*. The result was an opposition of sensible and intelligible worlds. Here the universal was given ontological weight, because it was only through knowledge of it that we could have any knowledge of the particular at all.

On the other hand, the essentialist response viewed the concrete as accidental, capricious and often irrational in its particularity, under such a view, thought turned in on itself, moving farther and farther into the realm of abstraction and the internal self consistency of the logical structure. This placed truth solely within the prerogative of the universal which now became an abstraction. Under such conditions thought became nothing more than thoughts reflection on itself, a condition which Hegel saw manifested in what he called the 'literal minded' philosophers.
[xxx] As T.M. Knox has noted "The defect of the Understanding is that while it correctly distinguishes between form and content, essential and unessential, universal and particular, it fails to synthesis these opposites. Held apart from one another, however, each of these opposites becomes an abstraction, and the living whole of reality has not been explained but explained away and killed by being so analyzed into its constituents. What the Understanding fails to recognize is that 'thought' is not something empty or abstract; it is a determinant, a determinant of itself." T.M. Know, *Hegel's Philosophy of Right*, trans Knox, Oxford University Press, London & New York, 1952, foreword pg viii.
[xxxi] ". . . the forms and rules of the old logic, of definition, thinking, have become recognized as inadequate for speculative science; or rather their inadequacies have not been recognized." Hegel, *The Philosophy of Right*, trans. Knox, Oxford University Press, London & New York, 1952, pg 2.
[xxxii] Gadamer, Hegel's Dialectic of Self-consciousness, reprinted in *Hans-Georg Gadamer Hegel's Dialectic Five Hermeneutical Studies*, trans Smith, Yale University Press, New Haven & London, 1971, pg 56-57.
[xxxiii] To this generation of writers, , artists and thinkers the shipwreck of reason that was the fate of France, during its bloody Reign of Terror, had made it clear that no rational political action could establish liberty once the means to such an end had taken on a life of its own. In the words of Holderlin "Nothing intelligent has ever come out of mere intellect; nothing reasonable has ever come out of mere reason."(Holderlin, *Hyperion 2* [Berlin, 1799], cited from idem, *Samtliche Werke und briefe*, ed. Gunther Mieth [Munich: Carl Hanser, 1970], 1: 661) The bloodshed of the revolution had proven that abstract reason was not a complete solution to the problems of the world, nor a firm foundation upon which to establish another. The new definition of reason that established the duality between mind and body, man and nature, reason and the senses, Objective and Subjective aesthetics, had proven itself to be a false path to truth. For this generation of avant- garde thinkers, only in beauty was the duality overcome, were reason and emotion united, only the idea of poetry was capable of guiding reason along the path to truth.

[xxxiv] Hegel, *The Philosophy of Right*, trans. Knox, Oxford University Press, London & New York, 1952, pg 10.
[xxxv] Ibid. pg 12.
[xxxvi] I am here using to Ernst Cassirer's terminology of mimetic and indicative from *The Philosophy of Symbolic Forms*, vol. 1: Language, Yale University Press, London and New Haven, 1955, pp. 182-184.
[xxxvii] Hegel's discussion of the aim of art and the inherent problem with imitation as a basis for aesthetic theory can be found in *The Aesthetics, Lectures on Fine Art*, in the Introduction specifically pp. 41-56. While the amount of text dedicated to the subject here is small in comparison to the size of the discourse he is nonetheless clear on his rejection of imitation and the grounds for it.
[xxxviii] William Desmond, *Art and the Absolute*, State University of New York Press, Albany, 1986, pg. 3.
[xxxix] Plato's famous assertion from the *Republic* that art is a copy of trice removed from the truth of the *eidos* and hence reveals less than reality of it is an example of the negative version while Aristotle's 'apologia' to the argument that art allows us to experience realities cut off from our daily experiences, is the assertion of art's imitation in the positive.
[xl] The reference here is of course to the tenth book of Plato's *Republic* where he argued if all art is, is an imitation of nature then it can only provide less information than the original and hence is of no real use to society. Plato who began life as a poet certainly did not believe that the artists should be thrown out of the *polis*, but rather that art was more than imitation. The book is ironic and in it he called for someone to define precisely what arts value was. The answer came in Aristotle's *apologia* in which he argued successfully that art had the ability to expand our sense of experiences through empathy in such a way as to increase our ability to learn from life. Art was didactic and in so being increased knowledge.
[xli] Ibid., pg 55.
[xlii] William Desmond, *Art and the Absolute*, State University of New York Press, Albany, 1986, pg. 6-7.
[xliii] Schiller, Friedrich, *On the Aesthetic Education of Man in a Series of Letters*, reprinted in *Friedrich Schiller On the Aesthetic Education of Man in a Series of Letters*, trans Snell, Frederich Ungar Publishing Co. New York, pg 26.
[xliv] Schiller, Friedrich, *On the Aesthetic Education of Man in a Series of Letters*, reprinted in *Friedrich Schiller On the Aesthetic Education of Man in a Series of Letters*, trans Snell, Frederich Ungar Publishing Co. New York, 1965, pg 102.
[xlv] Schiller, Friedrich, *On the Aesthetic Education of Man in a Series of Letters*, reprinted in *Friedrich Schiller On the Aesthetic Education of Man in a Series of Letters*, trans Snell, Frederich Ungar Publishing Co. New York, 1965, pg 108.
[xlvi] Ibid., pg 103.
[xlvii] Ibid., pg 77.
[xlviii] Ibid.5, pg 106.
[xlix] In this sense Schiller prefigures the writings of John Ruskin a hundred years later who asserted that it is the value of the human labor exhibited in the work and our ability to empathize with it that gives the work its force. Ruskin used this argument to challenge the mass production of craft arguing that it did not represent the transformation of the material by man.
[l] Goethe, 'On the Laocoon Group', 1798, in *Essays on Art and Literature vol. 3*, edit. Gearey, trans. von Nardroff, Princeton University Press, Princeton, NJ. 1986, pg. 15. the same argument would be used latter by John Ruskin in the *Seven Lamps of Architecture* where he made the claim that is was our ability to identify in the work the effort and spirit of the artist or craftsman in a work of art that allows us to empathize with them and in so doing gives the work its value.
[li] Schiller, Friedrich, *On the Aesthetic Education of Man in a Series of Letters*, reprinted in *Friedrich Schiller On the Aesthetic Education of Man in a Series of Letters*, trans Snell, Frederich Ungar Publishing Co. New York, 1965,pg. 127.
[lii] Schiller does not use the terms core-form and art-form. I interject them here as this same distinction will play a major role in the discourse of architecture most prominently in the writings of Botticher who will refer to the distinction using the terms core form and the art form. But the concept is also present in Hubsch where he uses the term *technostatic* to refer to the proportions generated by the core-form.
[liii] Schiller, Friedrich, *On the Aesthetic Education of Man in a Series of Letters*, reprinted in *Friedrich Schiller On the Aesthetic Education of Man in a Series of Letters*, trans Snell, Frederich Ungar Publishing Co. New York, 1965, pg 128.

[liv] The entire quote reads as follows; "When the mechanical artist sets his hand to the formless block, to give it the form that he intends for it, he does not hesitate to do it violence, for Nature, which he is fashioning, merits no consideration for herself, and his concern is not with the whole for the sake of the parts, but with the parts for the sake of the whole. When the fine artist sets his hand to this same block, as little does he hesitate to do it violence, only he forbears to show it. He respects the material at which he works not in the slightest degree more than the mechanical artist does; but he will try to deceive the eye which takes the freedom of this material under its protection, by an apparent deference towards the material." Schiller, Friedrich, *On the Aesthetic Education of Man in a Series of Letters*, reprinted in *Friedrich Schiller On the Aesthetic Education of Man in a Series of Letters*, trans Snell, Frederich Ungar Publishing Co. New York, 165, pg 32-33.
[lv] Ibid., pg 123.
[lvi] The full text of Schiller's commentary is as follows; "Those philosophers who blindly trust the guidance of their feelings in considering the subject can arrive at no concept of beauty, because they distinguish nothing individual in the totality of the sensuous impression. The others, who take the intellect as their exclusive guide, can never arrive at a concept of beauty, because they never see in its totality anything but the parts, and spirit and matter remain, even in completes union, for ever separate to them. The first are afraid of invalidating beauty dynamically- that is as an operative power- by separating what is yet comb8ined in the feeling; and the others are afraid of invalidating beauty logically- that is, as a concept- by bringing together what is yet separate in the understanding. The former want to think of beauty as it operates; the latter want to have it operate as it is thought. Both must therefore miss the truth, the former because they seek to rival infinite Nature with their limited intellectual capacity, the latter because they are trying to restrict infinite Nature to their own intellectual laws." Schiller, Friedrich, *On the Aesthetic Education of Man in a Series of Letters*, reprinted in *Friedrich Schiller On the Aesthetic Education of Man in a Series of Letters*, trans Snell, Frederich Ungar Publishing Co. New York, 1965, pp. 89-90.
[lvii] The lectures have been transcribed and are currently in the collected text known as the *Transcendental Philosoph*y but Schlegel himself had not intended to publish them as such.
[lviii] Goethe, *Conversations of Goethe with Eckermann*, first published in 1836 in *Gespeache mit Goethe*, trans. Oxenford, Everyman's Library Edition 1930, E.P. Dutton & Co. Inc., The conversations took place between 1822 and 1832. See also Hazard Adams, *Critical Theory Since Plato*, Harcourt Brace Jovanovich College Publishers, 1992, pg. 531.
[lix] Goethe, Simple Imitation, Manner Style 1789, in *Essays on Art and Literature vol. 3*, edit. Gearey, trans. von Nardroff, Princeton University Press, Princeton, NJ. 1986, pg. 72.
[lx] Ibid.
[lxi] Bennett, Benjamin, *Goethe's Theory of Poetry, Faust and the Regeneration of Language*, Cornell University Press, Ithaca and London, 1986, pg 114.
[lxii] Ibid., pg 120.
[lxiii] Ibid., pg 124
[lxiv] Goethe, "Was Kann der Mensch im Leben mehr gewinned, Als dass sich Gott-Natur ihm offenbare? Wie sie das Feste Lasst zu Geist verrinnen, Wie sie das Geisterzuegte fest bewahre." *Goethe Werke*, "Weimarer Ausgabe",143 vols. Wiemar,1887-1918.
[lxv] Bennett, Benjamin, *Goethe's Theory of Poetry, Faust and the Regeneration of Language*, Cornell University Press, Ithaca and London, 1986, pg 132
[lxvi] Hegel, *Phenomenology of Spirit*, trans. Miller, Oxford University Press, Oxford and New York, 1977, par. 802, pg. 487.
[lxvii]Hegel, *Hegel's Aesthetics, Lectures on Fine Arts*, vol. I trans. Knox, Clarendon Press, Oxford, 1975, pg 61.
[lxviii] The *Phenomenology* is divided into section entitled A. Consciousness, B. Self-consciousness, C. (AA) Reason, (BB) Spirit, (CC) Religion, (DD) Absolute Knowing. For Hegel, consciousness is composed of the three stages sense certainty, perception and understanding. These three are the initial stages of the act of knowing which terminate in the understanding of modern philosophy that divides the world into appearance and supersensible world. Self-consciousness is the domination of the subjective 'I'. The last section C. is composed of Reason, Spirit and Religion whose combined knowledge lead to what Hegel defines as true Wisdom; Absolute Knowing. For Hegel, this is 'comprehending knowledge'. Finley explains Absolute knowing as " . . . the realization that all forms of objectivity are identical to those essential to the thinking subject, so that in construing the world conceptually it is seeing everything in the

form of self, the self being simply the ever-active principle of conceptual universality, of categorical synthesis. In its conceptual grasp of objects it necessarily grasps what it itself is, and in grasping itself it necessarily grasps every phase of objectivity." J.N. Findlay, Forward *Phenomenology of Spirit* xxviii. According to Hegel this only occurs when the three legs of Knowing; Reason, Religion and Art are in balance. At this time Spirit comes into its own full flowering and a true Wisdom emerges. It is Hegel's answer to Self-knowledge. See *Phenomenology* par. 798 & 799.

[lxix] See Donald Philip Verene, *Hegel's Recollection a Study of Images in the Phenomenology of Spirit*, Suny Press, Albany, 1985, pp 16-17.

[lxx] Hegel, *The Phenomenology of Spirit*, trans Miller, Oxford University Press, New York, 1977 par. 93, pg 59.

[lxxi] Ibid., par. 143, pg. 86.

[lxxii] While he does not mention him by name the reference is undoubtedly to Descartes and his *Cogito ergo sum*. In his *lectures on the History of Philosophy* Hegel had credited Descartes for founding modern philosophy by shifting the center of philosophy toward the subject. It must also be remembered that this move also created the duality of the *res extensa* and the *res cogitans* the very essence of the epistemology of science and the duality of beauty. It was the inherent opposition of the condition of the Understanding that Hegel sought to eliminate in his philosophical project.

[lxxiii] This is as best expressed in the epistemology of science and Objective aesthetics

[lxxiv] Hegel referred to this as the 'Beautiful soul' and it is exemplified in Subjective aesthetics and was identified as the threat of Romanticism in its extreme by both Fichte and Hegel

[lxxv] Hegel, *The Phenomenology of Spirit*, trans. Miller, Oxford University Press, Oxford & New York, 1977, par 87, pg 56.

[lxxvi] Hegel, *The Philosophy of Right*, trans. Knox, Oxford University Press, London & New York, 1952, pg 10.

[lxxvii] Hegel, *Hegel's Aesthetics, Lectures on Fine Arts*, vol. I trans. Knox, Clarendon Press, Oxford, 1975, pg 71.

[lxxviii] William Desmond, *Art and the Absolute a Study of Hegel's Aesthetics*, State University of New York Press, 1986, pg. 8.

[lxxix] Desmond explains Hegel's notion of the subject object relationship this way: "Initially, the details of the work seem to be just there, and we may seem free to conjoin them this way or that, which ever way we please. Yet if we dwell with the artwork, and if this work is genuine, it comes to crystallize into a whole: the parts fit together and we discern a certain necessity in their cohesion. And since we are now guided by this sense of necessity, we are forced to discard our 'old' freedom. But we do not experience this necessity as a mere external constraint. Rather it comes to us as a liberation, a release: we are freed from the fragmentariness of mere detail and come to be at home in a rich whole. It is not that we discard or obliterate the details, but in standing beyond their fragmentariness we ourselves are freed from fragmentation." William Desmond, *Art and the Absolute a Study of Hegel's Aesthetics*, State University of New York Press, 1986, pg 64.

[lxxx] Hegel: *Hegel's Aesthetics Lectures on Fine Arts, Vol. II*, trans. T.M. Knox, Clarendom Press, Oxford 1975, pg. 623.

[lxxxi] William Desmond, *Art and the Absolute a Study of Hegel's Aesthetics*, State University of New York Press, 1986, pg. 21.

[lxxxii] Ibid., pg. 614.

[lxxxiii] Ibid., pg 70. Note that here Hegel uses the word 'Idea' in the way Schiller uses the term 'formal impulse' and then uses the word 'form' in the way Schiller uses the term 'material impulse'. While the terminology is inconsistent the concept behind them is identical.

[lxxxiv]William Desmond, *Art and the Absolute a Study of Hegel's Aesthetics*, State University of New York Press, 1986, pg 62.

[lxxxv] Hegel, *The Phenomenology of Spirit*, trans. Miller, Oxford University Press, Oxford & New York, 1977, par 808, pg 493

[lxxxvi] It should be advised that Hegel's concept of 'Absolute Knowing' is not synonymous with absolute knowledge in the strict sense of the *Logic* or of conceptual thinking. For Hegel it is a condition which exists when Religion, Art and Philosophy (understood as reason) stand on equal footing within the discourse of knowledge. In such a construct we must assume that Absolute Knowing therefore cannot be reduced to

conceptual thinking or logic in the traditional sense. While the term is present in the *Logic* it is also present in the *Phenomenology* where it is associated with the movement and development of consciousness, of spirits rise.

[lxxxvii] Hegel, *The Phenomenology of Spirit*, trans. Miller, Oxford University Press, Oxford & New York, 1977, par 798, pg 485.

[lxxxviii] Ibid. par 796, pg 485.

[lxxxix] Verene, *Hegel's Recollection A Study of mages in the Phenomenology of Spirit*, State University of New York Press, Albany, 1985, pg. 117.

[xc] The full quote is as follows; ". . . Spirit attains to a knowledge of itself not only as it is *in itself* or as possessing an absolute *content*, nor only as it is *for itself* as a form devoid of content, or as the aspect of self-consciousness, but as it is both in essence and in actuality, *or in and for itself*." Hegel, *The Phenomenology of Spirit*, trans. Miller, Oxford University Press, Oxford & New York, 1977, par 794, pg 483. See also Hegel, *The Phenomenology of Spirit*, trans. Miller, Oxford University Press, Oxford & New York, 1977, par 798, pg 485.

[xci] *Aufhebung* is a verb used in ordinary German that has no genuine equivalent in English. It has been rendered as 'supersede' and by a combination of two English verbs such as 'cancel' and 'preserve', as well as 'translate' and 'sublate'. *Aufhebung* is the noun that describes such action. As Hegel uses it, it is the way in which one stage of consciousness is transformed into a succeeding stage, the sense in which a preceding stage is replaced but yet absorbed into and incorporated in a new way into a succeeding stage. This concept served as the basis of his famous dialectic. The misunderstanding of the structure of the Hegelian dialectic is a serious point in Hegelian scholarship. The common misconception is that it is thesis, antithesis, synthesis, which implies that a compromised position is achieved that leads to a new form. This conception has been traced to a single individual who lectured on Hegel in Germany. For a complete explanation of this misreading and its correction please see Gustav E. Mueller, The Hegel Legend of 'Thesis-Antithesis-Synthesis' in *The Journal of the History of Ideas*, vol. 19, June 1958. It is needless to say incorrect. Hegel never postulated synthesis in such a way. The dialectic is such that two oppositions which are understood to be a truth signal that a higher level of consciousness is needed to realize how the two positions may be part of a different structure of truth. For Hegel opposition leads to a realization that the structure of truth we hold is limited and needs to advance. The result is the search for a new structure that explains the simultaneous existence of both positions. Thus the two original positions are not lost rather the system of relationships between them is altered.

[xcii] Donald Philip Verene, *Hegel's Recollection a Study of Images in the Phenomenology of Spirit*, Suny Press, Albany, 1985, pp 20.

[xciii] It is the series of generative moments of the double-*Ansich* that resemble the poetic metaphor of Vico's 'imaginative universal'.

[xciv] *Begriff* is commonly translated as either concept or notion. But one must be careful here Hegel is not referring to a figurative grasp of something he refers to that as a *Vorstellung*, a non-conceptual representation. That is the opposite of *Begriff*.

[xcv] Most notably that found in Vico's *New Science* where the basis of cognition lies in the poetic metaphor of the 'Imaginative Universal' at its base is the concept of *ingenium* or imaginative transference. As Donald Phillip Verene has pointed out this same idea is found in Hegel's *Phenomenology*. See Verene's *Hegel's Recollection*. I am not implying here that Hegel got his idea from Vico, to the contrary, that both came to a similar understanding of the nature of cognition and being. It should be noted that Goethe was familiar with the writings of Vico, but that came after his own theories of art were developed and so we should exclude any idea that the influence was second hand either.

[xcvi] Hegel, *The Philosophy of Right*, trans. Knox, Oxford University Press, London & New York, 1952, pg 10.

[xcvii] Ibid. pg 23.

[xcviii] T.M. Know, *Hegel's Philosophy of Right*, trans Knox, Oxford University Press, London & New York, 1952, foreword pg viii.

[xcix] This text is a fragment from a recently discovered manuscript in Berlin. Its German Title *is Uber Mythologie, Volksgeist und Kunst*, It was published in Germany by Staatsbiliothek Preussicher Kulturbesitz, Berlin. Its English translation can be found in D.P. Verene's *Hegel's Recollection*, Suny New York, 1985. the text is from Hegel's Jena period and is therefore written around the same time as the *Systemprogramm*.

[c] The significance of Hegel's contribution here must be noted. The origin of the term 'Aesthetics' is credited to A.G Baumgarten in his *Aestetica* of 1750. As Moshe Barasch notes he coined the term from the Greek *aisthenastai* meaning to recognize or perceive. It was fitting for Baumgarten's text propounded a theory of perception. As Barasch points out Hegel is not attempting a theory of perception or even a theory of beauty as he clearly states in his text, Hegel intends a philosophy of art. What Hegel is concentrating on art as a human activity, and a man-made object, but the fundamental assumption of his Aesthetics is that the subject matter of art is the same as both religion and philosophy the coming to terms with the Human Spirit. His science of Art therefore is aimed at addressing this subject and task through the lens of *poesis* and *techne*. See Barasch, *Modern Theories of Art, 1 From Winkelmann to Baudelaire*, New York University Press, New York & London, 1990, pp. 179-180.

[ci] Hegel uses the term *Geist* to express the interconnection between the mental, spiritual and willful properties of the human individual and the collective activities that make up human culture, art, religion, thought etc. It is often translated into English as Spirit but incorporates more than religious signification that word implies; it can also be translated as mind or culture.

[cii] William Desmond, *Art and the Absolute a Study of Hegel's Aesthetics*, State University of New York Press, 1986, pg. 45.

[ciii] Hegel first introduces the idea of a coincidence of art and religion in the middle of section '(CC) Religion, when he makes the statement "Spirit is Artist". *The Phenomenology*, par 698. See the Phenomenology 'Religion in the form of Art' pp 424- 439 (par 699- 726).

[civ] Hegel uses the terms meaning and shape but they are equivalent to Schiller's formal and material impulses. Today we might refer to this as the relationship between form and content.

[cv] Ibid. See Hegel pg 75.

[cvi] Hegel: *Hegel's Aesthetics Lectures on Fine Arts, Vol. I*, trans. T.M. Knox, Clarendom Press, Oxford 1975. Hegel first introduces these stages of development in the 'Introduction' (pp 75-81) but they are further examined in 'Part II' under separate headings.

[cvii] Ibid. pg. 75 forward. These stages are presented in the first volume of the Aesthetics which deals with Spirit. Hegel is clear that this is not art but Spirit's relationship to art. How art is an expression of the stages of consciousness and Spirit is explained in volume II specific to individual media; Architecture Sculpture, Painting, Music and Poetry.

[cviii] Goethe, Winckelmann and His Age, 1805, in *Essays on Art and Literature vol. 3*, edit. Gearey, trans. von Nardroff, Princeton University Press, Princeton, NJ. 1986, pg. 101.

[cix] It was also for him the source of the death of art. It was this understanding of time and history that underlay both 'Objective' and 'Subjective' Aesthetics. It is only when history is conceptualized as a series of discrete moments to be compared and evaluated that one can conceive of; an Ideal Golden Age, or Model to be imitated, or to conceptualize the use of art forms as associational images, designed to stimulate a 'richly stored mind'. This was why Hegel proclaimed the death of art, because it is no longer an autonomous human activity a manifestation of *Geist* as a concrete universal. In an ironic twist it negates the past as it severs the means of expression from the culture that produced it. He saw this as the source of the growing eclecticism in the art and architecture of his age.

[cx] Aristotle, *Poetics*, 1451, 5-6.

[cxi] Hegel, *Hegel's Aesthetics: Aesthetics Lectures on Fine Art,* 'Introduction', trans. T. M. Knox, Clarendon Press, Oxford, 1975, pg. 9.

[cxii] Hegel, *On Mythology, 'National Spirit', and Art*, Staatsbiliothek Preussischer Kulturbesitz, Berlin. trans. D.P. Verene, reprinted in *Hegel's Recollection: a Study of Images in the Phenomenology of Spirit*, Verene, State University of New York Press, Albany, 1985, pg. 36.

[cxiii] Ibid. pp.36-37.

[cxiv] Hegel, *The Phenomenology of Spirit*, trans Miller, Oxford University Press, New York, 1977 par. 729.

[cxv] William Desmond, *Art and the Absolute a Study of Hegel's Aesthetics*, State University of New York Press, 1986, pg. 28. Hegel uses the term *Errinnerung* to refer to this notion of recollection in the *Phenomenlogy*, Hegel, *The Phenomenology of Spirit*, trans. Finley, Oxford University Press, Oxford, 1977, pg. 492. See Also Verene, *Hegel's Recollection: A Study of Images in the Phenomenology of Spirit*, Albany: State University of New York Press, 1985.

Chapter 15: Tectonic Reformulations: Philosophy and Architecture

For the Idealist Philosophers in Germany, art proved the penultimate example of *Poetic Unity*. It not only provided access to an understanding of self-actualization, but to the nature and structure of reason. In its historicity as an expression of the '*Fortgang'* it also revealed the movement of *Geist* providing greater insight into man's condition in the world, making it a valuable philosophical tool. By the 1770's architecture, the most prolific of the arts and the one that most impacted human life, took center stage as men like Goethe, the Brothers Schlegel and Hegel began to reexamine it, in light of the new aesthetic doctrine.

In traditional historiography, the architectural musing of these men have been viewed within the context of their own literary body of work, and occasionally as ancillary theoretical texts within the discourse of architecture. Their commentaries on Gothic architecture are commonly seen as extensions of a 'Romanticizing' of it in line with "Subjective" aesthetics and Associational theories of art. Likewise, their commentary on Classical architecture is seen through the lens of Neo-classicism. Ironically, this is often interpreted as a validation of the classical as an ideal art form and postulated as proof of their conversion to Classicists. As I intend to show, this could not be further from the truth.

Part of the problem with this interpretation lies in the dominance within art historical circles of Johann Joachim Winkelmann (1717-68). German aesthetic culture during the early 1700's was dominated by him and his views on art helped to shape the early emergence of Neo-classicism in the German speaking world and beyond. Establishing

ancient Greek culture as the highpoint of cultural development Winckelmann sought to set up Greek art as an ideal model to be emulated. In emphasizing their grandeur and simplicity he showed his allegiance to the same aesthetic sense of taste as the French Neo-Classicists and the Abbe Laugier. In fact, he adopted the aesthetic categories of the French and English Enlightenment.

In his contribution to architecture, *Anmerkungen uber die Baukunst der Alten* (*Observations on Ancient Architecture* 1762), Winckelmann made the distinction between the 'essential' (*Wesentlichs*) and the 'ornamental' (*Zierlichkeit*). The 'essential' was related to the materials, construction and typology of the building, the 'ornamental', like Alberti before him, was a necessary, but added component. Winckelmann, like Laugier, assumed a lack of ornament at the origins of architecture and so its addition had to be consistent and serve its purpose, any excess led to 'pettiness in architecture'. In order for architecture to be beautiful 'ornament' had to align itself with simplicity.

Winckelmann's insistence on 'noble simplicity' and the supremacy of Greek over Roman prototypes led to a series of confrontations with Piranesi who saw in his writings shades of the rationalist discourse he so opposed. Their debates are interesting in that they literally carry on the same theoretical argument between Lodoli and Laugier, a generation earlier. The difference was that the latter debates were carried out on a larger more international stage, with arguably greater impact on aesthetic theory.

There was though a fundamental difference between the French approach to art and the German. Winckelmann had grounded his history of art in the evolution of individual cultures and their climatic and natural influences, not unlike that of Lodoli and Vico. This difference led to a greater association in Germany between artistic development and

cultural identity that played a key role in how German thinkers developed their attitudes toward art and architecture.

It is true that the texts of Goethe, Friedrich Schlegel and Hegel relied on an appreciation of Gothic on its own terms and as an expression of a people. But it is important not to attribute their commentaries on Gothic architecture solely to Winkelmann's influence. They were more directly influenced by Hamann and Herder both of whose writings went farther in defining art forms as an expression of 'belonging'. Furthermore, the Idealists placed that expression within the context of the movement of *Geist*. Additionally, Goethe, August Schlegel and Hegel translated Schiller's ideas of the sublation of material and formal impulses into their analysis of architecture, defining it as a form of *Poetic Unity*, and laying the ground work for the later idea of art-form and core-form which was to prove so central to German theory in the first half of the 1800's. It was Hegel who would transform the idea of a *Kunst-religion* into an aesthetic theory that saw architecture as an expression of the movement of *Geist*, transforming its history into a form of recollection, one that provided access to the arena of Absolute Knowing.

I propose to examine these texts in relationship to each other and within the broader epistemological context of Idealism. I would assert that their reexamination of architecture meant redefining it as an expression of the *'Fortgang'* (a manifestation of the *sensus communus*) along the lines of *Poetic Unity* (as a sublation of the material and formal impulses) and as a form of *Erinnerung* (a reflection on the movement of *Geist*).

Furthermore, I intend to show that their texts proved an important foundation step in restructuring Western architectural theory, owing to their direct impact on the work of

Friedrich Gilly and Karl Friedrich Schinkel, as well as the theoretical discourse surrounding style in Heinrich Hübsch and Karl Bötticher.

> "It is the business of the architect to satisfy this universal need."[i]
> "I cannot state strongly enough how my hard-won knowledge of natural things, which, after all, man needs as materials and uses for his benefit, constantly helps me to understand the procedures of artist and artisans."[ii]
>
> Goethe
> *The Italian Journey*

Goethe on Architecture

In comparison to his other works Goethe's commentaries on architecture appear small and secondary. They have rarely been translated into English and when they are, they are included in collections of Goethe's writings and not in collections of architectural theory. For this reason, he is often overlooked in English language commentaries. Yet his cultural prominence and influence would make it unlikely that German speaking architects of the time did not heed his comments on the subject.[iii]

Goethe wrote a total of four essays on architecture, which collectively show the development of his thought. The first, the 1772 *von deutshcer Baukunst,* ('*On German Architecture*') is the best known and most frequently cited. Two essays entitled *Baukunst*; one from 1788 and one from 1795 demonstrate a new found appreciation of the classical. They were written after his sojourn in Italy during the years of 1786 and 1788, when he experienced the work of both the Ancient Greeks and Romans and Renaissance art for the

first time. The last was a commentary, written in 1823, reflecting on the 1772 essay entitled '*On Gothic Architecture*'.

In Germany there was a growing appreciation of Gothic architecture on its own terms. While still appreciating it for its structural prowess, German writers increasingly interpreted the decoration as an expression of the German *Volk;* of the *sensus communus.* This was evident in Goethe's *On German Architecture.* This was more than likely attributable to the influence of Herder who introduced him to the idea that Gothic architecture had the power to move the human soul and express the national character when both men were in Strasbourg together in 1770.[iv]

What struck Goethe about the Strasbourg Cathedral was that despite his 'training' in 'good taste', it moved him emotionally.[v] He praised its architect, Erwin von Steinbach, for having created such a noble work. The totality of its construction seemed to consist of 'thousands of harmonized details' that appeared to fuse the 'countless parts into unified masses. What made the Gothic Cathedral significant was the ability of the master masons to 'elevate the arbitrary vastness to harmonious proportions'. What they had exhibited was a true understanding of creativity, the kind best exemplified by nature herself. Gothic architecture embodied nature's creative process by manifesting a unity in difference.

This point was central to Goethe's aesthetics. Art was a reflection of the human mind and intellect, whose essence was to be creative in the manner of nature. The cognitive role of the imagination and poetry was central to understanding nature and truth. [vi] What Goethe had done in his analysis of the Gothic Cathedral was to see in the work the multifarious individual imaginations, the particulars of being, but also the expression of a unity, the collective will of a people, their 'belonging'.

This must be understood in contradistinction to the century's long tradition of the Greco-gothic Ideal within architectural scholarship. In concentrating on the rationality of the Mechanisms of Structure and Disposition, eighteenth century theorist had overlooked the real importance of the Gothic. It was an expression of the *sensus communis*, a manifestation of the *'Fortgang'*. Criticizing the theorists of his time for not being able to appreciate the Gothic on its own terms, Goethe made the claim that had they felt more and measured less, they might have been able to create works with their own inherent beauty. The essay essentially challenged the systematic way of evaluating architecture that had emerged in the 18th century. At the heart of his critique was the questioning of the attempt to establish fixed principles and rules for the development of art. Such rules and the strict adherence to a priori principles would, according to Goethe, only lead to stagnation in architecture, turning the noble art form into simple mechanical operation. Goethe saw Laugier's *Essai* as doing just that and attacked it head on. Pointing out that the primitive hut that Laugier proposed was not historically the first, he rejected it as the 'principle' from which all latter works should be derived. Simpler forms of the hut were still in use and widely available, therefore Laugier had not begun at the beginning, but rather at the point where the form adhered to his own a priori design criteria. Goethe began with the circular logic of Laugier's argument exposing its epistemological flaw. "Thus none of your conclusions are able to ascend to the realm of truth, but merely float in the atmosphere of your own system. You want to teach us what we should use, because what we do use cannot be justified according to your own principles."[vii] His point was that knowledge of architecture and building comes from observation of how we live and construct our world, not from abstractions. Careful observation showed that far too often

the intercolumniations were walled up and that buildings were not composed of columns but of walls. “It seems to me dear Abbe that you should have been concerned when you encountered the unseemliness of walled-in columns so often, and saw that moderns even walled up the intercolumniations of antique temples. If your ears were not deaf to the truth, these stones would have preached the truth to you.”[viii] The emphasis on the column, so much the focus of architectural theory since the Renaissance, and the basis of both Laugier’s ‘principle’ and the Greco-gothic Ideal as a whole, was for Goethe only a ‘thin veneer of truth and beauty’ applied to the noble art of building.

Goethe’s point was that the importance of a work of architecture lay not with the symmetry, proportions and calculations inherent in its structure, but in its ability to endow them with significance and meaning, as an expression of both the individual artist and the collective ‘*Fortgang*’. It was how the idea transformed the material in such a way that it emotionally connected to a people, and not the mechanics of the material itself that was important to it as an art form. This of course had been central to Idealist aesthetics.

Historically, Goethe’s trip to Italy has been seen as a defining moment in his thought; one in which his confrontation with the works of Andrea Palladio proved constitutive of his transformation into a Classicist. [ix] Italy, it is true, opened his eyes to the beauty of classical art, poetry and architecture and allowed him to understand the beauty of classical composition. But this should not be seen as an acceptance of Enlightenment aesthetics. Rarely does one reject previous thoughts and ideals in favor of new ones. It was his close friend Friedrich Schiller who pointed out that Goethe’s work was not ‘classical’. [x] As I intend to show, underlying this ‘apparent’ shift in taste was a consistent definition of art.

Historians cite his appreciation of the Villa Rotunda as evidence of a new understanding of art as independent and self- contained; what has been termed "*Autonomieästetik*".[xi] His comments in *The Italian Journey* praise the villa's sculptural form and its ability to provide visual and tactile aesthetic satisfaction. But an increased appreciation for the classical in Goethe's thought should not be seen as a capitulation to "Subjective" aesthetics as claimed, or evidence of a turn toward Neo-classicism. More recent scholarship refutes this.[xii] William J. Lillyman argues that a closer reading of Goethe's ruminations on classical architecture as a whole undermine the idea of appreciation based on the Villa Rotunda commentary. [xiii] I find his argument interesting in that, if correct, Goethe's "classicism" is actually an assertion in architecture of what I have termed *Poetic Unity* found in his overall aesthetics.

Goethe's investigation into classical art began prior to his Italian trip with his study and critique of Enlightenment aesthetics. That criticism was not aimed at classical art per se, but rather at the theory of "la belle nature" and imitation, so central to both "Objective" and Subjective" aesthetics and Neo-classicism in general. His attack on Laugier was based on this critique. Goethe did not yield on this position in Italy. On the eve of September 22, 1786 he attended an assembly held by the Academy of Olympians in Vicenza, the topic of discussion that night was *"whether invention or imitation had been of greater benefit to the fine arts"*, a subject close to Goethe's own theory. Interestingly, Palladio was cited throughout the discussion as exemplary of both positions. Goethe's commentary on the discussion was telling. "In general the proponents of imitation won greater approval, for they said nothing but what the multitude thinks and is capable of thinking. At one point the audience, with loud handclapping, gave its hearty

approval to a very crude sophism, whereas it had not reacted to many good, indeed excellent statements in favor of invention."[xiv] His feeling that the better arguments put forth were in favor of invention, as well as his continued distaste for the theory of imitation was evident.

It was Goethe's fascination with the Gothic that inspired his interest in architecture and this had brought him to the writings of both Laugier and Blondel. From them he gained access to the classical, never having read the great classical theorists, Vitruvius, Alberti, Vignola or Palladio prior to the Italian trip. It was only in Italy that he encountered Palladio's *Il Quatro Libri* and after having read it proceeded to Vitruvius' *De Architectura*. Thus his understanding of classicism was solely through the filter of French theory whose premise- the theory of "la belle nature"- he had already rejected. French theory focused on function derived from the Vitruvian idea of *utilitas*, Laugier had used the term *"besoin"* meaning human need or utility. According to Lillyman, Goethe took to Italy a "firm conviction about the necessary functionality of classical architecture and classical art in general."[xv] The trip served to verify the necessity of utility and function to classical architecture.[xvi] Throughout his writings on the Italian journey, he continually stresses the classical buildings ability to satisfy human need, using the German word "*Bedürfnis*", meaning to fulfill a need or want.

But it would be a mistake to see this as a rejection of his earlier convictions on either art or architecture in favor of a theory based on utility and function. Goethe never asserted that architecture was either an *autonomieästhetik* or mere utility and function. As I have attempted to demonstrate, his aesthetic theory was based on the idea of *Poetic Unity*; a union of the material and formal impulses. This was still evident in Italy where

after visiting the Arsenal in Venice and seeing workers building, he states the following; "I cannot state strongly enough how my hard-won knowledge of natural things, which, after all, man needs as materials and uses for his benefit, constantly helps me to understand the procedures of artist and artisans."[xvii] For Goethe, the art of architecture was based in the nature of materials which were manipulated to answer functional needs. Combined they constituted the material impulse of architecture and were an important aspect of it as a work of art. His confrontation with classical architecture only served to reinforce his earlier conviction, shared with Schiller that art begins in the material impulse.

For Goethe art was the union of material and formal impulses, which sublate themselves to each other. He never wavered on this position. If classical architecture fulfilled the functional needs of a people answering to the material impulse, this was not enough to rise to the level of art. It had to also serve the formal impulse. Gothic had revealed to him architecture's ability to do just that, to express the spiritual needs of a people as an expression of the *sensus communis*. In Italy, he found classical architecture to possess the same ability. The Amphitheater in Verona fulfilled a necessary material need as a theater, but according to Goethe it also served a universal need; presenting to the populace a vision of itself as a unified nation. [xviii] A function it continued to serve in modern times. Goethe found in this classical work what he had found in Strasbourg Cathedral. As Lillyman notes, what Goethe discovered was that "in mature classical art and architecture the artist found a grand concept with which to satisfy a human need."[xix] But once again, one must not mistake this for a change in position.

On several occasions he confronted works of astounding beauty, which he felt were questionable as great works. Among them works of the Italian masters including Palladio and Sanmicheli. And this brings us back to the Villa Rotunda. It was no doubt beautiful and inspiring, but according to Goethe, it failed to serve the needs of a noble family. [xx] Likewise the Teatro Olympico was an important and historically significant work, but Goethe had reservations about whether it could really function as a contemporary theater.[xxi] It was beautiful and certainly inspired man to "feel the magnificence of a true, noble existence", but in terms of its current material use it was insufficient. Goethe expressed similar concerns regarding Sanmicheli's Porta Palio in Verona noting it was beautiful, but failed to achieve its stated goal, because the artist misunderstood the material conditions of the site. [xxii] If these structures failed, it was because they were not anchored in the material impulse of their intentionality, they stressed the formal impulse over the material. They contained no true sublation. A similar fault could be made of structures in the other direction. "I contemplate the magnificent buildings erected by that man and see how they have been disfigured by people's narrow, base needs, how these designs were mostly beyond the abilities of the builders, how poorly these choice monuments to a lofty human spirit harmonize with the life of the rest of mankind, then it occurs to me that this after all is the way of the world."[xxiii] The failure to harmonize the material and formal impulses resulted in a less than ideal work, one that might forever be seen as lofty and beautiful, but destined to bend to the yoke of necessity over time. Too great of an emphasis on necessity and need also failed to result in sublation and degrades the noble work.

Goethe did not change his aesthetic theory. What he discovered in Italy was that great classical architecture was a marriage of a higher ideal, a didactic turn and the material necessities of site and use. It was a union of formal and material impulses. It proved to be a *Poetic Unity*; a true work of art. He had come to understand the classical in a manner that no longer excluded it from his earlier position. What's more, he now saw the classical as a better example of sublation, while the strength of Gothic lay in its greater ability to express spirit, a point Hegel would later further articulate.

While Goethe was reticent about some of Palladio's works he nonetheless saw in him the same understanding about classicism. In Palladio, he found an artist who managed to successfully blend the material needs of his clients with a higher ideal in the formation of a new architectural version of classical architecture. For Goethe, this was best exemplified in Palladio's own Casa Cogollo,[xxiv] his Il Redentori and the unfinished Clarite. But it was certainly evident in his villas as well.[xxv] His oeuvre served to transform building types according to contemporary needs, it was anything but imitation. This according to Goethe made him a great *Poet*.

When Goethe finally read Palladio's *Il Quatro Libri* it inspired him to take on Vitruvius. "Since Palladio relates everything to Vitruvius . . . through his words and works, his manner of thought and action, [he] has already brought Vitruvius closer to me and interpreted him better than the Italian translation can do."[xxvi] It was then having read Vitruvius' own relation of *utilitas* to *venustas* and *firmitas* that he changed his terminology replacing "*Bedürfnis*", which stresses a lack or want within the subject, to *"Zweckmasigkeit"*, which stresses an aspect of the work, its innate functionality. That subtle semantic shift brings Goethe's understanding of utility more in line with his

previous position on the material impulse as something that emerged in the process of creation.

After the trip Goethe published the two essays entitled *Baukunst*, of 1788 and 1795 respectively. In the first, he revealed his new found interest in the clarity and order of the classical style, in the second he turned his attention to materials, function and the aesthetic effect of architecture. Such concerns were not entirely new. The first 1772 essay had praised the clarity of the structural members of the Gothic cathedral in their ability to communicate their function. Once again this was not a capitulation to functionalism or a rationalist conception of truth to materials. Goethe did not assert an absolute principle, as Laugier had done, instead recognizing Palladio as a man of greatness he concluded that 'out of truth and falsehood [he] creates a third entity, whose borrowed existence entrances us."[xxvii] The recognition that art was the product of a disturbed relationship to truth was an important one, one it should be noted is also present in Piranesi.[xxviii] It essentially undermined the attempt to classify architecture as a science reflecting the a priori principles of nature as understood through the natural sciences. For Goethe there still had to be something other than the Mechanisms of Structure and Disposition.

Closer in thought to Lodoli, Goethe believed that a strict adherence to materials and statics could not lead to art in architecture. "As long as only the immediate function was envisaged, and materials were allowed to control what was built rather than to be controlled, no art was possible."[xxix] There is another component necessary in architecture that must resist the 'purist' tendency to reduce the art of building to its materialist component. That component was for Goethe poetry. "It is the poetical part, the fiction that makes a building into a work of art."[xxx] The fact that Goethe did not fully alter his

position on architecture in response to his trip to Italy is confirmed by his own 1823 reevaluation of the earlier essay of 1772 *On German Architecture*. In *On Gothic Architecture* he quoted at length from Francois Blondel's *Cours d'Architecture*. Blondel had claimed that any appreciation of a work of art was the result of regularity and symmetry, because the satisfaction perceived was related to the proportions established. It was a product of the relation of parts among themselves and to the whole. Goethe felt that he had come to 'the same conclusion' in the 1772 essay, but by intuition and not measurement and examination. In the end it was the emotional impact rendered by the poetics of the details and their composition that was of greatest significance, rather than functional usage of materials or clarity of structural principles that accounted for the art of architecture.

For Goethe, as architectural styles progress, they are shaped by the cultures that produce them and those developments in turn shaped the very nature of humanity. In the 1772 essay *On German Architecture* he identified architecture as a manifestation of the '*Fortgang'*, an idea adopted from Herder. Italy, and more so Sicily, had made that all the more self-evident. "For as the centuries evolve from the serious to the pleasurable, they form man as they do so, indeed they create him thus. At the present time our eyes and through them our whole inner being are drawn towards and decisively influenced by more slender architectural forms, so that these dumpy, skittle-shaped, densely serried masses of columns appear to us cumbersome, even monstrous."[xxxi] The realization that humanity and art changed through time introduced a form of relativism into Goethe's understanding of aesthetics that could only have reinforced his belief that rules and imitation were extraneous to the true development of art.

Within his collective writings Goethe was able to relate architecture to Idealist aesthetics, explaining how mature architecture was a *Poetic Unity* and how, as an expression of the '*Fortgang'* it manifested the historicity of *Geist*. This was echoed in the writings of other Idealist philosophers who also wrote on architecture, including Friedrich and August Schlegel.

> "Therefore the architect must observe a vast amount of relations; it is not sufficient that he puts parts together, observing fixed mechanical rules of their proportioning both in itself and in relation to other parts, but he must contemplate them in their living coherence: his work must be one, designed in accordance with one indivisible idea, in which every part determines all the rest, and is conversely determined by them."[xxxii]
>
> August Wilhelm von Schlegel
> *Kunstlehre*

August and Friedrich Schlegel on Architecture

Like Goethe, Friedrich Schlegel (1772-1829) saw Gothic architecture as a combination of a lofty idea, the concept of the infinite, and the material necessities of construction. In his *Principles of Gothic Architecture* of 1805, he remarked that while the cluster of pillars was characteristic of the Gothic style it was derived from "the necessity of combining the side aisles with the nave and choir, the pillars of the latter aiding in the support of the former."[xxxiii] Thus within Gothic there was an underlying structural logic and clarity that accounted for the grounding symmetry that was present in it. This was related to both the choice and selection of materials and a response to the local climate and culture. "Every nation, country and climate should have architecture suited to its

particular requirements. . . . The form of our buildings rests, like other social customs, and ordinary habiliments, on natural causes, the variations of temperature, and similar influences and the destructive consequences of disregarding must be apparent to anyone . . . who has ever studied their reciprocal influence with attention."[xxxiv] Schlegel here asserted the mechanical concerns for structure and materials were a product of location, and therefore a response to the *genus loci.* But such concerns were not dominant in the determination of architecture. They were filtered through the aesthetic sensibility of Gothic culture and "Its predilection for variety and multifarious combinations."[xxxv] The truly great works of Gothic architecture were an expression of a people, one that ". . . unites an extreme delicacy and inconceivable skill in mechanical execution with the grand, the boundless, and the infinite, concentrated in the idea of an entire Gothic fabric; a rare and truly beautiful combination of contrasting elements conceived by the power of human intellect, and aiming at faultless perfection in the minutest details, as well as the lofty grandeur and comprehensiveness of the general design."[xxxvi] It was the combination of both the material impulse, in the form of structural logic, and the formal impulse, in the form of a grand idea.

His brother August Wilhelm von Schlegel (1767-1845) was one of the most outspoken critics of imitation in the arts. Like Goethe, Schiller and Hegel, his views were based on the epistemological critique of what constitutes the real object of knowledge. The mechanical and geometrical understanding of nature were abstractions not its ultimate reality, its truth. For him, imitation understood mechanically, as Hutchenson defined it, was only a passive copying of a dead, empirical nature, one that could only led to paradox and futility. The real question then was why copy nature at all since such

copies can never reveal the same level of truth or beauty that the original did.[xxxvii] Consequently, art should ignore the accidental and concentrate on the meaningful, which should be amplified by art to make it evermore available.[xxxviii]

It was in his *Kunstlehre* of 1801, that Schlegel developed his ideas of art and architecture. He could not reject the impact of nature on architecture, all building was building in materiality and therefore must adhere to the laws of physics and the nature of the materials of which it was constructed. But he rejected the idea that architecture was an imitation of the mechanics of nature or the mathematical proportion of either plant or animal life.

For Schlegel, architecture was the product of the human mind that provided its idea; therefore, it was directed to some end or purpose. While the satisfaction of ends tied it to materiality and the physical world, it was not a simple response to practical need or utility. Schlegel maintained it was an art; therefore it must also answer to a call for beauty. To do so architecture must move beyond the material impulse. Once the concerns with structural solidity and material performance were met the architect was free to design the form and its ornamentation. In this, Schlegel perceived the architect as following the methods of nature, which did not conform to geometrical laws, but to its own inner will.[xxxix] When it does, it frees itself from the constraints of materiality and utilitarian need, becoming a form of Freedom in Schiller's sense of the term.

Schlegel in the end discussed architecture's relationship to nature in two ways: first in its material utilitarian sense and then in the sense of life and spirit. What made it art and a manifestation of the free was the latter. When it manifests spirit, architecture bridges the division between necessity and freedom. According to Schlegel; "Therefore the architect

must observe a vast amount of relations; it is not sufficient that he puts parts together, observing fixed mechanical rules of their proportioning both in itself and in relation to other parts, but he must contemplate them in their living coherence: his work must be one, designed in accordance with one indivisible idea, in which every part determines all the rest, and is conversely determined by them."[xl] In its ability to embody both the material- the utility, geometry and mechanics- as well as the formal- the unity, diversity and freedom- architecture proves to be a *Poetic Unity*.

If Goethe and the brothers Schlegel were able to demonstrate how architecture manifested *Poetic Unity*, the task of addressing its relationship to the broader economy of the dialectic of Art and Philosophy fell to Hegel.

> "Architecture . . . is the art whose medium is purely external, so that here the essential differences depend on whether this external object has its meaning within itself or whether, treated as a means, it subserves an end other than itself, or whether in this subservience it appears at the same time as independent."[xli]
>
> G.W.F. Hegel
> *Lectures on Fine Arts*

Hegel on Architecture

Volume I of Hegel's *The Lectures on Fine Arts* begins with a discussion of the notional essence of art. The work of art, a manifestation of *Geist*, is the objectivization of the *Ideal* in sensuous form, what Hegel refers to as a concrete universal.[xlii] It then proceeds to the particulars of arts manifestation. Just as *Geist* moves through its stages, as

outlined in the *Phenomenology,* art moves through three different relationships of meaning and shape,[xliii] identified as symbolic, classical and romantic.[xliv]

In volume II, Hegel turns to the individual arts; architecture, sculpture, painting, music and poetry. For my purpose here, I will only address his discourse on architecture. It is important to note that his remarks are no minor reference. While architecture is treated within the broader economy of his 'science of art', his treatment of the subject should be seen as his own theory of architecture. Furthermore, his centrality as an intellectual powerhouse of the German Enlightenment makes it highly unlikely that it did not have an impact on architectural theorists of the time.[xlv]

In the *Phenomenology,* Hegel began by asking the question; *'how does the mind have anything before it at all?'* Likewise, in *The Lectures on Fine Arts* he does not begin with a discourse on the principles of an individual art form, but with the question *'how does meaning emerge in art?'* In its earliest stage, art has not yet found an adequate material or form for the expression of spirit. It therefore "has to be content with merely seeking a true harmony between content and mode of presentation and with an external relationship between the two".[xlvi] The first task of art consists in giving shape to what is objective itself, the physical world of nature, the external environment of the spirit. It endows such "things" with meaning and form, which are not immanent in them in their objective existence. Art begins with spirit's search for its own material existence.

According to Hegel, this task first takes place in the medium of architecture. Its very nature- immersed in materiality- makes it the symbolic art form par excellence. It is important to note that this is not a denigration of architecture as so many commentators claim.[xlvii] Rather, it makes architecture a key component of Hegel's aesthetic theory. It is

where the essence of art first emerges and takes shape, the first step in spirit's movement to self-actualization in an external symbolic form. Architecture, therefore, is the necessary starting point of any true aesthetics. It is the originary moment in the dialectic of Art and Philosophy, a point too easily overlooked. Thus the origin of architecture becomes central, not only to Hegel's aesthetics, but his entire philosophical system as well.

In Enlightenment architectural theory, the primitive hut, as espoused by Laugier, was central to the discourse of origins.[xlviii] While acknowledging that this was a common urge born out of the desire to visualize the thing in its simplest mode, Hegel saw this as a dangerous thing for the philosopher. The image of the primitive hut had become so intelligible that the image appeared to have no need of further explanation. According to Hegel, this was to confuse this simple mode, summed up pictorially in an image, with the essence of the thing.

Referencing Goethe's 1772 *On German Architecture*[xlix], he challenged this theory directly. The theory of the primitive hut focused on the relationship of parts and the nature of the materials within the image. While the material in question affected the nature of the external form and its articulation, this was only the empirical particularities of the manifestation of architecture. In terms of the origins of architecture, the issue of original material, or form, was secondary. As Hegel pointed out, Vitruvius and Aloys Hirt (1759-1837) claimed origins in wood, others stone.[l] The primitive hut was only a means to an end that presupposed a purpose external to it, i.e. shelter. It established only a system of differences relative to the means of building.

The original interest of art was the reconciliation of the idea with a concrete particularity. “Art has no other mission but to bring before sensuous contemplation the truth as it is in the spirit, reconciled in its totality with objectivity and the sphere of sense.”[li] The primitive hut was insignificant in terms of content and subordinate to the real question at hand. It failed to address the key aspect of architecture; its role as an art form in the manifestation of meaning and signification. For this reason, philosophically it must appear as accidental.

Hegel’s discourse presupposes a distinction between building and architecture. Philosophically, building is insignificant to the discourse of origins. Aesthetically, what is of importance is how objective reality is transformed into symbolic form. The art of architecture begins not with the primitive hut as means, but with the first attempts to identify ends by fixing meaning in the physical environment. Thus for Hegel the *archai* of architecture lies not in type forms, but how ends are identified materially, how meaning emerges architecturally. Any theory of architecture must be one that postulates its limits as a symbolic form. It is here that he begins his theory of architecture.

According to Hegel; “The original interest [of art] depends on making visible to themselves and to others the original objective insights and universal essential thoughts.”[lii] It is the application of meaning to a material and in the case of architecture it is a construction for no other means than to communicate an idea. “Architecture . . . is the art whose medium is purely external, so that here the essential differences depend on whether this external object has its meaning within itself or whether, treated as a means, it subserves an end other than itself, or whether in this subservience it appears at the same time as independent.”[liii] Like Art, architecture too finds within itself three different

relationships of meaning to shape, or content to form, likewise identified as symbolic, classical and romantic. It is by examination of the three relationships that Hegel attempts to find its true essence as the origin of art and its' limits as a symbolic form.

In its formative symbolic stage architecture is vague and general; its meaning is mutable with no fixed sets of meaning associated with either mass configuration or spatial configuration. This is owing to the fact that there is no tradition to establish such fixed meanings. The essence of symbolic architecture is the search for a relationship of meaning to shape. For Hegel, this makes it a proto-architecture in that, as media, architecture has not fully realized its own potential. What is not yet established is a morphology of architectural signification. But it is an essential stage to pass through when the mode of signification is first being explored and refined.

As with the first stage of consciousness in the *Phenomenology*, the symbolic moves through three stages in its relationship of meaning to shape. In the first stage architecture is a kind of memorial that serves to mark a signification - a clearing in the woods, a marker or stele- that identifies a *genus loci* as a unifying point of assembly around an idea. ". . . the aim of architecture consists exclusively in visibly setting forth now this and now that aspect for contemplation, in symbolizing them, and by human labour making them pictorial. . . . the primary purpose . . . is only the erection of something which is a unifying point for a nation or nations, a place where they assemble."[liv] Unlike the theorists of rational tectonics who set the origins of architecture in the first building, Hegel establishes its' *archai*, in "marking" as the first means of signification, and "assembling" as the first programmatic function.

At this early stage, the form is incidental. As Hegel notes, the Tower of Bel serves as a unifying idea of a people, but it is not a space of assembly, because it serves none of the ends of worship, which take place outside it.

In its next stage of development, symbolic architecture adopts more concrete meanings creating individualization between objects. It does this by deferring to sculptural forms in its details. In the process architecture and sculpture become confused. Hegel cites as examples phallic columns, obelisks and sphinxes. One might also add to that list the Ashoka columns of early Indian cultures and Totem poles of the native peoples of North America. What distinguishes such elements from sculpture is their disposition. According to Hegel, in symbolic formations; ". . . architectural purpose is purely an accessory and only a matter of external arrangement." Because of their exteriority, these arrangements are essentially paratactic. Such parataxis itself is often symbolic referring to external symbolic systems such as numerology or the zodiac. Architecture has not yet found its own form. Rather it resorts to external symbolic forms to communicate its content; meaning is sensed through the appropriated form of another object.

What is learned from the symbolic origins of architecture is that its true origin lies in it's subservience to some purpose, and that purpose is not utilitarian (i.e. pragmatic function), but an idea (i.e. socialization, worship, politics, memorialization).

For Hegel, symbolic architecture is limitless, because a limit on how Spirit expresses itself, has not yet been imposed. This leads to the last phase of symbolic architecture, when it begins to exclude the systems of representations of sculpture and begins to become a structure for other meanings. Hegel cites works like the rock cut tombs of

Ellora in India as an example of this kind of transition. As he claims, architecture "does not merely excavate and form caves, but is manifest as an inorganic nature built by human hands where necessary for achieving a human aim."[lv] Here the configured disposition of forms and spaces define a place of assembly where the ritual or function takes place. Architecture's pragmatic function as assembly begins to manifest itself as motivator of form. Thus we begin to see the transition to architecture proper.

If in its origins it adopts imagery from nature or other sources as a means to communicate its' true purpose, it now recognizes itself as "thing" and "properties" and in so doing begins to recognize the necessities of its own construction. These necessities are the means of spatial definition; the roof and supports. Such elements serve a load bearing function, that is mechanical in relation, and belong to the province of gravity and physics. Architecture as enclosure can be shaped only in a manner external to it, that shaping is not organic, but abstract and mathematical.[lvi] Architecture has begun the transition to the classical.

Hegel's theory of architecture is founded on two premises. Its' purpose, the higher idea or content (the real social purpose in human terms, i.e. worship, assembly, politics etc.) and the particularization of its parts which serve the needs of its purpose. It is the 'purpose' of architecture, its proper meaning that rules and determines the classical work. "Therefore we may so conceive the transition that on the one hand the previously independent architecture must modify organic forms mathematically into regularity, and pass over to purposiveness, while conversely mere purposivness of form has to move towards the principle of the organic. Where these two extremes meet and mutually interpenetrate, really beautiful classical architecture is born."[lvii] Architecture has begun to

grasp it own truth as a concrete universal, one made up of real need and independent purpose. As an art form it manifests the *Ideal* in a form appropriate to the material needs of its own construction. For Hegel, the truth of architecture is "the unity of these two principles."[lviii]

Architecture now "devises the substance of its plan and figuration in light of spiritual purposes, while its' shape is the product of the human intellect and has no direct model."[lix] According to Hegel; "Classical beauty has for its inner being the free independent meaning, i.e. not a meaning *of* this or that but what means itself and therefore intimates itself."[lx] In classical architecture signification and meaning becomes self-referential. It is the display of differences of kind in the elements of construction, whose forms are determined by their use which in turn are shaped by artistic ends organically. Its differences "come into appearance *as* differences, on the other hand it is equally necessary for them to be united into a whole."[lxi] Architecture recognizes itself, its structure, as a unity in difference.

What distinguishes the classical is the awareness of the essential nature of architecture; "its productions are subservient to an end and a meaning not immanent in itself. It becomes an inorganic surrounding structure, a whole built and ordered according to the laws of gravity."[lxii] While the system of arrangement in classical architecture is still essentially paratactic, it is controlled owing to the rational ordering of its parataxis. Thus the paratactic systems of ordering in classical architecture are governed by the necessary relations of its structural members whose overall proportions are determined by the necessary mathematical calculations of weight transfer leading to an expression of

statical forces. This rational ordering comes from architecture's grasp of itself as structure.

Following Vitruvius and Hirt, Hegel sees architectural signification containing an expression of structural support and transfer. According to Hegel architecture is 1) formed masses carrying a load, 2) such masses are bound together to give support and stability and 3) for the purposes of enclosing and partitioning.[lxiii] Thus the primary elements of architecture are identified as the roof; whose purpose is to define space, beams; which transfer the loads of the roof to the columns in a controlled manner, columns; whose purpose is support, and the wall; whose purpose is to act as boundary between spaces. A wall may also serve as a support and if this is the case then the column should not be present in the form of a half column, engaged column or pilaster. The clear expression of their difference is important.[lxiv]

But one must not mistake this for the theory of Hirt or Laugier. Hegel is not reducing classical architecture to functionalism, or the Mechanisms of Structure and Disposition. His theory, like Goethe's, is closer to that of Lodoli. Their final form in beauty is the expression of their relationship to their supportive function determined by art. For Hegel it is the relationship between these two motivators of architectural form that is the guiding principle.

In the case of the column "architecture has nothing but the mechanical determinant of the load bearing and the spatial distance from the ground to the point where the load to be carried terminates the column. But the particular aspects implicit in this determinant belong to the column, and art must bring them out and give shape to them. Consequently the column's specific length, its two boundaries above and below, and its carrying power

should not appear to be only accidental and introduced into it by something else but must be displayed as also immanent in itself."[lxv] The transfer of support from beam to column results in the capital, and the transfer of support from column shaft to foundation results in the expression of the base. The function of the capitol and the base is imminent in their articulation from the shaft, but their particular form, Doric, Ionic or Corinthian is a matter of artistic expression.

It is this relation of core-form and its mathematical determinacy combined with the art-form as expression of that determinacy that for Hegel gives us entasis. Because the lower section of the column carries in addition to the original load the weight of the column it is thicker than the top, the gentle curvature of entasis is only the artistic interpretation of it. "in its ascent the shaft of the column tapers slightly, usually from a third of its height; it decreases in circumference and diameter because the lower parts have to carry the upper, and this mechanical relation between parts of the column must be made evident and perceptible."[lxvi]

Hegel's column bears all the hallmarks of Schiller's work of art. It contains the necessary material form- the actual material and its construct that lay at the core of it as object; its' core-form, and the aesthetic means of expression or style; its' art-form. Both are immanent and emerge simultaneously as a concrete manifestation of the idea of support.

In romantic art, *Geist* has come to recognize its true content as the universality of itself. As Hegel notes, *Geist* posits external reality "as an existence inadequate to itself."[lxvii] It now abandons the unity found in the classical, in an attempt to find reconciliation within itself. The result is a new totality composed of subjective being and

external appearance- whose sole purpose is to express its' turn toward the inner life. The purpose of romantic architecture now becomes the expression of the inner life of spirit.

In this quest, it turns away from exteriority and the exigencies of matter and the real. If the classical temple looks out to the world with its colonnade, the Gothic cathedral turns inward. Because its aim is to construct an enclosure for the spirit, its interior acquires a more essential importance. Likewise, if classical architecture is governed by the necessary relations of its' structural members, in the romantic function- as utility and means to an end- is surpassed as the building transcends any specific pragmatic end. "It has and displays a definite purpose; but in its grandeur and sublime peace it is lifted above anything purely utilitarian into an infinity in itself. This elevation above the finite, and this simple solidity, is its one characteristic aspect."[lxviii] Architecture is no longer tied to a symbolism that makes reference to its purpose via an external form, nor does it express in the form of mathematical calculation. "In this way architecture acquires elevation to the infinite as the significance which it is driven to express in architectonic forms, a significance independent of mere purposiveness."[lxix]

As David Kolb points out, romantic architecture, like the symbolic, is identified by its unrestrained subjective excess best expressed in its flourish of details.[lxx] In classical architecture particularization, diversity and variety gain their greatest scope. The resulting dissection of its' component parts is then unified via mathematical abstraction. In the romantic, unity is achieved via a confluence of its particularities. For Hegel this is the true characteristic of romantic architecture. In the Gothic cathedral the multiplicities of its elements succumb to a single vision of upward ascension. The romantic pillar rises upward bearing its load without effort defying gravity once again achieving unity of the

whole that goes beyond measure. Construction is dematerialized as the material and the particular are transformed into the immaterial and the infinite. The turn inward means that architecture turns from external form to spiritual enclosure, from self-referential expression to unity in multiplicity. Its' elements coalesce within the infinite as a single solidity, producing a higher unity in the universality of *Geist*. Like Goethe and Friedrich Schlegel before him, Hegel sees in the Gothic cathedral a rush of individual particulars, an excess of decoration, but like Goethe, he finds a unity of both the particularity of its individual parts and the life of the substantial whole that transcends them.

In his essay *Before Beyond Function*, David Kolb argues that symbolic, classical and romantic architecture are organized around relationships of identity and function.[lxxi] According to him, there are six distinct levels discernable in Hegel's theory. They are; (0) Absence of Purpose, (1) Pragmatic Purpose, (2) Self-showing, (3) Expressing the People's Basic Thoughts, (4) Doing What Architecture Does and (5) Doing What Art does. The six are fully distinct in the classical but mixed in the symbolic and romantic. I find Kolb's argument useful here in that his taxonomy allows me to effectively relate the nuances of Hegel's discourse on architecture first, to my previous argument about the sublation of the formal and material impulses, and second, to Hegel's understanding of the science of aesthetics as a form of *Erinnerung*.

I would assert that the first four levels establish the dialectic of material and formal impulses within a framework of identity and function. (0) 'Absence of Purpose', is the recognition that the work of architecture as object "*in-itself*" can be described in terms of its material and chemical properties in the manner of the physical sciences. But this misses the essence of architecture as an art form and therefore does not serve the

aesthetic inquiry that Hegel seeks. Therefore, the first level apropos to inquiry is (1) 'Pragmatic Showing' where, according to Kolb, the building is identified as a manifestation of both subjective and realized purposes. Here the building is understood as a tool to serve a pragmatic function, what is conventionally known as a building program. (2) 'Self-Showing' moves beyond the pragmatic level, expressing the embodiment of the building's performative essences. This is a self-referential function in which architecture speaks of its own ontology. I would assert that the first three (0, 1 and 2) of Kolb's levels of identity and function address the material impulse of architecture. While there is a sense of notional essence in both (1) "Pragmatic Purpose" and (2) 'Self-Showing', it is subservient to the performative nature of architectures materiality as opposed to any true reference to an external purpose. Thus the first three levels do not address in any substantive way the *Ideal* or formal impulse of architecture as a work of art.

The following level, (3) "Expressing the People's Basic Thoughts" expresses the thoughts of a people, the *sensus communis*. In Kolb's words it "embodies the relation of an articulated inner unity of meaning that is fully expressed in the perfected particularity of an outside. . . . So the architecture is also expressing a category or metaphysical vision of human life and cosmic form."[lxxii] It expresses the embodiment of its notional essences. Here the performative is subservient to the formal impulse identified as the primary purpose of architecture; manifesting the *Ideal*.

It is in my reading of the last two levels of function (4) "Doing What Architecture Does" and (5) "Doing What Art Does", that I believe Hegel's theory of architecture becomes a form of *Errinnerung*. They represent the philosophical inquiry that Hegel seeks in his aesthetics. It is here in historical analysis, itself a from of recollection, that

we come to understand the theoretical implications of the dialectic, including the movement between material and formal, and their sublation relative to Hegel's philosophy.

Kolb states of level (4) "Doing What Architecture Does" that "For 'us' the buildings particular mode of unity and its achievement on the second and third levels fit in as a stage in a narrative which is not the narrative of this or that people but the story of architecture as a whole relating inner meaning and function to outer form and expression." This knowledge is not accessible to historical peoples precisely because it requires a comparative analysis between the modes of expression. It is an understanding of the history of architecture that provides us with a theoretical understanding of how architecture as a symbolic form emerges and advances.

The characteristic of symbolic architecture is that meaning is not yet immanent in the work itself. There exists a separation of meaning and form. Its' primary purpose, its ends; "marking", is disjunct from its means; the erection of physical markers. In its later stages, the use of paratactic strategies allow for elaboration and/or additional meanings, but fails to overcome this disjunction. Because of this exteriority, signification comes not through the work, but through its reference to a programmatic function external to it; "assembly". Therefore, the relationship of meaning to form in symbolic architecture is identified by the paratactic relationship to "Pragmatic Purpose". In its earliest phase the form implies a "Pragmatic Purpose" which occurs outside the work. In its next phase it implies its meaning through its appropriation of an external form as it becomes confused with sculpture. And in its last phase, as a transitioning to architecture proper, it becomes an enclosure for "Pragmatic Purpose" while it simultaneously begins to transition from a

paratactic relation of difference to the self-referential one of “Self-Showing”. It is the exteriority of meaning in the symbolic that prevents the formal impulse of ‘Expressing the People’s Basic Thoughts’ from becoming fully distinct within the work, instead making it subservient to the “Pragmatic Purpose”. If my reading is correct, the symbolic only manifests level (1) “Pragmatic Purpose” as a distinct function. While the material and formal impulses are present the subservience of level (3) to level (2) means that architecture proper begins with the recognition of the material impulse and its performative essence.

The romantic, in its’ turn toward the inner life of spirit as an expression of Christian worship, concentrates its manifestation on (3) ‘Expressing the People’s Basic Thoughts’ as its primary function. Seeing a reflection on difference as superfluous to its purpose, it refuses to be defined by the performative functions of its elements of construction. Sacrificing the self-referential expression of its own ontology, it chooses to be defined solely by its notional function. In so doing, it moves beyond the system of relations of the *Understanding* and mathematical calculation. According to Hegel, in the romantic “nothing is left to the artistic representation but to refuse validity to the material and the massive in its purely material character and to interrupt it everywhere, break it up, and deprive it of its appearance of immediate coherence and independence.”[lxxiii] The romantic has turned away from both level (1) “Pragmatic Purpose” and level (2) “Self-Showing”, which are now subservient to level (3). The formal impulse has become dominant and now suppresses the material impulse.

For Hegel, art is the balance of self-articulated inner meaning and proportioned outer form and this is best manifested in the classical. Here the role of architecture is the

creation of spatial limits and enclosure of an external purpose. It acknowledges its' material nature by providing a rational order to its parataxis through self-reference to its' ontological making. The shape or form is controlled by the speculatively fixed content of "Self-Showing" which serves as its' core-form, but it is the expression of its grounding categories of 'Expressing the People's Basic Thoughts' that provides the opportunity of its' art-form. Means and ends, building and *Ideal*, achieve organic unity owing to the lack of excess found in both the symbolic and romantic. Levels (1), (2) and (3), are manifest in such a way as to balance the material and formal impulses. It manifests both its notional and performative ontologies.

Hegel's description of the development of architectures takes us through the oscillation between the material and formal impulse. It is in the classical that architecture reaches its form as a concrete universal by achieving balance between the two within a *Poetic Unity*. But Hegel is loath to declare the classical as the culmination or apex of architecture. To understand this reticence we have to move to Kolb's level (5) "Doing What Art Does". According to Kolb, this is where the examination of the narrative of architecture is understood within the larger narrative of art. It is here that the philosophical observer recognizes "the building as functioning within the movements and transitions involved in art as a mode of absolute spirit coming to itself."[lxxiv] It is the understanding of architecture as a manifestation of *Geist* and a step along the way toward 'Absolute Knowing'.

I would interpret this level as applying Hegel's definition of art to the recollection of architecture attempted in level (4). For Hegel, art is a manifestation of *Geist* and as such,

it should manifest its advance as identified in the *Phenomenology*. I would assert, throughout Hegel's discourse on architecture this was alluded to in the subtext.

In the *Phenomenology,* consciousness begins with the division of being, a doubling of what Hegel called the *Ansich,* the '*in-itself*', and then progresses through three levels in its development toward self-consciousness, (sense-certainty, perception and understanding). According to Hegel, symbolic architecture too moves through three stages. In this formative stage it has not yet established a morphology of architectural signification. There is a disjunction between meaning and shape. Architecture has yet to develop an understanding of the relationship of the '*this'* as 'object' and the '*this'* as 'object for the comprehension of meaning' and oscillates between the two. It first concentrates on the material object as "marker" and then on its symbolic content in the use of sculptural form. In this latter move it has begun to perceive its own symbolic function, grasping for the first time the necessity to relate the '*this'* as 'object' to the '*this'* as 'object for the contemplation of meaning'. It is here in the third stage of the symbolic that architecture begins to understand itself as 'thing' and 'properties'. This is a move toward abstract reason as the object becomes something to be understood. Architecture now searches for a means to establish their relationship and generate a true morphology of signification within itself.

As with the self of the *Phenomenology,* architecture has come to recognize the necessity of its own double. It has begun the transition toward self-consciousness by recognizing that the selections of forms appropriate to it are the forms that express the necessary relationships of its own performative ontology. Architecture now recognizes

the necessity of itself; as spatial enclosure and structural support. For Hegel, this marks the threshold of the transformation to architecture proper and the classical.

In the *Phenomenology* this move to self-consciousness is also the most dangerous stage, if the self forgets its own past it retreats into itself, becoming what he called the "Beautiful Soul". In this stage of consciousness the *Understanding* defines the object, not by our sensual relationship to it, but by its qualities or abstract concepts. In the *Lectures on Fine Arts* Hegel warns us of this occurring in classical architecture.

Its balance and organic unity make the classical the best manifestation of architecture as a concrete universal. But it runs the risk of forgetting its true purpose. Potentially losing sight of itself as an art form, it degenerates into the abstractions of its own mathematical calculations, becoming nothing more than the desire to show the transfer of the statical stresses of the building in their movement from the roof to the foundation in a clear and rational manner. This was the basis of Hegel and Goethe's critique of the architectural theories of their time. While they both referenced Laugier and the primitive hut, the focus of their critique was the tendency to frame the discourse of architecture within the framework of the Mechanisms of Structure and Disposition, found within the Greco-gothic Ideal, at the expense of its true purpose in the higher ideals of human society and the development of *Geist*. For Hegel, the classical in architecture is an advance over the symbolic, but only in so far as it does not forget both its material, or performative, essence and its *ousia* in marking and assembling, its formal or notional essence. It must remember to sublate the material and formal impulses and understand itself as a *Poetic Unity*.

In the *Phenomenology*, Hegel warned that the move toward abstraction engenders a sense of alienation, creating the opposition between appearance and the supersensible world. This in turn brings on the *verkehrte Welt* as self-consciousness questions the certainty of the *Understanding*.

If the goal of art is to bring forward spirit in outward sensuous form, the romantic does it best. But in its inward movement it forsakes its own materiality. "Nothing is left to the artistic representation but to refuse validity to the material and the massive in its purely material character and to interrupt it everywhere, break it up and deprive it of its appearance of immediate coherence and independence."[lxxv] But it does so at the expense of the very nature of architecture as media. It has forgotten the nature of its' own truth, its' double, that the selection of forms appropriate to it are the forms that express the necessary relationships of its' own performative ontology. For Hegel, this is the problem with "Romantic" art in general; its' inward subjectivity loses connection to the concrete and its access to truth as a concrete universal. It is the end of architecture.

For Hegel, architecture lies in a spectrum of the arts at its beginning precisely because of its inherent materiality. At the other end of that spectrum are music and poetry which themselves have no materiality. Their goal is to become more concrete. Architecture only achieves its true form as a concrete universal if it transcends its material essence and moves toward the notional. Hegel's analysis of the movement of architecture provides us with an image of the oscillation between material and formal impulses. But it must be mindful of the necessity of sublation. If it forgets this, it becomes the "Beautiful Soul" and loses itself in mathematical abstraction, or it creates the *verkehrte Welt* and forgets its own essence.

We exist in an age of the *Vernuftstaat* where, according to Hegel, art is no longer possible; it is dead. But what is so often overlooked is Hegel's insistence that knowledge and spirit take the form of a circle, that art in the end becomes what it was in the beginning. Hope comes in the form of a new submergence into the concrete. As we are told in the *Phenomenology*, such a movement is effected by *Errinnerung*, recollection. Architecture must recollect its own path; its own history as a symbolic form. Hegel's discourse on architecture, by effecting levels (4) and (5), attempts a philosophical inquiry that moves beyond self-consciousness toward "Absolute Knowing". But more importantly, it implies a framework for architectural theory, one that examines how the *Ideal* is manifest in a form appropriate to material needs. It is the recollection of the necessity of sublation by recognizing that the truth of architecture lies in the unity of real need and independent purpose: its performative and notional ontologies. This requires a philosophical examination of the history of style.

Summation

As Friedrich Schlegel noted, it was not enough for architects to put together the component parts of architecture; they had to contemplate them as an indivisible idea. Like Goethe's morphology of Nature and Man, the Idealist philosophers sought the underlying principles that explained the unity in difference that was the history of architectural style. Their epistemological position engaged architecture along two philosophical avenues of questioning; '*How does meaning emerge in the media of architecture?*' and '*How is architecture intelligible?*'

The answer to the first question was addressed at the level of art. As a manifestation of *Geist,* the search for meaning in Architecture began with the search for its own coming into being. As August Schlegel noted, all building was material and had to address the laws of physics and nature, but it was not an imitation of nature. Architecture was a product of the human mind therefore; it was directed towards some end or purpose. It was in the marking of a *genus loci,* a place of assembly and identity (assembly, nation etc.), that the origin of architectural meaning was to be found. Thus the manifestation of an independent purpose in a spatial configuration, a covering and its supporting system proved to be a principle of architecture one that served as the unity in difference exhibited in the diversity of history.

The answer to the second question was addressed at the level of architecture and its own materiality. Architecture was based in the nature of the materials. It was in its' parataxis, the structural logic of the covering and supporting system that architecture became comprehensible as 'thing and properties' it was self referential.

It was in an examination of its ontology that architecture proved to be a union of the material and formal impulses; a true concrete universal. In their examinations the Idealist Philosophers provided a theoretical framework; one that examined both the noetic and performative ontology of architecture as a *Poetic Unity.*

ENDNOTES

[i] Goethe, *Goethe The collected Works Vol. 6 Italian Journey*, ed. Saine & Sammons, trans. Heitner, Princeton University Press, Princeton NJ, 1989, pp 37.
[ii] Goethe, *Goethe The collected Works Vol. 6 Italian Journey*, ed. Saine & Sammons, trans. Heitner, Princeton University Press, Princeton NJ, 1989, pp 67-68.
[iii] Kruft has argued this point claiming the collected essays amount to a theoretical statement on architecture that bore some weight in the German speaking world at the time. Kruft, 'Goethe und die Architektur', *Pantheon XL*, 1982, pp. 282- 89.
[iv] Herder in fact printed the Goethe's *von Deutscher Baukunst* in his anthology *Von Deutscher Art und Kunst* in 1773.
[v] Gothic architecture, in England there was a growing interest in the Gothic because of its association with religiosity, the sublime and chivalry. While a true academic understanding and appreciation of the style would not arise until the mid 19th century, the appeal of its sublime character and picturesque composition began as early as 1764. In that year Horace Walpole published his novel *The Castle of Otranto: a Gothic Story*, set in a haunted castle full of sublime terror and horror. The book triggered a whole genre of 'Gothic' novels in England and on the continent. Walpole was one of the first to write about the Gothic as a serious style of architecture, His own home Strawberry hill in Middlesex incorporated the first Neo-Gothic detailing, but his approach was had its epistemological grounding in the English theories of Associationalism. Gothic was not used because of an understanding of the period, its goal's ideology and compositional strategies, but because of its growing association with the sublime, religiosity and chivalry. The actual details, designed by Richard Bentley, could hardly be described as 'authentic'. In the early 19th century scholars began a more archeological review of the period and by mid century the Neo-Gothic could be said to be a true revival style, particularly the work of A.W.N. Pugin
[vi] Goethe had been critical of the impact of the Enlightenment's abstract reason on aesthetics, a point he shared with the rest of the Counter Enlightenment writers. On this subject his thought was influenced by the writings of the likes of Johan Gottfried Herder, Johann Georg Hamann , Anthony Earl of Shaftsbbury and Joseph Addison. The association between Goethe and Herder and their thoughts on the imagination and the mind is a rather significant point in this discourse. Many scholars have pointed out the similarities of thought between Herder and Vico, even going so far as to insist on a direct influence. The similarity in thought between Herder and Goethe and the role that Vico might have played in influencing their thought is strengthened by the fact that Goethe is said to have had a copy of the *New Science* in his library. It should be noted that Vico also influenced Anthony, Lord Shaftsbury. The point here is not to draw the conclusion that at the root of all of their writings and of Goethe's in particular, is an allegiance to Vichian thought, each of these writers was a great and original thinker in his own right. Rather the point is to elaborate on the possibility of a constellation of thought which emerged in Italy, Germany and England that questioned the Enlightenment's understanding of the imagination and cognition and the effect it had on definitions of art and architecture.

[vii] Goethe, 'On German Architecture', 1772, repro. *Goethe the Collected Works Essays on Art and Literature*, edit. Gearey, Princeton University Press, 1986, pg. 5.
[viii] Ibid., pg. 5.
[ix] Three days after arriving in Vicenza and visiting the Teatro Olympico, the Basilica and the architects home, he sought further guidance from Ottavio Bertotti Scamozzi (1719- 1790). Goethe recalls his visit to Scamozzi on September 21 of 1786 and credits him for his guidance in his studies of Palladio. Scamozzi, ten years earlier had produced *Le Fabbriche e I desegni di Andrea Palladio*, a four volume collections of his drawings of the works of Palladio. He was at the time considered the foremost expert on the Master's work. Scamozzi had set out to guide his own age back to what he called the "veri principi della bellezza Architettonica'. There is no doubt that Scamozzi effected Goethe with a great appreciation of Palladio's version of classicism. See Goethe *The Collected Works vol. 6 Italian Journey*, edit Saine and Sammons, trans Heitner, Princeton University Press, Princeton NJ, 1989, pp. 49, for Goethe's reference to Scamozzi.
[x] Schiller made the commentary in an essay entitled 'Naïve and Sentimental Poetry', in which he demonstrated that Goethe's play *Impegenia* was indeed Romantic and not Classical. For his part Goethe in *Conversations with Eckerman*, acknowledged that Schiller was correct claiming that he had proven the point and convinced him thoroughly.

[xi] *Autonomieästhetik* asserts that work of art is a self- contained work for aesthetic appreciation, essentially a subjective expression of the artist. This interpretation has its origins in Fritz Burger but was popularized by Herman Meyer in his "Kennst du das Haus? Eine Studie zu Goehtes Palladio-Erebnis" *Euphorion 47* (1953) pp 288-89. It was continued by Herbert von Einem "Palladio und Goethe" in *Goethe-Studien*, Fink, Munich, 1972, pg 147. For an outline of this historical development see Lillyman, "The Question of the Autonomy of Art: The Origins of Goethe's Classicism and French Eighteenth Century Neo-Classical Architectural Theory", *The Goethe Yearbook*, vol. 7, 1994, pp. 99.

[xii] The symposium raised several doubts about this interpretation of classicism in Goethe's work a point noted by Whittkowski in his introduction. Wolfgang Whittkowski, ed. proceedings, *Revolution und Automonie: Deutsche Autonomieästhetik in Zeuitalter der Franzosischen Revolution* Tubingen, Max Niemeyer, 1990. The symposium raised several doubts about this interpretation of classicism in Goethe's work a point noted by Whittkowski in his introduction.

[xiii] William J. Lillyman, "The Question of the Autonomy of Art: The Origins of Goethe's Classicism and French Eighteenth Century Neo-Classical Architectural Theory", *The Goethe Yearbook*, vol. 7, 1994, pp. 97-112.

[xiv] Goethe, *Goethe The collected Works Vol. 6 Italian Journey*, ed. Saine & Sammons, trans. Heitner, Princeton University Press, Princeton NJ, 1989, pg 51.

[xv] Ibid. pg. 107.

[xvi] This is most notable in his writings on three Roman works; the Amphitheater in Verona, the Temple of Minerva in Assisi and the Aquaduct of Spoleto, each of which he saw as continuing to satisfy human needs even if their original function was altered.

[xvii] Goethe, *Goethe The collected Works Vol. 6 Italian Journey*, ed. Saine & Sammons, trans. Heitner, Princeton University Press, Princeton NJ, 1989, pp 67-68.

[xviii] Ibid. pg 37. "It is the business of the architect to satisfy this universal need. He prepares a crater like this by means of art, making it as simile as possible, so that the populace itself will be the decoration. Once having seen itself, it could only be amazed; for whereas its was otherwise accustomed only to see itself running about in confusion, to find itself as a milling crowd without order or particular discipline, now the many-headed, many minded, fickle, errant beast sees itself united into a noble body, induced into ones, bound and consolidated into a mass, as if it were one form, enlivened to every eye, and each head serves as a measure of the vastness of the whole."

[xix] Ibid. pg.103.

[xx] "Perhaps there has never been more extravagant architecture. . . . Inside it can be called habitable, but not comfortable. The salon is very beautifully proportioned, the other rooms also; but they would hardly meet the needs of an aristocratic family for a summer sojourn." Goethe, *Goethe The collected Works Vol. 6 Italian Journey*, ed. Saine & Sammons, trans. Heitner, Princeton University Press, Princeton NJ, 1989, pg 50.

[xxi] "The Olympian Theater is a theater of the ancients on a small scale and inexpressibly beautiful, but compared to ours it seems to me like a rich, aristocratic, handsome child compared to a cleaver man of the world, who is neither so aristocratic, rich, nor handsome, knows better what he can achieve with means at his disposal." Goethe, *Goethe The collected Works Vol. 6 Italian Journey*, ed. Saine & Sammons, trans. Heitner, Princeton University Press, Princeton NJ, 1989, pg 48.

[xxii] In *The Italian Journey* Goethe comments on Sanmicheli's Porta Palio (Verona, September, 16) "The artist obviously intended this gate to effect a relocation of the Corso, for it does not fit at all with the present street. The left side has nothing but hovels, and the line at right angles to the middle of the gate leads to a convent, which would certainly have had to be torn down. No doubt this was perceived, also the rich and aristocratic probably did not wish to settle in this remote quarter." Goethe, *Goethe The collected Works Vol. 6 Italian Journey*, ed. Saine & Sammons, trans. Heitner, Princeton University Press, Princeton NJ, 1989, pg 38.

[xxiii] Ibid. pg 48.

[xxiv] Goethe had assumed that Casa Congolo was designed by Palladio, in fact there has been much speculation as to where he was the architect. Ackerman now considers it to be by his hand.

[xxv] It is important to note that Goethe purchased a copy of *Il Quatro Libri* and also visited some of the villas. Thus we should acknowledge that he was aware that the images in the text are ideal versions of the actual constructed villas, a clear demonstration of the necessary tension between the material and formal impulses that all artists confront. Goethe's quote above in which he notes that magnificent buildings

erected are often disfigured by human needs is in reference to Palladio's work that he found less than satisfying.

[xxvi] Ibid. pg 82.

[xxvii] Goethe, *Italienische Reise*, 19 September 1786. 'Aus Wahrheit und Luge ein Drittes bildet, dessen erborgtes Dasein uns bezaubert'. See also *Goethe The Collected Works vol. 6 Italian Journey*, edit Saine and Sammons, trans Heitner, Princeton University Press, Princeton NJ, 1989, pg. 48.

[xxviii] In the 1772 *"On German Architecture"* Goethe had emphasized the necessity of imaginative genius in architecture, a position he held with Herder. This is perhaps what drew him to Piranesi, Goethe owned a copy of the first volume of his *Antichita Romane*, and its imaginative images were clearly in his head when he visited the eternal city.[xxviii] But his visits to the ancient works of the Romans and Greeks brought Goethe face to face it.

[xxix] Goethe, 'Baukunst', 1795, in *Goethe*, vol. 19, *Schriften zur bilden Kunst*, Berlinger Ausgabe, 1973, pg. 111.

[xxx] Ibid., pg. 119.

[xxxi] Goethe, *Italienische Reise*, 23 March 1787. "Denn wie die Jarheunderte sich aus dem Ernten in das Gefallige bilden, so bilden sie den Menshen mit, ja sie erzeugen ihn so. Nun sind unsere Augen und durch sie unser ganzes inneres Wesen anschlankere Baukunst hinangetrieben und entchieden bestimmt, so dassuns diese stumpfen, kegelformigen, enggedrangten Saulenmassen lastig, ja furchtbar erchienen."

[xxxii] Schlegel, A.W., *Kunstlehre*, (1798-1813) Paderborn 1989, pp. 310-11 and 318-19.

[xxxiii] Friedrich Schlegel, *Principles of Gothic Architecture*, (1805) trans. Millington, reprinted in E.J. Millington, *The aesthetic and Miscellaneous Works of Friedrich Schlegel*, Bohn's Standard Library, Kessinger Publishing, 2006, pp. 178.

[xxxiv] Ibid, pp. 169.

[xxxv] Ibid pp. 178.

[xxxvi] Ibid., pp. 156.

[xxxvii] This is Plato's argument in the *Republic*, art must be more than just a copy or else it has no real value. Walter Benjamin would make a similar argument in his essay *Art in the Age of Mechanical Reproduction.*

[xxxviii] Aristotle had pointed in this direction as well in insisting that art was didactic.

[xxxix] Schlegel used the term "purposive unity" he was here referring to the idea of nature as defined by the Counter Enlightenment as the will to creation first identified by Goethe and others. The idea of purposive unity is the manifestation of the will in material form in the diversity of nature's productions. It is a manifestation of the unity in difference that is present in all of nature and a product of what I have been referring to as Poetic Unity.

[xl] Schlegel, A.W., *Kunstlehre*, (1798-1813) Paderborn 1989, pp. 310-11 and 318-19.

[xli] Ibid. pg 634.

[xlii] Hegel: *Hegel's Aesthetics Lectures on Fine Arts, Vol. I*, trans. T.M. Knox, Clarendom Press, Oxford 1975. pg. 630.

[xliii] Hegel uses the terms meaning and shape but they are equivalent to Schiller's formal and material impulses. Today we might refer to this as the relationship between form and content.

[xliv] Hegel: *Hegel's Aesthetics Lectures on Fine Arts, Vol. I & II*, trans. T.M. Knox, Clarendom Press, Oxford 1975. Hegel first introduces these stages of development in the 'Introduction' (pp 75-81) of volume I of the Aesthetics which deals with Spirit. Hegel is clear that this is not art but Spirit's relationship to art. How art is an expression of the stages of consciousness and Spirit is explained in volume II specific to individual media; Architecture Sculpture, Painting, Music and Poetry.

[xlv] Hegel's *Lectures on Fine Arts* was published posthumously in 1830 and so the influence of the text must be seen as occurring after that. But it must also be recognized that the *Lectures* as they exist today are a compilation from Hegel's notes and the notes of his many students taken over the years of his lectures. Thus the real influence, as with the case of the *Tracks* of Christopher Wren, comes earlier than the publication through the lectures, conversations and the distribution of notes and manuscripts.

[xlvi] Hegel, *Hegel's Aesthetics Lectures on Fine Art*, vol. II, trans. T.M. Knox, Oxford University Press, Oxford, 1975, pg. 624.

[xlvii] This reading is based first on the teleological advance of *Geist* from consciousness through Absolute Knowing in the *Phenomenology.* The lowest form of *Geist*, consciousness, is associated with the symbolic, the highest, Absolute Knowing, with the romantic. And second, that in volume II of the *Lectures on Fine*

Arts the particulars of art; architecture, sculpture, painting, music and poetry, move from concrete to incorporeal in the same manner. Thus, architecture the most concrete art form is the symbolic art form par excellence and poetry the least concrete is the romantic form par excellence. The equation here is that the symbolic and architecture is therefore associated with *Geist* in the stage of consciousness while poetry is associated with *Geist* in the stage of Absolute Knowing. Since Absolute Knowing is for Hegel a higher stage in *Geist's* teleology, poetry is higher than architecture. But this position negates the reality of Hegel's own discourse. Hegel never states that one art form is higher and hence better than another. Instead he argues that each art form moves through the same stages as *Geist*, thus all forms of *Geist* are manifest in each art form in the movement from symbolic to romantic, from consciousness to Absolute Knowing. What Hegel asserts is that the essence of each art form establishes the fundamental challenge it has as a form for Geist. This is derived from his idea of art as a concrete universal and the necessity of a sublation of material and formal impulses. The challenge of the sublation is unique to each art. Architecture's materiality necessitates its movement toward the incorporeal while poetry's incorporeality necessitates its move toward the concrete. The result is that different forms become the most appropriate for Geist's expression in its varoius stages. In the case of Absolute Knowing poetry is the most appropriate form because it lends itself more easily. Hegel's concern is that in some stages the art form looses connection with its own essence and hence the balance of material and formal impulses is disturbed.

[xlviii] While the conception of the primitive hut could be traced back to Vitruvius and was frequently made reference to in Renaissance texts, notably Filarete's *Trattato di architettura* of 1465, the principles of architecture were never seen as wholly derivative of it. It was the Abbe Marc Antoine Laugier whose *Essay sur l' architecture* of 1753 first proposed a theory of architecture derived from the primitive hut given as an *a priori* image to the mind. According to him it was this clear and simple image that embodied the essence, or *ousia*, of architecture and from which all of its essential components and truths should be derived. The most significant alteration to this theory of origins at the time was that of Quatremere de Quincy who argued in his *De l'architecture egyptienne consideree dans son origine* of 1803 that there could be no one true origin. He proposed instead that there were three basic building archetypes the hut, the tent and the cave each of which leading to an alternative building system. All true architecture was a reflection of the primitive hut, or cave or tent, and all value judgments regarding the validity of a given work were therefore determined in relationship to these models.

[xlix] Hegel references Goethe who challenged Laugier's idea that the hut was the origin of architecture in his 1772 essay *On German Architecture.* Hegel actually quotes Goethe where he attacks Laugier's argument that the primitive hut was the origin of architecture.

[l] Aloys Hirt was a German art historian and archeologist of Greek and Roman antiquities. Hirt also served as Goethe's tour guide on his Italian journey. In 1809 he published "Die Baukunst nach den Grundsätzen der Alten" where he strongly promoted neo-classicism. In 1810 he became the first professor of art history and theory at the University of Berlin. He later founded the Bauakademie in Berlin where the Architect Karl Friedrick Schinkel was one of his students.

[li] Hegel: *Hegel's Aesthetics Lectures on Fine Arts, Vol. II*, trans. T.M. Knox, Clarendom Press, Oxford 1975, pg. 623.

[lii] Ibid. pg. 635.

[liii] Ibid. pg 634.

[liv] Ibid. pg 637.

[lv] Hegel: *Hegel's Aesthetics Lectures on Fine Arts, Vol. II*, trans. T.M. Knox, Clarendom Press, Oxford 1975, pg.653.

[lvi] Ibid. pg. 654.

[lvii] Ibid. pg. 656

[lviii] Ibid. pg. 659.

[lix] Ibid. pg. 662.

[lx] Hegel: *Hegel's Aesthetics Lectures on Fine Arts, Vol. I*, trans. T.M. Knox, Clarendom Press, Oxford 1975, pg. 427.

[lxi] Ibid., pg 674.

[lxii] Ibid., pg. 660.

[lxiii] In many ways he prefigures later architectural theorists who articulate the distinction between the roof and its supports as a primary motivator for architecture.

[lxiv] Hegel's understanding of the proper use of the column comes from Goethe's *On German Architecture* of 1773 were he expressed the desire for a lack of confusion and the clarity of the column as support. Likewise his identification of the chief function of the wall as enclosure also comes from Goethe.
[lxv] Ibid. pg. 668
[lxvi] Ibid. pg 669. As Knox has pointed out, it is unusual that Hegel would not have recognized entasis as an optical correction but instead chooses to see it as a result of the desire to express the compressive stress of the columns loads. See footnote pg 677. This may be due to his personal lack of familiarity with the advances of architectural archeology at the time.
[lxvii] Hegel: *Hegel's Aesthetics Lectures on Fine Arts, Vol. I,* trans. T.M. Knox, Clarendom Press, Oxford 1975, pg. 518.
[lxviii] Hegel: *Hegel's Aesthetics Lectures on Fine Arts, Vol. II*, trans. T.M. Knox, Clarendom Press, Oxford 1975, . pg. 685.
[lxix] Ibid. pg. 686.
[lxx] David Kolb, *Before Beyond Function*, Bates College, TTP://Abacus.bates.edu/~dkolb/bbfunction.html. pg. 9.
[lxxi] Ibid. pg. 7
[lxxii] Ibid. pg. 7.
[lxxiii] Hegel: *Hegel's Aesthetics Lectures on Fine Arts, Vol. II*, trans. T.M. Knox, Clarendom Press, Oxford 1975, pg. 696.
[lxxiv] David Kolb, *Before Beyond Function*, Bates College, TTP://Abacus.bates.edu/~dkolb/bbfunction.html.. pg. 7.
[lxxv] Hegel: *Hegel's Aesthetics Lectures on Fine Arts, Vol. II*, trans. T.M. Knox, Clarendom Press, Oxford 1975, pg. 696.

Chapter 16: Poetic Tectonics: Architecture and Idealism

The influence of French thought on aesthetics and architecture in Germany was certainly evident by the mid 1700's and could be found in the works of theorists like Johann Georg Sulzer (1720- 79), Christian Traugott Weinlig (1739- 99) and Karl Phillip Moritz (1756- 93). Sulzer had called for a true taste of Antiquity, one that required a 'noble simplicity'. He rejected the architecture of the middle ages as 'barbaric'. He also advocated an organic- functionalist approach toward building. He claimed: "Every organized body is a building; each of its inner parts is completely appropriate to the use for which it is intended; but all the parts are unified in the closest and most convenient relationship the whole has in its own way the best outward form . . ."[i] Weinlig combined the functionalist doctrines of both Lodoli, as understood via Algarotti, and Laugier, taking over Laugier's evolutionary theory of the orders and the primacy of material concerns. Moritz was perhaps the most influenced by the French and functionalism in his concerns. "The most beautiful capitol does not bear or support any better than the plain shaft; the most sumptuous cornice covers and warms no better that the flat wall."[ii] Thus for him the expressivity of the ornament should reflect the statical pressure and construction of the detail.

Eighteenth century German theory, while borrowing from the epistemology of science, conceived of architecture as a reflection of society's social structure and moral fortitude. As noted earlier, Art historians often credit this to the early prominence of Winkelmann. But Sulzer, who measured architecture according to its socially educative effect, expressed a similar concern. It was the task of the arts in general to cultivate

morals and architecture was not excluded from that concern. According to him architecture should assist in producing universal happiness. “From frequently repeated enjoyment of pleasure in the Beautiful and the Good arises the desire for these, and from the adverse impression made on us by the Ugly and the Bad results an antipathy towards anything that is against the moral order.”[iii] Sulzer saw architecture as reflective of ‘a national state of mind’ (‘*Gemuthszustand einer Nation’*) one that should do honor to the nation. The same attitude was evident in the 1785, *Untersuchungen über den Charakter der Gebaude,* in which its anonymous author insisted that architecture was not an imitation of nature, but the depiction of ‘the condition of men’.[iv] It was the social status and psychological condition of the occupant that was expressed in the character of the building more so than the function. This difference helped to maintain a concept of architecture as a humanistic discourse, a reflection of the human mind and its progress, as opposed to an analogue of a mechanistic nature.

It was perhaps this alternative concern with architecture as a reflection of society, coupled with Winkelmann’s notion of its’ evolutionary development, that made many German theorists more receptive to the work of Hamann and Herder and Idealist aesthetics as they began to reformulate architectural theory in a manner less dependent upon Function and Enlightenment Rationalism.

> "When science and art unite at a common central point, when they work in concert, and when they place equal reliance on the lessons of experience, then they will progress more swiftly toward their goal; and each stands to gain by mutual extension of their powers to encompass even the remotest social purposes."
>
> Friedrich Gilly
> *"Some thoughts on the Necessity of Endeavoring to Unify the Various Departments of Architecture in Both Theory and Practice"* [v]

Friedrich Gilly and the Architecture of the Systemprogramm

In the Late 1700's an unlikely prophet of German architecture would emerge. Friedrich Gilly (1772- 1800), the son of David Gilly (1748- 1808) a well- known German architect and professor, proved to be a young protégé. [vi] He first came to major recognition with his 1796 competition entry for the Friedrichsdenkmal, a monument dedicated to the memory of Fredrick the Great of Prussia.[vii] In a letter to the philologist and archaeologist Carl August Boettiger (1760- 1835), the writer Friedrich Gentz said of the younger Gilly ". . . this young man possesses one of the foremost artistic geniuses of our country and our age. I am far from indicating the true extent of his abilities – though this in itself says much for him - when I tell you that in his twenty- fourth year he was hailed by all those best qualified to judge as the first architect of the Prussian State."[viii] His praise was not singular. After an exhibition of Friedrichsdenkmal drawings at the Berlin Academy Exhibition in 1797 both the playwright Ludwig Tieck[ix] (1773- 1853) and the poet Wilhelm Wackenroder[x] (1773-1798) hailed him as a national genius.[xi] The younger Gilly died young and produced little in the way of built work or written texts,

but the ideas embodied in what he did accomplish managed to express the will of his age and inspire a generation of architects.

His earliest drawings and writings identify him as a significant new voice in German architectural theory. In particular, his essay entitled *On the Views of Marienburg, Castle of the Teutonic Order in West Prussia, Drawn in the Year 1794 by Mr. Gilly, Supervisor of the Royal Building Administration*. Written as an accompaniment to the 1795 exhibition of his sketches from Marienburg, at the Akademie der bildenden Kunste, it should be paired with Goethe's earlier 1772 *On German Architecture*, as signaling a shift in German theory. Like him, Gilly chose to view Gothic architecture as a poetic expression of the will of a people, an expression of the '*Fortgang'*.

Fig. 23 Image View of the Exterior of the Chapter House of Marienburg 1794- 76

Earlier writings on Gothic architecture had chosen to view the period as either degenerate in its excess of ornament and lack of pure form, or as an example of rational structure whose expression was unfortunately obscured by decorative motifs. The latter position underlay de Cordemoy's Greco-gothic Ideal and in fact persisted right up to the time of Viollet- le- duc (1814-1879). In his *Observations* of 1765, Laugier proved to be more sympathetic with the Gothic than the position espoused in his earlier *Essai*, but he still held to an appreciation of the Gothic that was derived from the rational *clarité* of its structure.

What fascinated Gilly about the Gothic mason's art was the variety of expressiveness found in the manipulation of its stones. Where others saw Gothic vaulting as a rational exposition of statical forces, Gilly saw shooting stars that transformed the massive vaulting into poetic interpretations of the night sky. Aside from his obvious appreciation of its picturesque qualities, Gilly saw Gothic as the poetic interpretation of medieval man's *Lebensvelt*. Focusing more on its oneiric qualities, he commented on how the castle rose above the ground as far as it burrowed deep within the earth. The sketches themselves reveal an almost Piranesian fascination with the expressive potentiality of stereotomic form and light. His sketch of the refectory at Marienburg depicts a lone man leaning against one of the columns staring up at the rib vaults in silent contemplation. In it architecture bears historic witness to man's past achievements and serves as inspiration for today's poet.[xii] Architecture's expressive potentiality is one designed to stimulate man's contemplation of the *Ideal*, in the Hegelian sense. Gilly saw the Gothic not as a degeneration of the Classical ideal, but like Goethe and later Hegel, its transformation into a higher form of art.

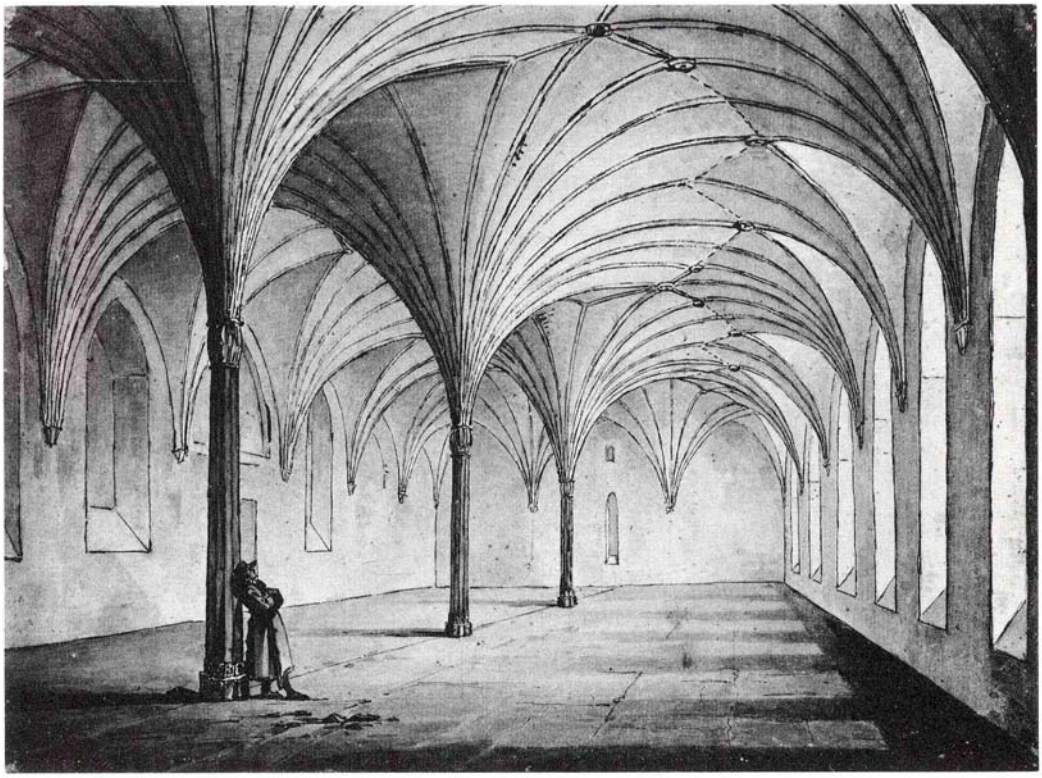

Fig.24 Image Refectory of Marienburg Friedrich Gilly 1974.

Gilly's sketches concentrated on the expressivity of the forms, reinterpreting certain aspects of the Gothic in classical terms. This allowed him to understand certain heavy piers as 'masculine' Doric forms and still others as slender 'feminine' Ionic ones. It was this ability to transcend stylistic purity and understand the Classical alongside the Gothic as two interpretations of the same expressive potentiality that lead him to his own explorations of built form.

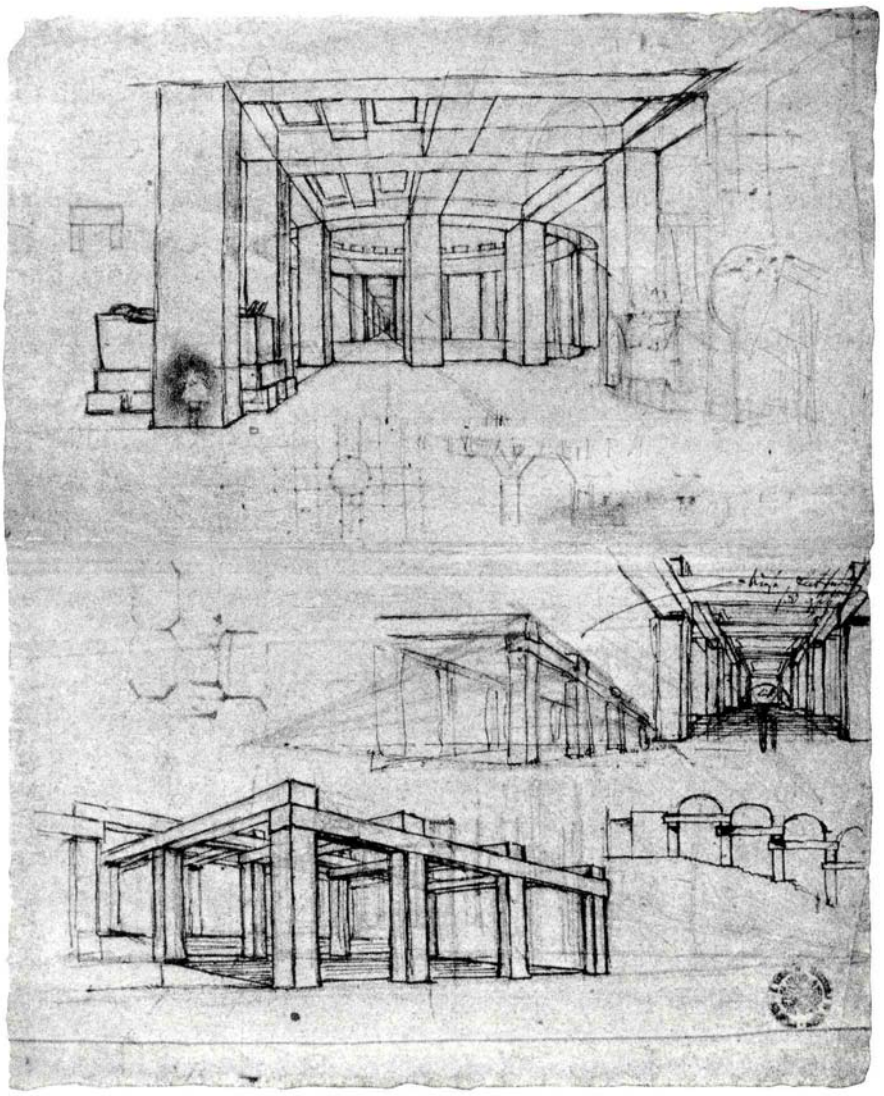

Fig. 25 Image Loggia Design date unknown

In a series of studies for a loggia from his sketchbook, Gilly provided one of the 18th century's most radical visions of architecture. He stripped the post and lintel forms of their historical garb and associations. The images present massive piers and beams which far exceed their necessary dimensions. They are determined not by utility, but by the desire to convey strength, permanence and solidity. By reducing them to a simple relationship between idea and form, they revealed a sense of the monumental. Gilly

exposed the raw expressive power of construction and how the manipulation of form, proportion and light affects its poetic reading. Gilly's images present us with pure poetic form.

Early 20th century historians saw in his sketches evidence of a rationalist approach toward design and functionalism and interpreted them as an origin of modern architecture. As I intend to show, Gilly was by no means a rationalist or functionalist in the Modern sense. This interpretation denies not only his theory of architecture, but the context within which it was formulated. It projects onto the first real architectural alternative to rational tectonics, the 20th century doctrine of functionalism.

Gilly was well versed in then contemporary French theory. His library contained several works by the most important writers of the 18th century, including Charles-Etienne Briseux, Jacques- Francois Blondel, Marc Antoine Laugier, Marie- Josep Peyre, and Antoine- Chrysostome Quatremere de Quincy, all of whom proved influential on his ideas. But he did not accept many of their core tenets. A closer reading of his work reveals that his theoretical agenda was aimed in an altogether different direction, one guided by the tenets of Idealism. As Bergdoll has noted, Gilly read the writings of Schiller and Goethe as part of a reading society. He asserts that Schiller's *On the Aesthetic Education of Man* was highly influential on him.[xiii] I intend to show how his work is better seen as aligned to that of Schiller, Goethe and Hegel.

Gilly was close to Goethe and directly influenced by him. In *The Metamorphosis of Plants* of 1790, Goethe proposed the idea of the *Urpflanze,* a theory in which all the parts of the plant were seen as variations and developments from one seminal element or organ that was then transformed into the subsequent diverse parts. For Goethe, Nature was

composed of the relationship between the concrete physicality of a particular living organism and its morphology. Individual organisms in their particularity were seen as reflections of the conditions of their 'climate'. The ever-changing nature of the relationship between the particularity of appearance and morphology was what accounted for the infinite creativity of nature.

Gilly's sketches present us with a similar study of architectural form. The loggia form is reduced to its basic seminal *Urflanze* of construction. The image is the recognition of an idea that orders our cognition of the construction type 'trabeation'. Fichte had called the ability to generate such images the 'productive imagination'; the complex process of the *Anstoβ* that generates order from the dialectic of cognition and reality. For him this was the primary role of the artist, who must transcend material necessity through the inner principles of the productive imagination if he is to achieve what he called 'primal beauty'.[xiv] Such *Ur* forms were not of any given age, rather they existed outside time, like some architectural mythic image. As Fritz Neumeyer has claimed "this imagined building seems timeless, archaic, and utopian, all at once. It evokes associations that stretch back in time to Stonehenge and forward to the modern skeleton constructions of our own century and the steel temples of Mies van der Rohe."[xv] It is this quality that allows them to transcend individual subjectivity and move beyond the contingencies of a given style to rise to the level of the Absolute.

The *Ur* form may have served as a principle of architecture, but it did not have the character of the mechanical laws of Newton's nature. Unlike Laugier's Primitive Hut, it did not establish a principle to be imitated. Instead it served as the framework upon which each culture could build its own means of expression. The continuous ever-changing

"climate" of human culture was the source of infinite interpretations and expressions, making architecture an extension of nature's creativity. Intentional or not, Gilly was able to create an image of architecture in line with Herder's understanding of symbolic forms, Goethe's definition of nature and Fichte's concept of self.

This had implications for architectural history. Historical analysis was no longer the study of disconnected styles, the study of stylistic components and their mechanical relationships. Winkelmann may have been the first to view the history of architecture as a history of cultural advance, but it was Gilly who provided the mechanism for that analysis. History now focused on how individual cultures transformed the *Ur* form into an individual expression of the '*Fortgang'*, making it an examination of the artistic processes itself- and posing the question; '*How does Architecture create human meaning and expression within the exigencies of man's material existence?'*

Gilly's sketches, particularly those from Marienburg, reveal a keen interest in picturesque compositional qualities, as well as the Sublime, most likely derived from Piranesi, but it would be a mistake to see him as an advocate of a 'Subjective' aesthetics. This is evidenced in two essays of 1799, *A description of the Villa of Bagatelle, near Paris* and *A description of Rincy, a Country Seat near Paris.* While admiring the Villa at Bagatelle, its English-styled gardens left him less than impressed. He criticized its superficiality; the artificiality of its 'natural' landscape and its fascination with sham follies. The associations they triggered might 'stimulate the richly stored mind', but such experience was no substitution for reality. For Gilly, the follies distracted the spectator from the appreciation of the same qualities in actual working structures. Although he accepted the critique of the formal French garden style as having "imprisoned" nature,

Gilly still saw in it “a strong impression of sublimity”. The Picturesque seemed to him to have “transformed” the gardens into “diminutive, artificial models of gardens”, prompting him to assert that; “the art of gardening in France has by now perhaps lost more than it has gained by taking a different path.”[xvi]

His impression at Rincy was different; the buildings in the garden there served real functions. According to him, there “the poet discovered the ideal that is so delightfully depicted in his accounts of country life and of its simple pleasures. Here, all embodies that judicious combination of utility and beauty . . .”[xvii] It was that combination of utility and beauty that underlay his whole approach to architecture and demonstrates his allegiance to Idealist aesthetics, most specifically the idea that true art was the balanced combination of material and formal impulses.

This was nowhere move evident than in his most famous essay, *Some Thoughts on the Necessity of Endeavoring to Unify the Various Departments of Architecture in both Theory and Practice.* In it he criticized the growing tendency to conceive of architecture through the filter of the epistemology of science. An obvious criticism of ‘Objective’ aesthetics, it should be seen as the first architectural treatise to directly challenge eighteenth century theory along the lines of Idealism.

The essay was written as a commentary on the development of architectural education shortly after the establishment of the Bauakademie in Berlin. The essay, the prospectus and the aims of the new school were published in the same edition of the *Sammlung* an editorial aimed specifically at the professional audience with the intention of bringing art and science closer together. Gilly took the editorial staff at their word and launched an attack on the prospectus of the Bauakademie, which focused its aims on a scientific

understanding of architecture. The Bauakademie was modeled on the Ecole centrale des travaux publics in Paris, later renamed the Ecole Polytechnique, and so its emphasis was on practical and technical problems associated with engineering and civic structures. As the official state school of architecture it would have established an interpretation of architecture along the lines of the Ecole Polytechnique and the epistemology of science.

What was at issue was how the state was choosing to define architecture within the prospectus. Gilly questioned what relationship such modern disciplines as mechanical engineering, hydraulics, river engineering and mining had to monumental building. These disciplines had historically been related to architecture. Treatises had long contained sections on the construction of fortifications, bridges and roadways, and thus fallen under the auspices of the profession. But more recently, they had developed further into individual discourses, ones that addressed specific problems using specific techniques. In essence, they had evolved their own aims, methods and concerns which set them apart from those of architecture. “In many cases it is merely a tenuous and contingent connection or the initial application of certain common principles that has caused such highly disparate subjects to be associated as if they were closely akin.”[xviii] Gilly’s concern was that lumping them all together under the title construction, or Bauen, within a college of architecture forced architecture to conform to the aims of the engineering sciences, as opposed to the art of architecture itself, which according to Gilly, was a world apart from such aims.

Gilly’s concerns were not overstated. The late 18th century was marked by various attempts to establish a science of architecture. The growing reliance on mathematics and scientific method to justify value judgments in architecture was becoming more evident.

In Germany men like Christian Wolff and Leonhard Christoph Sturm had treated architecture as a branch of applied mathematics and had brought a strong rationalist sensibility to the profession.

At issue was the tendency that by this time had become evident, the tendency of the epistemology of science to move toward specialization. Such specialization resulted in a fragmentation of knowledge that Gilly perceived as fundamentally at odds with the necessities of architecture. Gilly noted that the fragmentation tended to place a concentration on the scientific aspects of architectural knowledge at the expense of understanding the discipline as an art form. “So vast is the range of the several arts and sciences, and so numerous are the fields of action that they encompass, that practitioners, mindful of their own limitations, must for their own sakes restrict themselves to one or another aspect of their chosen subject; they may nevertheless, on occasion, profitably adopt a more elevated vantage point and survey the whole, of which their own work is a part, and which endows that work with its characteristic form and purpose.”[xix] This same concern with the fragmentation of knowledge lay at the center of both Herder and Hegel’s critique of Cartesian rationalism.

Paraphrasing Goethe, Gilly remarked that in antiquity the status of architecture was more closely associated with the arts than sciences. “Whatever may have been its status or its connection with the sciences, it was then, more than at any other time, that architecture naturally enjoyed a close alliance with the arts.”[xx] The history of architecture was for him a movement from such intimate connection with the arts to one of craftsmanship, (one assumes that he is referring to the Gothic era) and then to one of a scholarly pursuit. This represented a true decline. “With the spread of learning,

architecture came to be treated as a largely scholarly pursuit. The age of the manuals now dawned. Mathematics, in particular, took architecture in hand and even presumed- if only in an appendix- to solve the problem of taste."[xxi] One must assume that the reference was to either Vignola or Perrault, both of whom used mathematical tables to demonstrate the proper proportions of the columns. Gilly read the history of recent architectural theory as a continuation of this tendency. What had resulted was a 'pernicious onesidedness' that allowed for the reduction of architecture to individual or national taste. His assessment of history was that the duality of beauty made architecture beholden to either an objective mathematical interpretation or a subjective taste. The result according to him was that "Architecture had long since been admitted as a true companion of the fine arts; but few now came forward to defend this right or even its right to the name of art. Some conceded it half a vote in the congress of the arts, but others struck it entirely from the list, citing its ignominious subservience to necessity and utility. And so architecture came to be considered merely a mechanical pursuit, and it was subordinated first to one superior authority and then to another: its task was to serve and be useful."[xxii]

There are echoes here of Schiller's assertion in *On the Aesthetic Education of Man* that art bends its' knee under the yoke of necessity. For him likewise, this proved unacceptable. Quoting Goethe at length he revealed the essence of his comments to be a critique of his own age and its episteme. "If art be controlled and subdued, if it be made to conform to the dictates of its age, it will wither and perish . . . If the arts are to flourish and advance, there must be a universal and active love of art, with a predisposition toward greatness . . . It is vain to expect that elegance, taste, and fitness for purpose will

spread their influence through every craft; for this can never happen until a feeling for art has become general, and until those qualities are in demand."[xxiii]

For Gilly, Architecture had to respond to the greater issues and concerns of society and not just the practical and economical concerns of a specific project. It required therefore, that the architect move above the individual disciplines of the building trades and focus on how they were interrelated and related to society at large. "The art of architecture itself, in its own proper domain, is also characterized by an extraordinary multiplicity not only in the individual topics with which it deals but also in its associated purposes, wants, and inquiries. Its study, like its practice, involves a great variety of interconnected topics; its essential concerns therefore demand to be considered from distinct points of view. These concerns nevertheless connect to form a whole once they are seen in terms of the points of contact that arise in practice between them; and this connected view becomes necessary because the purposes and wants themselves necessarily form connections."[xxiv] This according to Gilly would amount to 'an outline of the entire education of an architect.'

What Gilly was calling for was an architecture of the whole, for "an art that is as useful as it is pleasurable; an art that is the natural ally of order, tranquility, and the blessings of civilization; an art that involves human activity of every kind in its pursuit of mutual advantage; an art that– wherever it flourishes- is itself a sign of a cultivated society."[xxv] This was what he believed he saw at Rincy: a union of utility and beauty.

It reveals a deep seated commitment to the principles of Idealism. Like Schiller's assessment of art before him, Gilly cast contemporary architecture within a dialect of material and formal impulses. The theories of men like Wolff and Sturm, and the

prospectus of the Bauakademie focused far too much on the material impulse of architecture at the expense of the formal impulse, leaving the true role of architecture as an art form, the manifestation of the *Ideal*, by the way side. This was the condition of the *Vernuftstaat* in architecture and it would have to be overcome if the profession and society were to advance.

In order to do this there had to be sublation. Gilly's solution was a paraphrase of the *Systemprogramm*. The architect must learn to value the scientist and the scientist to value the architect, and none should claim the vanity of being the *Baukunstler*, or artist of construction. Only when art and science unite at a common central point would they both progress more swiftly. "When science and art unite at a common central point, when they work in concert, and when they place equal reliance on the lessons of experience, then they will progress more swiftly toward their goal; and each stands to gain by mutual extension of their powers to encompass even the remotest social purposes."[xxvi] It was the union of art and science that brought society to its highest potentiality and this could be accomplished within architecture, which served as both the reflection of society and as its motivator.

At the heart of Gilly's argument was the conception that art and science had to stand on equal footing for society as a whole to progress to greatness. Architecture stood at the crucible of such a union, and truly great architecture could only be the product of an age that understood such a balance. If Goethe and Hegel saw architecture as central to the discourse of philosophy, Gilly explained in the clearest way possible why that was so.

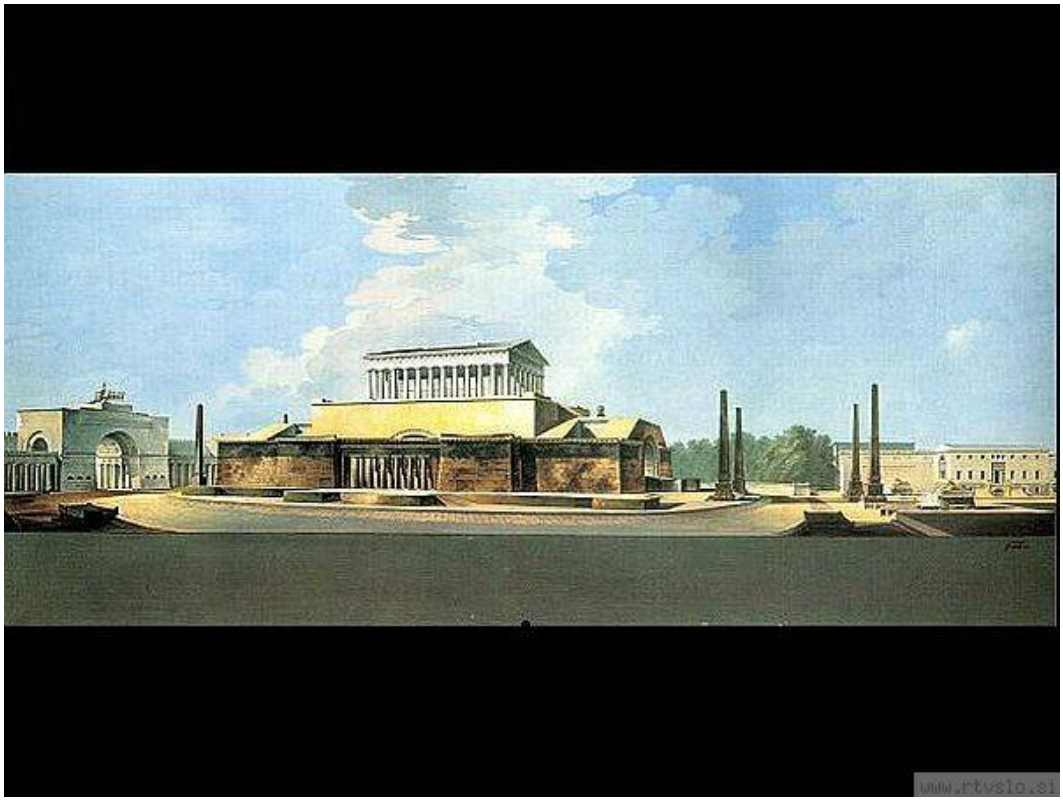

Fig. 26 Image of the Friedrichsdenkmal

Gilly's sketches and writings formed the basis of a new theoretical approach toward architecture, but it was the competition entry for the Friedrichsdenkmal that provided the new and influential image that inspired a generation; what Bergdoll has referred to as a comprehensive program for architecture.[xxvii]

Unlike the other entries that proposed statues, monuments or singular structures, Gilly redesigned an entire district of Berlin at Leipziger Platz. That move, bold as it was, signaled a concern for architectures' relationship to the *polis* and its ability to manifest the higher ideal in the built fabric of the city. He chose the Leipziger Platz for its location and scale. The area was one that, in his mind, owed much of its success to the late King.

While well frequented, Gilly saw it as removed from the hustle and bustle of the main areas of Berlin, a quality he saw as necessary in a monument to such lofty ideals.

The spatial sequencing here was important. One would arrive along the road from Potsdam to approach the new propylon of Berlin rising from the groves of the Tiergarten. Gilly's new Potsdamer Tor served as a hinge linking the road to Potsdam, home to Friedrich the Great's Sansoucis Palace and the beginning of Friedrichstradt, a street laid out under Fredrick I and finished under Fredrick II. As David Leatherbarrow has pointed out, it symbolized tolerance under the reign of Frederick the Great.[xxviii] This made it a powerful metaphor for yet another higher ideal. The Potsdamer Tor combined Greek and Roman motifs with Langhan's Brandenburg Gate into the sterotomic solids of revolutionary architecture, the entire sequence recalling the influence of classical form on the development of Berlin. The monument, axially aligned with the gate and Friedrichstadt, would be visible through the triumphal arch of the gate. In a bold move, Gilly raised the monument on a massive plinth with two barrel vaults at ninety degrees cut into it allowing visual passage through the monument and onto the street beyond. The triumphal arch of the gate was echoed in the barrel vaults of the plinth, visually linking them together as a single urban intervention.

The competition brief called for a project that inspired the higher ideals of morality and patriotism. Gilly took that charge to heart, envisioning a *Heroum* one that, while referencing the heroic Prussian King's life directly, inspired the subject to contemplate and celebrate the higher ideals he now stood for.[xxix] Gilly used the monument to create an architectural image of the Greek ideal as proffered by men like Alois Hirt and Winkelmann. Inspired by the images in his father's copies of Stuart and Revett and J.D.

LeRoy, he created a tour de force of memory and imagination that moved beyond the academic classicism of the age. In its place he proposed a sublime dialogue on the opposition of dark and light, of individual finitude and the infinite that called the subject to confront the *Ideal* in the same manner as the great Gothic Cathedrals of yore.

Liepziger Platz was large and open, with no significant large structures allowing the monument to control the space without competition. Around the elongated octagonal square Gilly placed a double row of trees designed for promenading and viewing the monument. The base of the *Heroum* was constructed of black basalt stone. Along the triumphal path at the center of the structure, visible from the street, Gilly proposed placing the sarcophagi of Friedrich the Great upon a base of black marble rising from a pool of unfathomable depth, above it a great vault of stars. In the dark somber chamber, a memorial to the life of a hero, we as spectators are drawn to the inner subjectivity of our own experience and asked to confront the finite, the mystery of our own mortality.

Above the dark nether world of the base, a second podium, lighter in color, with monumental stairs at its corners rises. Compelled toward the light, the visitor is confronted with alternating views of the city and the sky, meant no doubt to symbolize reality and the Absolute. Atop this second podium, a Doric temple, open to the sky. Gilly turned to the Temple of Jupitor-Seapis at Pozzuoli, near Naples as a precedent.[xxx] In notes written on the Friedrichsdenkmal, Gilly stated “I know of no more beautiful effect than that of being enclosed on all sides- cut off, as it were, from the tumult of the world- and seeing the sky over one’s head, free, entirely free. At evening.” It was this image of seclusion that physiologically draws one to view upon the open sky and contemplate the Absolute. It was Gilly’s friend Wackenroder who likened the work of art to a prayer and

asserted this form of monastic seclusion was necessary for aesthetic contemplation. As Neumeyer has noted “Many of Gilly’s designs are about creating this dialog with the Absolute by architectural means. This is as true of the tiny Temple of Solitude in its parkland setting as it is of the vast, urban “temple of Solitude” that was the Friedrichsdenkmal.” [xxxi]

Gilly moved beyond the then contemporary fashion of archeological classicism, instead choosing to manipulate mass, proportion, light and texture to create an architectural language that spoke more directly to the senses then speech. Bergdoll has noted that this aspect of Gilly’s work places it in line with the ideas espoused by Le Camus de Mezieres in *Genius of Architecture* and Schiller in *On the Aesthetic Education of Man*. As he has claimed, the project provides us with a recapitulation of the history of Greek architecture as an evolution of materials and construction. The massive black stone base with its hexagonal stones and battered walls provide the foundation for the more refined stone work of the podium upon which rests the stoic purity of the Doric order. It is as if we see before our eyes rising from the nether world to the sky, the movement from archaic earthwork and brute construction to the idealized classical tectonic form. In Bergdoll’s estimation “Gilly proposed an image of architecture in which an exploration of the tectonics of construction led to the embodiment of higher ideals, and in which the world of Ideal forms, with all the stereometric purity and abstraction that was the hallmark of Gilly’s style, continually framed views of the real world.” [xxxii] While it predated Hegel’s *Phenomenology* of 1807 and his lectures on architecture of the 1820’s, it nonetheless incorporated the idea of Recollection so central to them.

In 1799 Gilly founded the Privatgesellschaft jünger Architekten, the Private Society of Young Architects, with Heinrich Gentz (1766- 1811). In addition to several notable young architects[xxxiii] the group included a young student named Carl Friedrich Schinkel (1781-1841). He would later claim that it was Gilly's Friedrichsdenmal that made him want to become an architect.

> "Very soon I fell into the error of pure arbitrary abstraction, and developed the entire conception of a particular work exclusively from its most immediate trivial function and from its construction. This gave rise to something dry and rigid, and lacking in freedom, that entirely excluded two essential elements: the historical and the poetical. I pursued my researches further, but very soon found myself trapped in a great labyrinth . . . "[xxxiv]
>
> Karl Friedrich Schinkel
> *Das Architektonishe Lehrbuch*

Schinkel and the Birth of Poetic Tectonics

A young Karl Friedrich Schinkel (1781- 1841) came in contact with the work of Friedrich Gilly in 1797 when he saw his design for the Monument to Frederick the Great on display at the Berlin Academy Exhibition. Within a few months time he met Gilly and they became great and dedicated friends.[xxxv] In 1798, Schinkel moved into the Gilly household and began studying with Friedrich and David Gilly at their private architecture school.[xxxvi] A year later, Schinkel enrolled in the newly formed Bauakademie in Berlin. After Friedrich's untimely death in 1800, David Gilly gave Schinkel his son's notes and sketch books. Historians have noted that throughout his career Schinkel turned to them for inspiration.

Fig. 27 Image Karl Friedrich Schinkel 'Medieval Town by the Water'

Schinkel began painting after returning from his trip to Italy in 1805. The large canvases depicted Classical antiquity and Medieval Rome as ideal models of social reform. It was also at this time that he did the huge stage set for Mozart's *Magic Flute*. Both he and Casper David Friedrich are considered to be the most important Romantic painters of the age. But after having seen the formers' *Monk by the Sea* of 1809, Schinkel gave up painting professionally and turned his full attention to architecture.[xxxvii] He would prove to be one of the most widely known and influential architects of the early 1800's. His career was vast and diverse. Alongside architecture and planning, he designed furniture, stage sets, and house wares.

Fig. 28 Image Casper David Friedrich 'Monk by the Sea' 1809

Like Goethe, historians have been quick to identify him as a Classicist. This attitude owes much to Goerd Peshckin. In his analysis of Schinkel's theoretical development he claimed that after coming under the influence of Goethe and the philosopher Karl Wilhelm Ferdinand Solger (1780-1819),[xxxviii] Schinkel embraced classical architecture and the idea that art and architecture should express rational laws and the honest expression of structure.[xxxix] Peschkin called this phase of his development (the third of five) 'Classicist'.[xl] According to Peschin "After Schinkel turned classicist he again regarded antiquity as the supreme ideal. Hence he sees the history of architecture as a development of simple to complex forms of construction. For him the greatest simplicity embodies perfect dignity as in post and lintel construction where the beam demands larger blocks of stone or better material than those used for spanning an arch. For Schinkel, progress consists in the fact that technology can achieve its aims with less and

less materials."[xli] Peschin's description appears to align him with the ideals of French Neo-classicism in its emphasis on simplicity of form and economy of construction. But there are several problems with this assessment.

First, Solger was influential very early in Schinkel's career and was responsible for exposing him to the tenets of Idealist aesthetics. Schinkel met Solger in 1801 and he would become Schinkel's mentor for the early part of his career.[xlii] Muller has claimed that he was also influential on Hegel.[xliii] There are several points that they share; most notable was that art was the manifestation of the *Ideal*. But also that art was the teacher of mankind. Hegel had made the point earlier in the *Systemprogramm* of 1796. And in the *Aesthetics*, Hegel too saw architecture as the most material of the arts, meaning that it had to address the *Ideal* to a greater degree to overcome its inherent materiality. As I have shown, that gave it an important place in Hegel's philosophy as well.

Solger's aesthetics were consistent with the main tenets of Idealism. His 1815 master work, *Erwin, Vier Gesprache über das Schone und die Kunst* was based on his University of Berlin lectures of 1811-12 and as Bergdoll notes, reflected his early exchanges with Schinkel.[xliv] In it he argued that the artist was one of life's teachers and that the duty of the artist was to make the *Ideal* knowable through the manipulation of the phenomenal. Solger believed architecture was the best medium for the *Ideal* precisely because, as the most accessible and material of the arts, it had to manipulate the real the most in order to transcend it. While architecture derived its function from necessity, it served a higher moral purpose in the human and social needs it addressed.

Solger was not the only one to make the connection between architecture and a higher moral purpose in German literature. Goethe had made a similar point, first about

Strasbourg Cathedral in *On German Architecture* (1772) and again in *Italian Journey* (1786) about the Roman amphitheater in Verona, when he claimed that true architecture provided a vision of humanity's universal needs. The same could be said of Schiller, who insisted that our ability to read in the work the overlay of the human spirit provided it with its power to inspire us. For him the *Ideal* manifested itself as the creative force in man and was found in any symbolic form. Central to his theory of both Man and Aesthetics, Schiller called this the formal impulse and made it a necessary component in his theory of sublation. Far from directing Schinkel toward Neo-classicism, Solger initiated him into the ideas and aesthetics of Idealist philosophy. That initiation would evolve into a full-blown membership.

The second problem with Peschin's assertion that Schinkel was a Classicist was the implication that Goethe influenced him toward classicism after their acquaintance in1816. The problem with this assumption lies in the idea that Goethe was a classicist and that what they took from their studies of classicism was uncritical. Just as more recent scholarship challenges the image of Goethe as a Classicist; more recent scholarship of Schinkel challenges his classicist image as well.

Many historians have sought to link him to the Neo-classical tradition by associating him with J.L.N. Durand.[xlv] Goalen sees this as an ironic twist, given the high admiration for Schinkel and the relatively low one afforded Durand, by these same historians.[xlvi] He notes that while there are compositional similarities between their work (in particular Schinkel's Altes Museum in Berlin and Durand's un-built project for a Museum) there is little comparison in their intentions. Durand sought a system of rational composition. Schinkel consciously sought to bring the "principle of Greek architecture . . . to terms

with the conditions of the epoch."[xlvii] For Durand details were of little concern and applied only after the composition was finished. Schinkel on the other hand, began with an understanding of how the details determined the outcome of such a composition. In Schinkel there is constant adjustment to the exigencies of the conflicting systems in the plan of the Altes Museum. In his work there is a concentration on the creation of individual autonomous scenes that collectively contribute to the experience of the edifice, something completely absent in Durand.

According to Betthausen, the image of Schinkel as a Classicist is inaccurate because most of his more innovative buildings have, since his death, been destroyed leaving only the grand classical structures as his legacy.[xlviii] He notes the shift to the Neo-classical style after 1810 was not motivated by a stylistic preference, but by outside forces, most notably Friedrich Wilhem III's increasing desire to turn away from references to the national spirit of the Wars of Liberation. Among Prussian leaders, Gothic architecture was seen as having Nationalist associations. The classical style was increasingly more fashionable among the Bourgeoisie who were his patrons, and this would account for its extensive use in his work.

Schinkel was accomplished in the classical style and its vocabulary was the one he most applied, but he was equally accomplished in Neo-gothic.[xlix] He maintained a fascination with the Gothic throughout his entire career. Bergdoll claims that the development of designs in multiple styles speaks to the essence of his project and not about stylistic purity. He sees the multiplicity as a reflection of Wilhelm von Humbolt's notion of diversity of languages.[l]

A more thorough analysis of his influences and oeuvre reveals that he was intimately connected to the theoretical constructs of Idealism. In 1803, while in Rome, Schinkel met and became friends with Wilhelm von Humbolt. During the years of 1808 and 1810 Humbolt would restructure the educational system in Germany and in 1809-10 he would found the University of Berlin with Fichte. Together they would bring an entire generation of philosophers and scientists to Berlin, changing its intellectual culture. His friendships with Wilhelm von Humbolt (1767-1835) his brother Alexander von Humbolt (1759-1869) and Johann Gottlieb Fichte, are well documented.[li] And between the years of 1816 and 1824 Schinkel was in direct contact with Goethe. Additionally, historians such as Barry Bergdoll have noted the direct influence of August and Friedrich Schlegel and associated his work with the ideas of Schiller.[lii]Schinkel's friendships and contacts placed him at the center of the new intellectual circle of Idealist thinkers during his formative years when he was developing his theoretical perspectives on architecture. As Wolf has argued, it is in this context that his work should be studied.[liii]

Alex Potts has observed a greater influence of Hegel than has been historically recognized, a point I fully agree with.[liv] Hegel, who was working in Berlin from 1818-1831, had begun to give lectures on Architecture and Aesthetics in 1820. It is likely that Schinkel, if not in attendance at those lectures, may have gained familiarity with the positions put forth by the eminent philosopher through their mutual friend Goethe. In the case of Schinkel this was his most fruitful and complete period of theoretical exploration, 1825-30, the period in which he was elaborating his notes for the *Lehrbuch*. Thus Schinkel and Hegel were both in Berlin developing their theories of architecture at or around the same time.

Therefore, Schinkel's theoretical formulations in the *Lehrbuch* come after his correspondences with Goethe and after Hegel's public lectures on architecture and art. It is not my intention here to imply that his ideas should be attributed to either; he was an original and inspired thinker. Rather, I wish to situate him within this broader constellation of thought and demonstrate that his work reveals a consistency *throughout* his career with that agenda.

Schinkel identified architecture as a manifestation of the collective *Geist* and, as I intend to show, a sublation of the material and formal impulses. He expressed a distain for imitation, and rejected the supremacy of function and use found in French theory. Furthermore, his work reveals a critical stance toward history, one similar to, if not based on, the idea of "Recollection" found in Hegel's 1807 *Phenomenology*. And he also called for a new architecture; a combination of Gothic and Greek, similar to that implied by Hegel in his *Lectures on Aesthetics*, which he believed would result in a poetic unity of Spirit and reason, what I have termed *Poetic Tectonics*.

Both Hegel and Goethe were essential in establishing the idea of art as a manifestation of *Geist*, wherein some universal significance was embodied in sensuous form; Hegel's concrete universal. This had been central to Idealist philosophy and aesthetics and it proved to be highly influential on the development of Schinkel's thought. For Schinkel, architecture proved to be the manifestation of higher *Ideals* in the built environment.

Encouraged by Solger, Schinkel began reading Fichte during his time in Italy from 1803-05.[lv] It was through his writings, that Schinkel would begin to see architecture as a medium for the conveyance of ideas. They would eventually meet through their mutual

friend Wilhelm von Humbolt, and in 1810 Schinkel began to attend Fichte's lectures at the University of Berlin. As I have shown, it was Fichte, along with Schiller, who had been pivotal in translating the concept of *Poetic Unity* into a theory of the self and consciousness. And I believe it was Schinkel, following Gilly, who then translated it into a systematic means of understanding architecture.

According to Fichte, consciousness did not begin with disinterested contemplation, but with action or praxis. What humanity did was to create its own vision of reality, in a process that most closely followed that of creation and *poesis*. For him, as for his friend Schiller, if Nature impinged upon our being, forcing us to take action, it then became the material out of which we created our freedom again. Our understanding of the world was what it was because it was defined in terms of the purposive behavior of man. It was this aspect of our reality (that it was constituted by our own sense of purpose) that became the very source of the self for Fichte. Schiller also espoused such ideas. Man had to remake sense perception in his own image for the self to emerge. It was here that freedom was first achieved. This was Man's nature; his free will. Man was only man if he was given the opportunity to rise above Nature and mould her to his morally directed will. For both Fichte and Schiller, the end of man was self- development. That meant the individual possessed a duty not only to him/herself, but to society as a whole. Conversely the collective state had an important role in the cultural edification of its people.

A similar position was held by Schinkel's good friend Wilhelm von Humbolt. In his 1793 essay 'Concerning the Study of Antiquity', he used the term *Bildung* to refer to the development of the entire individual through knowledge and cultivation. It formed the basis of his approach toward education, particularly in his development of the

pedagogical structure for the University of Berlin. He believed that no individual could effectively contribute to a cultivated and humane existence of the state without first achieving it in themselves. For Humbolt, the state served as the agent of that process in its educational system.

All these philosophers asserted the necessity of self-development as a condition of freedom, transforming it into a moral imperative. The idea of *Bildung* would become a cornerstone of architecture for Schinkel. Increasingly, he saw architecture as having to demonstrate immediate visible images of freedom and life. He would claim that "Freedom consists in the first place of ethical feeling: to submit oneself freely to a higher law on the basis of reason, or poetic feeling is something sublime and beautiful."[lvi] For Fichte that submission was necessary to prevent subjectivism and nihilism, a belief he shared with Hegel. The self must take its place among the collective consciousness, what Fichte called the *Beruf,* and Hegel called *Geist*.

According to Schwarzer "Schinkel's legacy to aesthetic idealism lies in his vision of architecture as the forming of purpose into higher ideals. . . . [He] understood the supreme goal of architecture as that of working toward the artistic education and betterment of society. In order to serve a greater cultural function beyond immediate use, architecture had to transcend its material origins and relationship. It had to become an ideal image."[lvii] That image would be the manifestation of the *Ideal* in the generation of architectural form. This would bring Schinkel's own aesthetic theory in line with the general tenets of Idealist aesthetics. More significantly, by establishing the moral necessity of architecture to presence the *Ideal* as its basic criteria as an art form, he laid the ground work for its adherence to Schiller's concept of sublation.

Schinkel would take the Idealist concept of 'self' and its relationship to the structure of aesthetics and transform it into a perceptual theory of architectural form. Goethe believed true art sprang from the creative impulses of man's primal being.[lviii] That idea would be echoed in Fichte's *Die Tatsachen des Bewußtseyns. Vorlesungen, gehalten an der Univeritat zu Berlin in Winterhalbjahre 1810-1811*. In it he concluded that art comprised the absolute and boundless representation of man's freedom and existential being. He envisioned art as the result of a complex process of self-imaging of the *sensus communus*. The role of the artist was to embrace this unconscious system of representation and generate images of 'primal beauty'. This was the basis of his notion of the 'productive imagination'.

For Schinkel, this found its visual analog in architecture in what he called 'primal forces'. As in Fichte's concept of 'self', they existed within a dialectic of cognition and reality, in that their physical reality was coincident with their visual recognition. They were *Urphanomene* (primordial phenomena), what Schinkel called the 'primitive style principle of architecture'. It was an expression of the 'primal force' of the incarnate self, a constant reflection of the collective unconscious. Each form representing a unique cultural moment, an expression of Spirit in architectural form. The study of which became the search for the inner essence, the indeterminate, poetic character of form and its structural relationship through history.[lix]

For Schinkel they were represented in expressive, 'poetic', *Grundformen* (ground forms) that proved to be basic constructional motifs, simple structural systems whose images were more beholden to their perceptual impression than to actual structural proportional systems. They had less to do with their technical expression and more to do

with aesthetic expression. According to Wolf; “In Schinkel’s tectonic ground forms, visible static forces no longer represent other things in the world, but are paratactic signs of vital forces. As objects of perception, they do not escape the world of illusions, but employ physical distortions (such as *entasis*) to achieve greater visual or psychological effect.”[lx]

Wolf asserts that Schinkel grounded his theory of the *Urphenomeme* in theories of the unconscious, particularly those described by Jean Paul Richter (1763-1825)[lxi] and Carl Gustav Carus (1789-1869).[lxii] Richter’s *Vorschule de Äeshtetik* of 1804 argued that the unconscious revealed the instinctual self, and our innate drives, it was therefore the source of an ‘involuntary poetry’. For Carus this unconscious memory of the self was represented in expressive, ‘poetic’, *Ur* forms that proved to be the basis of tectonic modes of expression.

While I do not disagree with Wolf that Schinkel was familiar with these theories- he transposed sections of them into his notes for the *Lehrbuch*- I have to disagree with his assessment that they were the source of inspiration. It is important to note that Carus text’s *Vorlesungen über Psychologie* of 1831 and *Psyche* of 1846 were written after Schinkel had begun the *Lehrbuch* in the mid 1820’s. Therefore, Carus’s texts should not be seen as inspiration for the ideas, but rather as a possible latter source for their validation. Richter’s text of 1804 places it early enough to have impacted Schinkel’s thought, but one has to acknowledge that the basic idea of an unconscious motivator of artistic expression was already present within the intellectual circles Schinkel inhabited, most notably in Herder’s ‘*Fortgang’* (not surprising given the fact that Richter and Herder were friends), in Fichte’s ‘productive imagination’ and in Hegel’s *Geist*.

Rather than see Schinkel's *Grundformen* as a reflection of emerging theories of the unconscious, I believe it should be seen as an extension of Gilly's *Ur* forms, which would have served as a more direct inspiration. He was in possession of his sketchbooks containing his notes and drawings of them. Thus, the idea of a poetic understanding of construction, a 'primitive style principle', was available to him prior to the publication of Richter's text of 1804.

As I have asserted, this idea was related to Goethe's definition of nature in the *Morphologie*. For him, nature eternally created new forms, each a variation or modification of a simple order. Following Bergdoll, I believe this too should be seen as a potential source for Schinkel's idea.[lxiii] Goethe and Schinkel began their contact in 1816 about the same time Schinkel began to develop his ideas on architectural form. But he would have been familiar with Goethe's general idea of nature prior to that from another source. In 1804, the same year Richter's text was published, Alexander von Humbolt, the younger brother of Schinkel's good friend Wilhelm von Humbolt, would return from his vast trip to the Americas, a trip that would formulate his ideas on nature. [lxiv] Echoing Goethe, Humbolt claimed nature was not a fixed system, but an ongoing process of creation, one of continuous 'becoming'. He believed that one could unlock the secrets of its *morphology* and dynamics, claiming that man could "trace the stable amid the vacillating, ever-recurring alteration of physical metamorphoses" and unlock the morphology and the dynamics of change within the natural realm.[lxv] For Humbolt the chain of connections that link all natural forces were dependent on each other, like Goethe's *Urphlanze*, they created a unity in difference. Thus Schinkel would have been

intimately familiar with this concept and should have recognized Gilly's attempt to translate it into a theory of architecture.

Schinkel's *Grundformen* was derived from Fichte, whose concept of the self was part of the broader intellectual framework of Idealism. Central to it was the idea of unity in difference, an underlying order that exhibited a continuous variation and diversification through time. It was present in the writings on nature of Goethe, Schelling and Alexander von Humbolt and in the theories of the 'self' of Fichte, Schiller and Hegel.

According to Schiller, "Only as [man] alters does he exist; only as he remains unalterable does he exist. Man conceived in his perfection would accordingly be the constant unity which amidst the tides of change remains eternally the same."[lxvi] Both Goethe and Humbolt believed that it was paralleled in man's creativity. It was Goethe who claimed; "Just as the soul of nature has played itself out in the forms of its individual creations and the relationship of their parts one to another, so the human spirit has left its mark on the forms of art; from that a whole world of form has come into being."[lxvii] Schinkel reinterpreted Goethe's position in his own statement that "Architecture is the continuation of nature in her constructivity. This activity is conducted through that natural product: Mankind."[lxviii] Man's architectural analog, Schinkel's *Grundformen*, was a constant unity amidst the changing tides of history and culture, yet another form of unity in difference. Nowhere was this connection more evident than in the work at Potsdam where the architecture created a heightened sense of the dialectic of historical progress.[lxix]

Schinkel now began to re-conceptualize the history of architecture as a continuity; one that included both Gothic and Classical as an expression of *Geist*. Like Goethe and

Hegel, his analysis of the Classical and Gothic styles resulted in an understanding of them as manifestations of two distinct cultural predilections; one focused on reason and materiality, and the other on expression and Spirit.

In his analysis of Classical architecture, Schinkel saw clarity and order, its forms encompassed by rational laws that governed its statics. “In the buildings of Antiquity it is presented as something already in existence, something permanent, encompassed by rational laws, thus conveying an agreeable serenity.” [lxx] By providing a rational order to its parataxis, classical architecture possessed legibility; it acknowledged its material nature through self-reference. In this way it provided a balance of self-articulated inner meaning and proportioned outer form.

Schinkel now saw architectural form as the combination of several different constructional units- pier, arch, column, beam, wall, vault, etc.- that generated a conceptual framework for both the enclosing walls and the ceilings. These were the product of the type of space enclosed and the type of spanning system it generated. He now focused on two fundamental points; 1) the construction of the enclosing walls, and 2) the construction of the ceilings. It is important to note that Schinkel’s findings were not that distinct from those of Hegel.

In his analysis of Gothic architecture, Schinkel saw the emergence of spiritual enlightenment. [lxxi] What was central to its form was the expression of its overcoming the contingencies of matter. In that sense it became expressive of the idea of universal Christian spiritual enlightenment. In the memorandum for his 1810 design for a mausoleum for Queen Luisa he noted that Gothic architecture was “Spirit fully victorious over mass and material”, capable of inspiring the observer with “the infinite and the

eternal."[lxxii] He conceived of Gothic as a rush of particularities rising up as one. "In the medieval pointed arch proportion is seen as something in the process of formation- it grows before our eyes."[lxxiii] Again, his interpretation was not that distinct from Hegel who saw in the Gothic cathedral the multiplicities of its elements succumb to a single vision of upward ascension.

Central to Idealist aesthetics was the necessary sublation of material and formal impulses. Both Goethe and Hegel saw Gothic as the higher expression of Spirit in architecture, but they were critical of its loss of self. In expressing Spirit it had turned inward and lost sight of itself as construction. It denied its own materiality. If it excelled at the expression of Spirit, it faltered as an art form. Gothic proved to manifest the formal over the material. For them, the classical was not much better. It too often manifested the material over the formal. For both, the classical was not ideal, but at its best, it was a better example of the necessary sublation. Because of that, it served as a better case study for the development of an art form that would allow for a resistance to the *Vernuftstaat,* one that could lead to cultural advance.

For Schinkel, the goal of art and architecture was the edification of the people. Finding the correct case study for how to successfully achieve that became essential. Like Goethe and Hegel, He too would turn to the Classical to find the underlying principles of architecture. Not because he became a Classicist or because it was an ideal model to copy. But because he too believed that Greek culture was a model of civic virtue and individual self-cultivation. According to Schinkel, it provided a "reference point and point of departure . . . from which artistic culture of consequence could be continued."[lxxiv] Like them, he too found Greek architecture to be the better expression of

sublation. It was the best measure for a true demonstration of *Bildung* (cultural advance), in architecture, one that did not sacrifice the art forms inherent material nature. He would claim; "For the artist there is only one age of revelation- that of the Greeks. To build in the Greek style is to build correctly, and from this point of view the best products of the Middle Ages are to be called Greek."[lxxv] But Schinkel was no longer thinking of 'Greek' stylistically, rather as the essence and purity of an idea. This was the lesson of Classical architecture.

Schinkel's comment, 'to build in the Greek style is to build correctly', has been used to justify an interpretation of him as a Classicist. Likewise, the focus on the self-referential aspect of architecture and its materiality has been used to justify an interpretation of him as a Materialist.[lxxvi] But he was not adhering to the theory of the Greco-gothic Ideal or advocating the Mechanisms of Structure and Disposition. He was not espousing a rationalist or materialist position in architecture at all.

In point of fact, he consistently refuted this interpretation in his own texts. In the *Lehrbuch* he claimed "Mere need does not give rise to beauty, nor does every accidental utilitarian factor have to be taken into account to endow something with character, otherwise chaos results. Only someone who moves freely above (material) need will be capable of beauty, provided that in his freedom he still endows the object with the characteristic aspect that makes it individual."[lxxvii] And in the *Philosophical Notebook* he stated "Architectonic relationships rest upon general static laws, but first become significant through their correspondence and analogy to the personal existence of man and second, to the similarly formed and organized essence of nature, whose static laws always provide the foundation for mechanical laws, primarily for the restful existence of

the individual and lastly for its progress."[lxxviii] Basing architecture on arbitrary abstraction, the immediate trivial function or construction was for Schinkel an error in judgment that could only give "rise to something dry and rigid, and lacking in freedom" precisely because it excluded "two essential elements: the historical and the poetical."[lxxix]

The Idealist critique was not a rejection of science per se, only the assertion that it was the only valid means to truth. Knowledge of the human condition and our understanding of the world required more, it required art (more specifically the process of *poesis* or poetry). Both Wilhelm and Alexander von Humbolt viewed the relationship between science and art as fundamentally different investigations that were equally essential to any understanding of nature and the human experience. It was this idea of the necessity to sublate science and art in education that underlay the pedagogical structure of the University of Berlin he founded with Fichte.

Friedrich Gilly had argued the same point in *Some Thoughts on the Necessity of Endeavoring to Unify the Various Departments of Architecture in both Theory and Practice.* Commenting on the development of architectural education shortly after the establishment of the Bauakademie in Berlin he claimed; "When science and art unite at a common central point, when they work in concert, and when they place equal reliance on the lessons of experience, then they will progress more swiftly toward their goal; and each stands to gain by mutual extension of their powers to encompass even the remotest social purposes."[lxxx] It was the union of science and art that brought society to its highest potentiality and this could be accomplished within the discipline of architecture, which served as both the reflection of society and as its motivator. Humbolt's idea that the union of science and art was a necessary precursor to *Bildung* had already been asserted by

Gilly a decade earlier. A proper architectural education was one that sublated science and art.

According to Wilhelm von Humbolt "The character of reality never reveals itself in reality itself . . . art represents the character of nature not as it is in itself, but as it is comprehensible to our sense organs, harmoniously predisposed for them."[lxxxi] It was art that allowed us to contemplate the larger order of things. It made nature's unity in difference comprehensible in human terms. For this reason it served as a necessary companion to science in the quest for knowledge. Schinkel would essentially restate this idea when he claimed; "The compulsion aroused by this premonition to investigate the interrelationships of a given number of phenomena has produced science; the compulsion aroused by the same premonition to contemplate in context as large a group of phenomena as possible has produced art. Therefore the vocation of art is a representation of its object in a manner that makes evident as many of its connections as possible."[lxxxii] It was the combination of both premonitions that lead to the fullest comprehension of nature and man

For Schinkel, the totality of nature was one that included the mechanical, chemical and organic forces as well as, the spontaneous forces that constitute the realm of freedom.[lxxxiii] It was for this reason that history, invention, archeology and technology were all interrelated aspects of the proper research agenda.[lxxxiv] It was the union of science and art that proved the path to Truth. For Schinkel, the same was true for the discourse of architecture. It had to involve 'the historical and poetical'.

Schinkel spent his entire career studying architecture as a symbolic form. I would argue that his methodology was decidedly etymological. Etymology traces the

development of form from one language to another by analyzing it into component parts, identifying its cognates in other languages and tracing them to a common ancestral form. His entire approach to research basically followed this model. The *Grundformen*, poetic expressions of architectural phenomena, were the origins of the various architectural 'languages'. Composed of a series of relationships of component parts, their endless possible combinations produced what we would call a style. New technical innovations and materials generated new developments in the spatial formatting and it's detailing, resulting in stylistic development- the 'etymological' alterations- over time.

He may have found inspiration for this in his friend Alexander von Humbolt. In his lectures at the University of Berlin, Humbolt claimed that it was in the study of language that the mind was made receptive to understanding the structure of all things. He later made this point in *Cosmos* where he wrote; ". . . the unity which I seek to attain in the development of the great phenomenon of the universe, is analogous to that which historical composition is capable of acquiring . . . in tracing the physical delineation of the globe, we behold the present and the past reciprocally indicated, as it were with one another; for the domain of nature is like that of language, in which etymological research reveals a successive development, by showing us the primary condition of an idiom reflected in the forms of speech in use in the present day."[lxxxv] For him, etymology revealed the larger order of things.

His etymological research would take a two pronged trajectory. One he referred to as the *Trivialbegriff des Gegenstandes*- the banal requirements of the object- its' material and construction technology. Reflecting the material impulse, it was the study of the endless combinations of component parts within a given construction technology. The

other he referred to as the *Artistischen poetischen Zwecken* -the artistic or poetic aim of the object, its higher purpose. Reflecting the formal impulse, it was the study of the development of an artistic motif from one architectural language to another. The study of both was essential because he firmly believed that both scientific and artistic research must remain in dialogue in the search for a new modern style worthy of being the successor to the great historical traditions. It was their interconnectivity and sublation that was for him the truth of architecture.

For Schinkel, as it had been for Gilly, the science of architecture was the study of the material nature of construction; its material impulse. He examined the *Grundformen* in terms of materials and the construction process. But the methodology was not that of the natural sciences, instead it took on a more etymological tone. His examination of Classical and Gothic had brought him to see architecture as an amalgam of parts that combined to form basic construction technologies; the post and lintel, and the arch and vault. For Schinkel the history of technical advances in form served as a textbook, not a model to be copied. Style developed over time as new technical innovations and materials were not only incorporated, but aesthetically treated in successful ways. According to Schinkel; "Style is achieved in architecture if the construction of a complete building 1) takes its visible characteristics in the most practical and beautiful manner from one single material, or 2) takes its visible characteristics from various kinds of materials- stone, wood, iron, brick- each in its own peculiar way . . ."[lxxxvi] The combination of the parts, material selected and the proportions selected, accounted for the difference in style. What he had learned from his study of Greek architecture was that the essence of trabeated construction was to be found in a set of harmonic and constructive relationships.

This led to his idea of architecture's self-representation. As he claimed; "All the essential structural elements of a building must remain visible; as soon as basic parts of the constructions are concealed, the entire train of thought is lost. Such concealment leads at once to falsehood." The work itself was enhanced "if each part of it makes its effect freely and without restriction in accordance with the general laws of statics (or appears so to do)." [lxxxvii] He called this visibility *Anschaulichkeit*- the legibility of the ontology of construction.

Schinkel would pursue this as a conceptual idea at the Schauspielhaus in Berlin of 1819. There he devised a system that he would continue to develop in the architectural plates of the *Lehrbuch.* Departing from the solid geometric compositions of early German Neo-Classicism, he developed a reticulated system of stripped pilaster supports and horizontal entablatures that interwove the two scales of the building, the colossal scale of its larger masses and the smaller scale of individual stories set as though within a frame. Forming continuous bands of fenestration, this structured grid dissolved the wall surface into a screen. Without giving expression to the buildings individual functions, the system gave expression to its elemental order, providing an overall harmonious image that represented trabeation as a structurally pure idea.

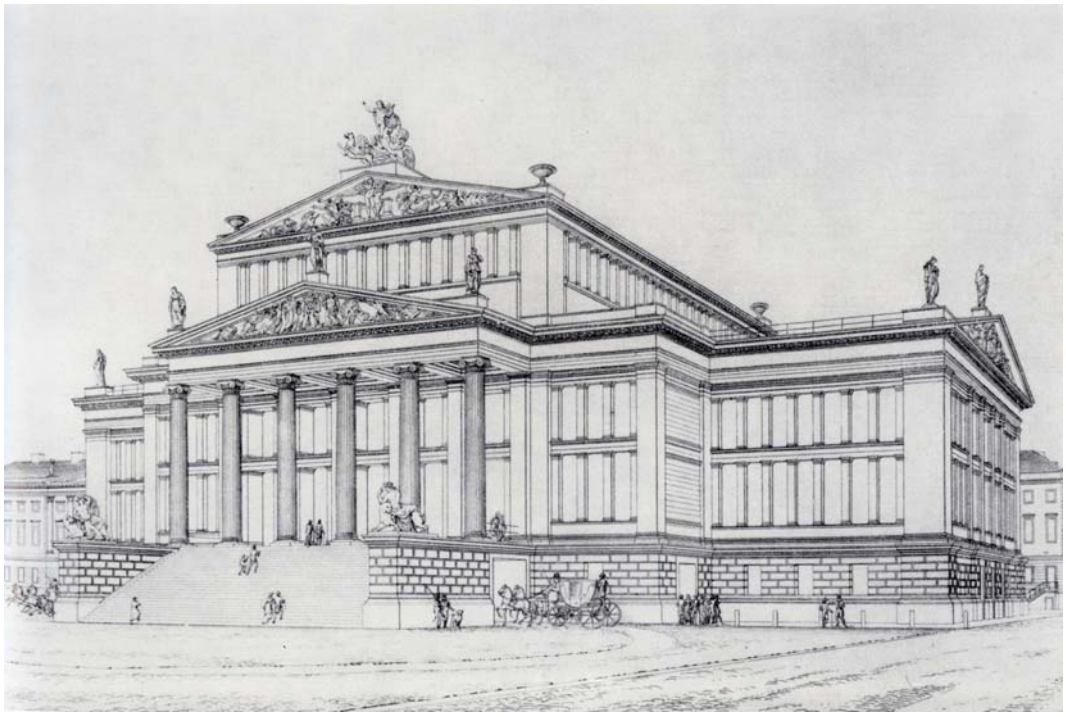

Fig. 29 Image of Schauspielhaus Berlin

Schinkel believed that public architecture should transcend the banal function of construction and program to express not only the higher functions of tectonic order, but also the higher ideal of its institutional purpose. This was reinforced by placing the theater on a massive rusticated podium. He justified it functionally as a place to make and house sets. But it had the aesthetic advantage of elevating the new Building above the everyday realm of the street and above the residential architecture of the district. Its Ionic portico, accessed by a steep broad flight of stairs that advanced into the space of the square, created a tauter and more dramatic dialogue with the porticos of the two flanking churches of the Gendarmenmarkt. The composition served to create a heightened sense of public ritual.

It was the precision of the technical proficiency maximized for greatest aesthetic impact that was the underlying motivation and not the expression of a simple frame

structure. Schinkel would continue his study of trabeated construction in brick, most notably in his ideal churches, and his commercial and military structures of the 1820's and 30's.

In his work, Schinkel sought the generation of form from structural law, but he believed those laws were observable in the dialectic of historical development. It was from this perspective that art and the formal impulse could be studied etymologically. For him, the modern subject while existing in the present was a by-product of the historical past. The expression of its continuity through time was an important aspect of tectonic expression. Once again, Schinkel found historical precedent in the work of Gilly. In the Monument to Friedrich the Great he had explored the development of tectonic expression, moving from a primitive form of masonry expression at its base to the refinement of the Doric temple at the top. In the 1820's, Schinkel followed suit and began to explore the exposition of historical development in structures at Schloss Glienicke. This would eventually become explicit in his major works beginning with the Altes Museum in Berlin (1824) and culminating with the Court Gardener's House in Potsdam (finished in 1836).

In the Altes Museum, Schinkel takes us on an historical odyssey that begins in ancient Greece with the form of the Greek Stoa, which serves as the precedent for its façade. In Hellenistic style, it forms the edge of a public square, the Lustgarten that serves as its agora. This relationship provides the work with its monumental presence. The continuity of the colonnade is broken by a flight of steps eight column bays wide- the first and eighth sit on the projecting walls that define the flight of stairs. Behind these are six columns, the first and sixth are in antis, embedded in the back wall of the Stoa. This

entrance sequence is echoed in the raised central section of the roof, the equestrian statues on the corners accentuating the first and eighth columns. This alteration of the classical precedent provides the façade with focus and directionality.

Fig. 30 Image of the Façade of the Altes Museum

Once past the screen of columns one finds oneself still outside, but sheltered by the roof. A diagonal flight of stairs takes you to the second floor, the original location of the entry door. Here you encounter a balcony that provides a view past the screen of columns. The Stoa now frames a view of the city, recalling the historical significance of the relationship between architecture and the body politic. The Lustgarten originally contained a line of poplars, a view of which through the layers of columns of the stoa

would have recalled the historical argument that the ancient Greeks originally worshiped out of doors in sacred groves and that the origins of the temple colonnade lay in the trunks of trees.

Fig.31 Image of Painting from the entry

The entry sequence serves as a reminder of the origins of Western architecture in ancient Greece, but upon entering the museum we find ourselves in a vast central space, Schinkel's homage to the Pantheon in Rome. Befitting the precedent, there is no indication on the exterior of the vast domed hall on the interior. But upon reflection we realize that Schinkel has foreshadowed the move. The projecting entry stairs, with their side walls, recall the typical Roman temple form. It should also be noted that the most common temple forms were the Peripteral (six columns across the front) and the Pseudodipteral (eight columns across the front).

The symbolism should not be lost. The Roman Temple, with its association with the ideal of civic religion is superimposed on the Greek Stoa, with its association with the ideal of civic life. One should also recall that it was in the Stoa that the Greek philosophers lectured on the virtues of reason. The work becomes a critical examination of the development of architectural form, one that symbolically combines the associated images of religion and reason for an art museum designed to house Greek and Roman Antiquities. For men like Goethe, Hegel and Schinkel, ancient Greek culture served as an ideal case study for *Bildung* precisely because they saw it as the culture that best balanced these three as vehicles to Truth.

The example of the Altes Museum would not in and of itself suffice to indicate a considered approach to the use of history. But when placed alongside the projects at Potsdam we can see a consistent strategy emerge. It was at Potsdam that Schinkel would create an image and experience of the evolution of architectural form that stood as the logical successor to Gilly's Monument to Friedrich the Great.

Schinkel redesigned Schloss Charlottenhof (1826-1827) as a retreat for the Crown Prince and his wife in the picturesque gardens of Sanssouci Palace. The Main façade was a Neo-grec two story pavilion design, but the rear of the house was sited on an artificial earthen plinth. The open loggia and low hip roof gave it the feeling of a Grecian temple on the garden side. To one side of the raised parterre garden was a simple vine covered pergola. The main axis was terminated by an exedra covered in a velarium supported by iron chains strung from a central iron pole. Its tent-like appearance contrasted with the trabeated form of the pergola.

Fig. 32 Image of Schoss Charlottenhof from Rear

Significant to the design were a series of water features that sat on the main axis and signaled a sequential, or historical, reading of the subject's perceptions. The fountain in front was echoed in the interior foyer by another fountain of similar form. The portico on the rear façade looked out to a linear water feature that connected the open loggia with the exedra; at its center was another fountain of similar design. Like the use of the subjects gaze in the Altes Museum, at the Schloss Charlottenhof Schinkel directed the eye in a picturesque manner to draw out historic connections. Here the historical lineage is of simple tent form, primitive trabeated construction, Grecian temple and Neo-grec pavilion.

But one must not separate this project from the one that followed, the Court Gardener's House (1829-1836), which sits in such close proximity to it. At the time, Schinkel had begun to prepare some of his Italian sketches to be engraved for the *Lehrbuch.* They analyzed the tectonic morphology underlying all architectural form and would have an impact on the project's detailing.

Upon approaching the compound, one is confronted with a perimeter wall whose random pattern of rustication is reminiscent of the Pelasgian stonework Gilly used in the base of the Monument. This gave way to the regular patterns of masonry rustication on the rear wall of the entry courtyard. The movement from rustic stonework to more refined masonry was echoed in the timber construction of the trellises. A vine covered trellis of rudimentary piers sat atop the perimeter wall, while the entry courtyard (between it and the rear masonry wall) was covered by a trellis carried in part by a row of squat Doric columns, with very simple capitols.

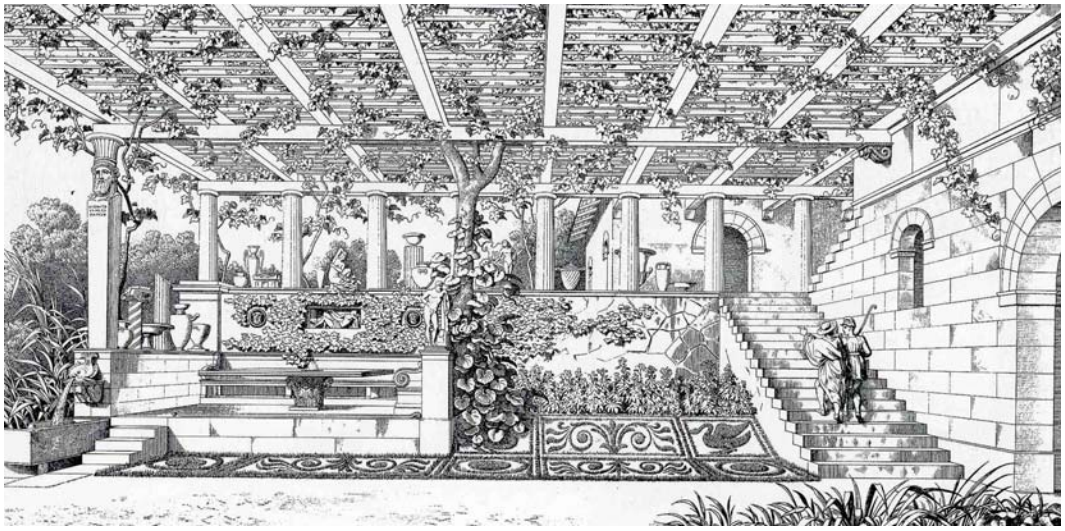

Fig. 33 Image of entry court of the Court Gardeners House

As one passed through the rear wall into the parterre garden one noticed the teahouse to the right, which took the form of a porticoed temple, its' squared piers little more than those of the trellis though changed in proportion and embellished with capitols in a proper architectural order. Behind the temple were two Doric aedicule, in the distance is the temple-like rear portico of the Schloss Charlottenhof sited atop its earthen plinth. It provided the final link in the chain of tectonic forms from rudimentary trellis piers to the principles of the classical order. Schinkel's perspective, done from the roof of the Bath complex, illustrated his intention to link the forms of the Court Gardener's House to those of Schloss Charlottenhof.

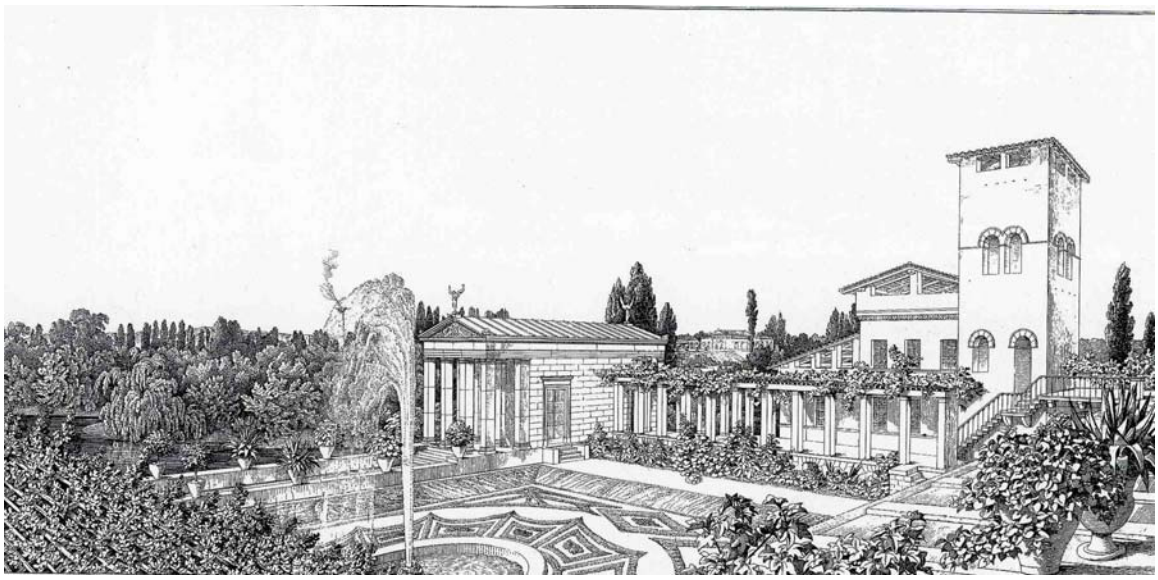

Fig. 34 Image of View across the site

The unfolding of historical development was not limited to trabeation. Schinkel did a perspective drawing showing the arrival to the bath complex by gondola. Here the path sequence was under a rudimentary barrel vault made of branches covered with vines. The

waterway led to the entrance of the baths, where one was confronted with an arcuated loggia. The interior of the bath complex was then decorated in a style reminiscent of Roman villas. The overall picturesque composition of the actual House of the Court Gardener recalled the images of Italian structures he had sketched on his trip through the Roman countryside that were the project's inspiration.

In the Potsdam projects, the architectural experience became didactic. It was in Schinkel's etymological analysis of the *Grundformen* that an awareness of the underlying order of tectonic forms was revealed. At the same time the presentation of its diverse manifestations through history revealed the movement of the Spirit through time.

Schinkel's etymological study of the *Trivialbegriff des Gegenstandes* (its' material and construction technology), revealed a necessary and non-arbitrary relationship between the detail, form and construction processes. For him, this implied an ethical imperative; a commitment to avoid false appearances where ornament masqueraded as a system of construction other than that actually used. As he claimed; "In architecture everything must be true, any masking, concealing of structure is an error. The real task is to make every part of the construction beautiful. In that word- Beautiful- lies the whole story, the whole nature, the whole feeling of conditions . . . Every perfect construction in a specific material has its decisive character and could not be rationally carried out in that same way in another material. . . . In an architecture with style, therefore every construction in a specific material must be complete in itself and whole."[lxxxviii]

Schinkel's etymological study of the *Artistischen poetischen Zwecken* (the artistic or poetic aim of the object, its higher purpose), revealed that the replication of historical imagery, without its recognition as a product of a past civilization, only served to obscure

origins. The imitation of historical styles was wrong and unworthy of humanity, because it failed to consider the *Ideals* the original work expressed. Furthermore, the copy had no grounding in the *Ideals* and practical demands of the time. The imitation of historical styles not only limited the freedom of the artist, but it also hindered the development of the nation and the Spirit.

Schinkel observed that modern construction practices had made it possible to imitate virtually any historical style. But that resulted in a disjunction between the exigencies of construction and the artistic motif. The result was the arbitrary application of form. His concern was summed-up in the following extensive paragraph from the *Lehrbuch*: "I observed a great vast store of forms that had already come into being, deposited in the world over many millennia of development among very different peoples. But at the same time I saw that our use of this accumulated store of often very heterogeneous objects was arbitrary. . . . what in its primitive manifestation in an ancient work produced a highly gratifying effect was often positively disagreeable to me when employed in new works of the present day. It became particularly clear to me that the source of the lack of character and style from which so many new buildings seem to suffer is to be found in such arbitrariness in the use [of past forms]."[lxxxix]

Like Goethe and Hegel before him, he openly rejected the theory of imitation. Nowhere was his critique more poignant than in his response to the book *Baukunst nach den Grundsatzen der alten* written by his teacher Alois Hirt (1759-1837).[xc] Published in 1809, it had become the seminal text advocating Neo-classicism. In it Hirt supported the imitation of the ancients in an almost mechanical fashion. Schinkel criticized Hirt's position in his notes for the *Lehrbuch*, "[imitation of past masters is] in no way historical,

but rather opposed to the historical. History has never copied earlier history, and when it has done so, then such an act is not to be accounted part of history, but rather in it history in a manner of speaking comes to a complete halt."[xci] As he had come to understand it, a truly historical understanding of architecture was the antithesis of the close imitation of past forms. The later marked the end of history, rather than a proper awareness of it. He would claim; "Why should we always build in the style of other times? If it is a worthy achievement to apprehend the essence of each style in its purity, so is it an even worthier achievement to arrive at a pure universal style which does not contradict the best that has been achieved in each of the other styles"[xcii] This was the real lesson of history and the essence of the historical styles. Schinkel would note; "To work historically, is to always have the new element at hand, to know that history is movement and to know how to continue history. It would be the most exciting thing if architecture, and the arts in general, became, like the sciences a field of experimentation."[xciii] True history, like culture, language and nature moved forward. He proposed a proscriptive theory of tectonics as opposed to a descriptive theory of architectural style.

Like Hegel, he called for a new architecture, one that was a union of Greek and Gothic, of reason and emotion, of material and formal impulses, in a new form expressive of the new elevation of Spirit. As he noted; "Every principle age has left the marks of its style on architecture, so why should we not seek to discover a style for our own age?"[xciv] Schinkel now sought a 'pure style of architecture' freed from the 'phantasm of history'. Inspiration for that new pure style would come from his studies of trabeation and brick construction techniques as well as, his exposure to new building typologies, notably the factory.

In 1821 Schinkel began the plates for the publication of *Vorbilder fur Fabrikanten und Handwerker* (Models for Manufacturers and Artisans) a book he was working on with his friend Peter Christian Wilhelm Beuth, the Director of the Technische Deputation fur Gewerbe.[xcv] In its volumes they sought to show the latest production techniques and materials. The pedagogical intention behind their efforts appeared in Beuth's preface. In it he wrote; "how necessary and useful it is to endow your work not only with technical excellence, but also with the highest perfection of form. Only work which combines the two can bring the work of handicraft close to the work of fine art, stamp it with a sense of refinement, and give it a more lasting value than the cost of its own materials."[xcvi] It was a reassertion of the necessity to unite science and art.

In 1826 Schinkel and Beuth began a series of trips to France and England with the intention of making industrial observations and taking industrial tours. Schinkel also used the opportunity to study art and architecture. Of particular note for him were the numerous foundries, factories and shipyards of the emerging industrial revolution. There is no doubt that he was fascinated with the new industrial society that was springing up in Europe, but it would be a mistake to see him as openly accepting the new industrial society and its capitalist economy without reservation. His comments on what he saw reveal not only a fascination with innovation and science, but a growing concern with the negative impact of these developments on society and the individual. Schinkel noted; "Since the war there have been four hundred mills constructed in Lancashire. One sees buildings in place that were once meadows three years ago, yet the buildings are so smoke- stained they appear to have been used for a hundred years- It gives one a frightfully sinister impression: colossal masses of building substance are being

constructed by builders alone without any regard for architectural principles, solely for utilitarian ends and rendered in red brick."[xcvii] The industrial revolution appeared to render architecture nothing more than a mechanical pursuit. Schinkel would claim; "Among all the great productions undertaken, I saw very few imbued with the character of a monument; most of them present to view only the greatest necessary nudity arranged not by artists but by simple workmen."[xcviii] They possessed no submission to a higher order of truth.

Schinkel would seek to correct that in his later works where he pursued a new logic of construction. Most notable were the Friedrich-Werdre Kirche and his master piece the new architecture building for the Bauakademie in Berlin of 1836. Arguably his most original building, the Bauakademie became a sensation as soon as the scaffolding was first removed and to this day (despite its demolition) is still an important structure. Vaulted and constructed of brick, it was the first masonry framed structure built in Prussia and the first to be actually constructed as frame and infill. The colossal piers encompassing all four floors and the jagged courses of brick between the floors established a grid weave of verticals and horizontals that traced with great precision the internal frame of the brick piers and vaults on the exterior of the brick walls. Even the low segmental profiles of the interior vaults were echoed in the great windows spanning the bays between each of the massive piers. The pattern was broken only in the fourth story where trios of small vertical windows indicate the half floor under the roof that sloped inward to drain into the interior court. Every form of the building was derived from the direct elaboration of its fundamental structure. The entire repertoire of forms on

the richly polychromatic brick and terra cotta facades emanated from the nature of the brick frame construction.

Fig. 35 Image of the Bauakademie

The building also resolved the dialectic between the reality of structure and its artistic representation that Schinkel had been exploring in his public architecture since the Schauspielhaus. This was made all the more evident in the iconographic program of the decorative panels that accentuated the form. These terra cotta panels were found on the window sills and surrounding the entry doors. According to Bergdoll, the terra cotta panels around the doorway and across the façade are allegorical "keys to the way in which this startlingly original building was derived from the nature of its own materials and tectonic forms, and form the history of their uses by past civilizations."[xcix] They depicted the history of culture and the development of architectural form. Around the

buildings front entrance the panels depicted the Vitruvian myths of the origins of the columnar orders.[c] No doubt the iconic program harkened back to Gilly's insistence that architecture was the union of science and art. But it also revealed Schinkel's progressive theory of history and its role in the pursuit of an architectural education.

I would argue that Schinkel's etymological study of architecture, both materially and formally, should be juxtaposed with that of Hegel's study of architecture in the *Aesthetics*. Interestingly there has been no serious comparison of their ideas, but the similarity begs the question.

In their respective studies of Classical and Gothic they interpreted the two styles as reflections of two distinct cultural predilections; one focused on reason and materiality; the other on expression and Spirit. Both saw Gothic as Spirit victorious over material, and an expression of multiplicities succumbing to a single upward vision. Each found Classical architecture to be the better example of sublation and, therefore a better case study for the true nature of architecture. Both found Classical architecture to display differences of kind in the elements of construction, whose forms were determined by their use, which in turn were shaped by artistic ends organically. From this each came to the conclusion that signification and meaning in architecture were self-referential; a paratactic system of arrangement controlled by rational ordering. Both believed that architecture was determined by the construction of the enclosing walls, and the construction of the ceiling. And each eventually called for the necessity to develop a new architecture of the age.

The coincidence of their interpretations can be seen as a point of interest, but it is not the crucial intersection of their thought. After all, such interpretations were not limited to

them and were common to their intellectual circle. More significant was the intersection of their dialectical approach to history that underlay their mutual examinations.

Hegel's analysis of the movement of architecture provided us with an image of the oscillation between material and formal impulses. The lesson of history was that it must be mindful of the necessity of sublation. If architecture forgot this, it became (like *Geist*, which it manifested) either; the "Beautiful Soul" losing itself in mathematical abstraction, or it created the *verkehrte Welt* forgetting its own essence. It was in the comparative analysis between the styles that a theoretical understanding of how architecture as symbolic form emerged and advanced.

For Hegel, such advance philosophically came in the form of submergence into the concrete. As we were told in the *Phenomenology*, such a movement was effected by *Errinnerung*, or Recollection. The *Aesthetics* provided just such an architectural recollection, recounting architecture's history as a symbolic form. Hegel had attempted a philosophical inquiry that sought to move beyond the self-consciousness of architecture's self-reference and parataxis toward a vision of architecture as a form of "Absolute Knowing". But more importantly, it implied a framework for architectural theory, one that examined how the ideal was manifest in a form appropriate to material needs. It was the recollection of the necessity of sublation by recognizing that the truth of architecture lay in its ontology.

I would assert that, Schinkel affected the same theoretical framework, but that his study was far richer. With the *Grundfomen*, Schinkel found the key to nature's continuity in architecture's construction. The analog to Goethe's morphology, it contained not only the principle of architectural unity, but also the principle of its difference. He effectively

translated the idea of *Poetic Unity*, so central to Counter Enlightenment philosophy, into a systematic theory of architecture.

His etymological study of the *Grundformen* became a demonstration of how architecture emerged and advanced. That study took two perspectives the *Trivialbegriff des Gegenstandes*- it's the material and construction technology- and the *Artistischen poetischen Zwecken*- its higher purpose- comparative to the formal impulses. But unlike Hegel, whose recollection was essentially theoretical, Schinkel's recollection included the practical. It affected therefore, a greater submergence into the nature of architecture's materiality; into the concrete. It was that submergence that allowed him to make the cultural advance to a new form in the Bauakademie; to effectively create a new manifestation of *Geist*.

Schinkel's recollection and submergence into the concreteness of architecture was a search for a higher order of truth. Both Hegel and Schinkel pursued the same thing, one in the conceptual form of 'Absolute Knowing" and the other in the concrete form of architectural theory and practice. But it was the latter that was the more compelling precisely because in its unity of theory and practice it was a true concrete universal.

Schinkel proved to be an important prominent architect and theorist who directly influenced generations for some one hundred years. It was through that influence that ideas of the Idealist philosophers became a major component of modern architecture. If Hegel provided the theoretical framework for understanding architecture as a means to Absolute Knowing, it was Schinkel who gave it an ontological presence, one that would continue in the theoretical work of Hienrich Hübsch and Karl Bötticher.

> "The indispensable main forms of a building are taken simply as a mechanical framework over which architecture proper in its role as a fine art should spread its veil of exquisite forms."
>
> Heinrich Hübsch
> *Differing Views of Style*[ci]

Heinrich Hübsch and the 'Technostatic' Forces' of Architecture

Schinkel and Hegel were not the only theorists in the 1820's to raise the specter of style within the discourse of architecture. In 1828 the architect Heinrich Hübsch (1795-1863) published the small book, *In What Style Should We Build?,* in which he chastised his contemporaries for imitating historical styles when they failed to meet contemporary building needs. "Most of them really believe that the beauty of architectural forms is something absolute, which can remain unchanged for all times and under all circumstances, and that the antique style alone presents these forms in ideal perfection."[cii] He blamed this 'sophistry', as he called it, on an incorrect notion of beauty that took its authority from the decorative aspects of historical styles.

In his earlier *Über griechische Architectur* (*On Greek Architecture*) of 1822, Hübsch dismissed the idea that the Greek temple was an imitation of earlier wooden prototypes, an assertion that had dominated architectural theory since Vitruvius. He went on to demonstrate that the Greek Style was a product of the structural laws and properties of the materials used in construction. He claimed this was what determined the major elements of the style. If the Greeks had invented a style of architecture that was refined and highly appreciated, it was because they developed these details in accordance with practical necessity in conjunction with the taste and ability of the individual artist. The

Greek ‘style’ was the necessary response to a series of given particulars, that may have produced something beautiful in its outward appearance, but that did not mean that it should be imitated.

Like Schinkel, Hübsch argued that the application of principles learned from historical analysis was essential to the development of architecture. The imitation of historical styles was the result of a failure to recognize that the origins of details were rooted in true purpose. He called it the original sin of architecture. " First the elements are applied to places where true purpose does not call for them and where they serve a sham purpose only; then, even this fictitious purpose is dispensed with, and the architect rests content, as it were, with the sham of a sham: . . . In order to allay misgivings, a wholly conventional aesthetic forum is postulated, which supplies the argument that this or that essential form arises, at least initially, from some real purpose."[ciii] He saw the continued use of the traditional orders by the Romans after they had developed the new walling systems as an example of this sham architecture. In his mind this applied equally to contemporary architecture. Neo-Classicism contained no truth because it contained no true relationship to the original purpose of either ancient Greek architecture or contemporary construction. The continued adherence to convention and tradition, had led to a decline in architecture.

According to Hübsch, architects had confused ‘Style’ with the production of the work of art. In a later essay from 1847 entitled *Differing Views of Style*, he claimed ". . . it is the poetic conception and organic presentation of the actual object and its artistic decoration that causes enthusiasm and delight, rather than the style, which concerns only the more general qualities of the work of art and in fact has to do with cold logic."[civ]

Hermann notes that, Hübsch's ideas may have been influenced by a series of letters between Carl Friedrich von Rumohr and Johann Karl Schorn published in the 1825 *Kunst-Blatt.* [cv] In the letters Rumohr outlined a clear distinction in architecture, between the material and ideas and their artistic representation. According to Rumohr, only the material and its treatment, was a subject of style. Ideas and their artistic representation were a separate issue. I would not disagree with Hermann's assertion, but would add that the distinction was essentially that of the material and formal impulses that dominated Idealist aesthetics since Schiller. In the 1828 book, Hübsch's intention was to focus on the principles that determined what he was referring to as 'style' and not the artistic representation. According to him, the principles of style were the product of four factors; climate, present need, material and technical experience. By relegating style to the technical sphere he, like Rumohr, made the claim that it was distinct from the 'aesthetic qualities' of the formal impulse. Thus style only addressed the material impulse.

Hübsch, like Schinkel and Hegel, defined architecture as an enclosure whose essential components were the ceiling and its supports (which could include columnar supports or enclosure walls). These in turn shaped two general determinants of style; 1) the basic spatial component and 2) what he called the 'technostatic' forces of the individual components of the system. The first determinant, the enclosure, was manipulated by a given people in response to climate and need. It determined the general architectural form. For him, climate was a primary factor, because it determined the nature of shelter and protection. Steep roofs were necessary in the north to shed snow, while in the desert it was acceptable to have no roofs. Where it rained broad eaves were essential. Thus, the roof was a protective element, the windows and doors necessary for light and

accessibility. These were the elements necessary to satisfy the basic concerns of architecture.

The second determinant, the 'technostatic' force, was the result of the material and technical experience. Accordingly, the proportions of a structure or its elements were determined by the statical stresses within the structure and the perceived abilities of the materials to carry them. Each material reacted to given situations of compression and tension in a specific fashion according to its own inherent strengths. Stone is stronger in compression, wood in tension. Therefore, a stone beam needs to be thicker than a wooden one and can only span a given dimension before it cracks under its own weight.

Hübsch did not see the technostatic forces as fixed. They evolved over time with familiarity and experience, becoming lighter and more economical. Through time and experience those proportions changed as familiarity with the material or technical prowess advanced. The advance from say, Romanesque to Gothic, came about because of a developing familiarity with stone construction and the desire to use less material. The stylistic result was thinner, or elongated proportions, and a lighter structure.

But we should be careful not to interpret him as a materialist, or rationalist. Style dealt with the building as a response to necessity, but the exact shape of a detail or part of a building or structure was not reducible to objective laws or conventional rules. In his words "Art would be destroyed if artists were to embrace the prosaic spirit and the coarse vision of the fickle and childishly vain world of modern materialism, which staggers from one extreme of bad taste to the other."[cvi] A point made earlier by Gilly. As he claimed; "These formative factors, derived from function, are surely as objective and as clear as they could possibly be. Yet they do not determine the size and basic form of the essential

parts with any exactness. They present a path that is firm yet not too narrow: though clearly indicating the main direction, it still allows some latitude."[cvii] The individual artist shaped these factors and it was their ability and taste that provided the work with its lively diversity, raising it to a higher purpose and making it a *Poetic Unity* in architecture, one that was discovered in historical recollection.

Hübsch may not have been an important figure in the Counter Enlightenment, but his ideas were certainly influenced by it. In *Differing Views of Style*, he claimed; "There still exists, though small in numbers, an intellectual aristocracy that withstands the anti-idealistic, onslaught of shallow, rational utilitarianism and materialistic Epicureanism."[cviii] Like his Idealist contemporaries he defined man as ever changing, noting that in appearance, man "no longer has a 'being' but –in Hegelian terms- only a 'becoming'."[cix]

> "Knowledge alone leads to conception; only imaginative inquiry inspires thought and invention."
>
> Carl Gottlieb Wilhelm Bötticher
> *The Principles of the Hellenic and Germanic Ways of Building* [cx]

Bötticher and the Ontology of Intelligibility

Karl Gottlieb Wilhelm Bötticher (1806- 99), a student and admirer of Schinkel,[cxi] published three texts between 1840 and 1852 in which he elaborated his ideas on architecture.[cxii] In many ways, it was a continuation of Schinkel's ideas from the *Lehrbuch*, but Bötticher's theory was also revolutionary. He pushed beyond the issue of

style and the use of history and proposed a theory of metaphor as the basis of the design process.

Bötticher dismissed the theory of imitation as counter intuitive to art and a negation of history. He claimed; “History itself has marked such an attempt as a destruction of everything that makes architecture into an art. Wherever it has made its appearance in architecture, it has signaled the death of the idea of form.”[cxiii] Like the other Idealist thinkers, Bötticher saw art as an expression of a people. The transference of forms from one style to another denied their essence; their very uniqueness. It negated the realities of their construction and its’ development from the particularities of the culture they came from. The assertion of an ideal model, or era, meant the inherent negation of the value of other styles and eras. Art was produced in all times and in all cultures. How could only one be acceptable as a universally valid truth? [cxiv] Furthermore, this amounted to a negation of history; a condition he felt was also untenable. “We would find ourselves alone in an immense void, having lost all the historical ground that the past has provided for us and for the future as the only basis on which further development is possible.”[cxv]

For him, the most troublesome outcome of the theory of imitation was the Greco-gothic Ideal. By clothing the Gothic structural skeleton in Greek details it negated, the inviolable qualities of each. He claimed: “They really thought to take the perfect product of a time- honored art, which embodies and reveals the artistic awareness and practical ability of a great nation, and use it like a model to be dressed at will. This was a most wretched and foolhardy idea; it was eclecticism at its lowest, which every time it has appeared in history has signified the relapse of a generation from a higher plane of tradition into ignorance and license. While shamefully disfiguring one style by robbing it

of the inborn essence of its character, they violated the opposite style by forcing it into monstrous dress and cruelly degrading it into a buffoon of modern art. . . .Of course, something new would be produced, but also something monstrous: something possible as form, but lifeless and stillborn."[cxvi] The inherent contradictions of such a hybrid only served to destroy each style in the process.

Bötticher came to two conclusions regarding architecture's relationship to history. The first; we must hold on to what has been directly handed down to us lest we lose the positive assets that we now possess, and second; it follows that we must not make use of tradition for its own sake. On the issue of the necessity of history Bötticher was emphatic; "To reject or negate tradition is as impossible as to reject history itself . . ."[cxvii] The negation of history in his mind only lead to the appearance of novelty, which in the end proved only to be misunderstood or misapplied traditional motifs. Conversely, the use of tradition and history for its own sake was to fall into the trap of nostalgia.

The theory of imitation was problematic, because it clouded our ability to learn from the past. Both styles, Greek and Gothic were part of the collective experience of our world. The unity of that experience meant that there must be some continuity between them; a continuity that implied the possibility for yet another style to emerge. He would claim; "These two styles [Classical and Gothic] . . . are not opposites in the sense of being conceived or created in order to cancel or destroy each other, but opposites that are complementary and, within the vast framework of the history of art, are therefore always conceived together. They signify two stages of development that have had to run their prescribed course before a third style can see the light of day, one that will reject neither of the two preceding ones but will base itself on the achievements of both in order to

occupy at their stage in the development, a higher stage than either: a third style that is destined to be produced as a matter of historical inevitability . . ."[cxviii] If critics were arguing over which was the true style, then that was proof that 'truth' lay not in some synthesis, like the Greco-gothic ideal, but somewhere in the dialectic of their apparent opposition; in a resolution that allowed for the possibility for both to be valid. This was clearly an Hegelian proposition, one that he would consistently apply.

It also implied the more teleological view of history as it was promoted in Idealist philosophy and aesthetics. Bötticher put this in decidedly practical terms. "Through scholarly research we must penetrate [architectures] spiritual and material qualities in order to arrive at an apprehension of the essential nature of tradition and an understanding of its forms. Only then will we be able to decide what part of tradition merely belongs to the past, was valid only then, and therefore must be rejected and what part contains eternal truth, is valid for all future generations, and therefore must be accepted and retained by us."[cxix] The task of historical research was to identify the origins of styles and their underlying principles to determine which were still valid and where, and to be selective regarding their application as a means of allowing for further development.[cxx]

Like Gilly, Schinkel and Hübsch, Bötticher saw the task of architectural research as the search for the unity in difference that was revealed in the history of style. He stated; "This would be true eclecticism, the eclecticism of the spirit that reigns throughout history and through which, in a gradually accelerating development, nature conducts the essence of each thing toward its supreme and ultimate goal."[cxxi] He too, sought an architectural analogy to Goethe's morphology, one that revealed the continual process of becoming that was the movement of Spirit.

Like Hegel and Schinkel, he asserted that architecture began with the covering of space and the creation of shelter, thus it was the roof structure and the subsequent means to support it that was the essence of architecture and each style. According to him; “The essence of architecture resides in its unique capacity to present the idea and set forth its theme through this structural- spatial combination, it follows that a work of architecture can be fully comprehended only if looked at and enjoyed spatially.”[cxxii] The idea of spatial covering combined with the available materials and technology resulted in the formulation of a system of supports, and their proper placement. The statical means by which the load of the sheltering roof system was carried down became the basis of the expression. Furthermore, each component of the system now was conceptualized as having a vital part to play both in the aesthetic harmony of the whole and the actual necessary construction of the system. According to him, these had never been seriously considered.[cxxiii] This of course was not entirely true. It was a point made by both Hegel and Schinkel, and Bötticher’s approach owed much to them. But he may have felt they had not gone far enough in defining the design process as a generative principle.

Bötticher focused on the way in which the material was transformed into the structural principle we call style. He claimed; “The covering reveals the structural principle of every style and constitutes the criterion by which to judge it. What comes first with any style is the development of a *structural force* that emanates from the material and, as an active principle, permeates the system covering.”[cxxiv] According to Bötticher, the materials ‘structural force’ was ‘aroused and compelled to demonstrate its structural strength once it has been given a form’.[cxxv] The architectural member, or detail, was the by- product of both the form and the expression of the latent forces within the

material. Thus the form was not an a priori idea copied onto the material. The material was an active player in the generation of the form. Exactly how Bötticher explained this was what was so unique to his theory.

Consistent with Idealist aesthetics, it was the integration of material and form that created the structural principle. Bötticher would again express this in decidedly pragmatic terms that would prove to be the most direct translation of Schiller's material and formal impulse into architectural theory to date. He referred to the manifestation of the structural force, the active material impulse, as the *Werkform* (Core-form). It had a technical purpose, but its principle was one invented for the situation. He referred to the form, the active formal impulse, as the *Kunstform* (Art-form). It too emerged from the situation. As Bötticher would claim; "architecture in all its different manners and forms emanates from the artistic consciousness of the generation that created it . . ."[cxxvi] Reminiscent of Schinkel's *Grundformen,* it was from the interaction of the material and the collective consciousness- and its ability to imagine a new structural principle- that the Art-form emerged. Bötticher did not conceptualize the Core-form and the Art-form as independent or derivative. As he claimed; "The structural member and its art- form are initially conceived as a single whole . . ."[cxxvii] Like all works of art it was a unified whole. To use Hegel's terminology, it was a concrete universal.

For Bötticher, like Schinkel before him, the starting point of the creative process was the material. Not every material was equally strong in a given situation. "When using a material, the inherent force and its strength must be investigated. From this knowledge automatically follows that law that lays down how the material should be formed to fulfill its specified function. In this way the structural form of the architectural part is

determined, and the nature of the material is master and made useful."[cxxviii] Thus the particularities of the material should affect the final form if the work was to exhibit a relationship to reality and truth. This was what the proper historical study of Greek and Gothic architecture revealed. "It was through such a process that relative strength became the active principle of the Hellenic system of covering, and the reactive strength that of the vaulting system."[cxxix] As building needs changed and material and technological advances occurred the Core-form was transformed, evolved, or a new one was generated.

For Bötticher, the search for architectural truth was the search for the ontology of its intelligibility. But it would be a mistake to think that he defined it in terms of construction and the Core-form alone. He was by no means a materialist promoting the rational exposition of the statical forces- i.e. the Mechanism of Structure. His vision was broader. The mission of the poet and artist he claimed; was "not to serve a commonplace reality and remain within its confines but to follow a higher calling . . ."[cxxx] It was the dialectic of material and form that was the eternal law of architecture. The emergence of meaning from the manipulation of the material was an ever-continuing process of becoming, each detail only a particular manifestation of this universal law. The true ontological ground would have to be found in the dialectic of the Core-form and Art-form.

Rational tectonics assumed an ability to read the statical forces in the structural principle of architecture. But as Bötticher noted, the Core-form was an invention with no 'natural' model. The question was *'How did the intelligibility of the Core-form emerge in the first place?'* His answer was the Art-form, while also an invention it was taken from our experience of the outside world, from memory.[cxxxi] He explained it as follows;

"[Architecture] takes its symbols and art- forms only from those natural objects that embody an idea analogous to the one inherent in the members of the architectural system."[cxxxii] Bötticher's understanding of the creative process was metaphorical, one that started with the particulars of place and material and then searched for analogous conditions already understood through experience. The Art-form troped what was known onto what was unknown, making it intelligible. By referencing previously experienced forms, the Art-form provided an allegorical explanation of the Core-form such that it could be read and understood. The resulting concrete metaphor maintained the reality of the material and the particularity of the situation while introducing a collective memory that allowed the subject to empathize with the condition and understand it. Bötticher came remarkably close to the ideas of Father Carlo Lodoli on this point.

Interchangeable from material to material, the Art-form preserved the memory of the historical development of construction practices, but also acted as a conservative force which balanced out the potentially more dynamic force of technological advance. For Bötticher this was important. Rapid developments in new materials could alter the Core-form radically, making them alien to the society as a whole. The Art-form preserved architecture's intelligibility in the face of innovation by providing an aesthetic key to reading the new form. Consequently, when the analogue of the Art-form no longer bore a relationship to the Core-form, intelligibility was lost. Under such conditions a new metaphor had to be found that generated a new Art-form appropriate to the material and construction technology.

The problem with the theory of imitation was precisely in its maintenance of Art-forms that no longer possessed an appropriate intelligibility. True methodological

research moved beyond the sensuous impressions of the details to an understanding of the creative process. Bötticher was clear on this point. “While penetrating in this way the essence of tradition, we simultaneously recapture an awareness of the principle, the law, and the idea inherent in traditional forms; destroy lifeless eclecticism; and once again tap the source of artistic invention.”[cxxxiii] Architectural knowledge must return to its original source; its arche, it should be apodictic; a demonstration of its own ontology.

Bötticher’s discourse on Core-form and Art-form provided a framework for understanding architecture’s intelligibility that was both practical and theoretical. The core form could be rationally understood *post facto* through the analysis of the material, construction technology and the statical forces that moved through them. This would certainly provide a conception of the ‘structural principle’. But the creative process was not analytical. With the cognitive process of the metaphor, Bötticher had provided a theoretical framework for understanding how intelligibility and meaning were created in the design process. As he would claim; “Knowledge alone leads to conception; only imaginative inquiry inspires thought and invention.”[cxxxiv] It was not rationality, but *poesis* that was the generative principle of architecture. According to Bötticher; “. . . only when practice and learning are joined can a learned practice arise; and that alone is art.”[cxxxv] That learned practice was a dialectic; composed of the interplay of the Art-form (formal impulse) and the Core-form (material impulse).

From Lodoli to Bötticher, the theorists of poetic tectonics all expressed concern over the direction of architectural theory and practice. Most notably, were what they saw as the inappropriate application of historical forms to contemporary construction and the instrumentalization of architectural theory brought on by the Mechanisms of Structure and Disposition. The concern over the use of historical forms grew out of the rise in eclecticism at the turn of the century facilitated by Subjective aesthetics, Associationalism in particular. The issue deepened as construction practices made it possible to apply any historical detail to virtually any building. The result was an increase in the arbitrary use of form and more significantly a severing of the relationship between construction and detailing. History had never copied earlier styles and architects questioned why they were doing so now.

Their questioning followed developments in aesthetics, where theories of imitation were increasingly seen as fundamentally flawed. The inherent duality of image and original implied an opposition between what was perceived as truth and what was perceived as a lesser vehicle to it. In the specific case of the theory of ‘la belle nature’, Art was a vehicle to truth, but only by revealing the underlying rationality of Nature which served as its paradigm. In denying it any real autonomy, all theories of imitation had failed to address Art on its own terms as a human activity.

In their place, the Idealist philosophers proposed that Art was an originary act, one that set in motion the process of self-actualization and the creation of a uniquely human worldview. Therefore, all symbolic forms, including architecture, had a cognitive

function that produced meaning and signification. They did so as an expression of a given people, in a given age and in a given location. They were in a word; historical, and their value lay in our ability to read in them the overlay of the human spirit on the material. For Architecture this meant the continued imitation of historical forms failed to acknowledge the ideals of the original work and those of the current age.

The critique of imitation also called into question the cornerstone of rational tectonics; Laugier's theory of the primitive hut, itself a product of 'la belle nature'. But the real challenge to it came in a critique of its inherent instrumentalization. Derived from nature's simplicity and functional efficiency, the primitive hut reduced architecture to a series of pure relations, a parataxis, which could be analyzed in accordance with the methodology of science. Architecture was reduced to two 'analytical' principles; the Mechanisms of Structure and Disposition that embodied the abstract reason so central to the epistemology of science.

The Idealist philosophers had rejected abstract reason and the application of the methodology of science beyond the realm of the natural sciences, and its architectural theorists followed suit. The reduction of architecture to the rational expositions of function and utility rendered the profession a mathematical endeavor rather than an art form. No one was more adamant about the dangers of this than Friedrich Gilly. According to him, it placed a concentration on the scientific aspects of architectural knowledge at the expense of understanding the discipline as an art form. The result was specialization and the fragmentation of architectural knowledge. The task of Architecture was to respond to the greater issues and concerns of society and not just the practical and economical concerns of a specific project. His argument was echoed by those that

followed. The architectural theorists all warned that if architecture only addressed prosaic material concerns everything that made it an art would be destroyed.

It was this critique that precipitated the necessity to develop an alternative framework for architectural theory. It should be no surprise that the method of theoretical investigation adopted in poetic tectonics followed that of the Counter Enlightenment philosophers, Vico and Hegel in particular.

For Vico, true wisdom was a combination of what he termed *coscienza* and *scienza*. The object of *coscienza* was *il certo,* the knowledge of particular facts, customs, institutions etc, the pursuit of which was philology or history. The object of *Scienza* was *il vero,* the true; the eternal principles of common sense, the pursuit of which was philosophy. Vico's *New Science* took as its methodology both pursuits: philology and philosophy. Its method began not with the classification of objects as universals, but with an investigation of the particular, as a given certain. It was then through the cross comparison of such particularities that one uncovered the principle of their coming into being. His method bore a similarity to that of Hegel in the *Phenomenology*. In it Absolute Knowing emerged from *Erinnerung*, or recollection, the power to create images (a *Bild*), to call them forth and to re-collect them into a totality; a conceptualized history (a *Begriff*). It too applied an historical comparison of particulars in the pursuit of the philosophical principles of being. In both instances, and for Idealism in general, the task of knowledge was first to grasp the world in its fullness as an ontological construction; as a *poesis*. And second to expose those constructions as the result of human praxis. Theoretical investigation proved to be the study of how praxis and *poesis* formed the unity of experience.

In line with this, poetic tectonics applied a method of investigation that incorporated both the historical and the poetical. History revealed the larger order of things. The poetical was the theoretical examination of *poesis* as both design process and cognitive structure. The Idealist philosophers saw poetry as the *novum organum* of philosophy. Therefore, it was here that architecture opened itself to philosophy.

For the Idealist philosophers, architecture, like all the arts, was a symbolic form chief among which was language. Therefore, it is not surprising to find that the pursuit of history followed that of etymology.[cxxxvi] This was most evident in the work of Schinkel. For the theorists, the study of architecture began with the study of the particular, the nature of the work itself. It then proceeded to a comparative history. The intention of which was to locate a common ancestral form and the principles of stylistic development. Lodoli was the first to attempt this when he organized his study of architecture sequentially by style, but the other theorists followed suit.

The historical examination began with the question of origins. Rational tectonics had proposed a series of ideal type forms, such as the primitive hut, as the origin of architecture. But for the theorist of poetic tectonics these only served as a means to ends. While the use of means to satisfy ends tied architecture to materiality and the physical world, its importance as an art form was not solely dependent on it. While objectively related, the ends could be achieved by a myriad of other means. This meant that specific means, in any form- including the primitive hut- were philosophically inconsequential. Its rationality could not be the true origin of architecture.

Central to Idealist aesthetics was the assertion that a work of art was a product of a human mind that provided its idea. It is therefore, not surprising to find that implicit in

poetic tectonics was the idea that the true motivator of architecture was its purposive idea (shelter, assembly, worship or nation). It was the act of marking a space with human signification; the creation of a *genus loci*.

Micea Eliade has identified this action as the distinction of sacred and profane space. As he noted, it "reveals absolute reality and at the same time makes orientation possible; hence it founds the world in the sense that it fixes the limits and establishes the order of the world."[cxxxvii] Like Vico's 'Imaginative Universal', Fichte's *Anstoβ* and Hegel's *Ansich*, it was the result of Man's confrontation with materiality that gave meaning to collective experience. Like Nature and Man, architecture emerged in the dialectic of self and other, caught up in the passionate historicity of experience and originary praxis. The 'founding of the world' was the objective manifestation of the *sensus communis*, one that made possible the ontology of the absolute.[cxxxviii] The *archai* of Architecture was not *ratio*, but *logos*.

Such ontological gestures, referred to by Gilly as *Ur* forms, and by Schinkel as *Grundformen*, were seen as poetic constructions; the product of a unique capacity to manifest an ideal within a spatial-structural combination. Basically schemata composed first and foremost of spatial configurations that were expressions of a higher independent purpose or ideal-, and secondly the real necessity of their structural support. They were ontological images of architecture.

Most commentators have seen such images as extensions of the idea of type forms. But this is to overlook their epistemological significance. While both contain the concepts of 'space' and 'parataxis' they were defined differently. Within the Mechanisms of Structure and Disposition, 'space' was subservient to 'parataxis' itself a reflection of

functional and utilitarian efficiency. Therefore, their loci can be found in an a priori universal; Nature's underlying rationality.

In contradistinction to this, the loci of poetic tectonics could never be found in a priori laws, precisely because the *genus loci* from which its conception of both 'space' and 'parataxis' emerged contained too many variables, which while coincident were not always commensurate. For this reason we can claim that the ontological image arises from the particular as opposed to the universal; a key epistemological point of Idealist philosophy. This point can be made clearer if we examine the concepts independently.

While concepts such as shelter or worship may be construed as universal, their actual expression in a spatial configuration is not. In poetic tectonics, 'space' is the expression of an ideal by the *sensus communis*, itself the product of its unique 'climate' composed of the concrete particularities of place, time and historical condition. It is out of this always already present milieu that 1) the ideals and ends are determined- shelter, worship, national identity, 2) how they are defined- their organization as social institutions, 3) where they are located- the actual demarcation of sacred and profane space, and 4) how they are expressed- their actual spatial configuration resulting from 1, 2 and 3. The formal impulse cannot be a universal because it is site and culturally specific. It must therefore be considered a particular, thereby making it a noetic ontology.

In poetic tectonics 'parataxis' was conceptualized as a true techne; a means that arose from and contained the inherent material contingencies of site, climate, material and technology (trabeation, vaulting or truss systems), making it too, a reflection of the particularities of place, time and historical condition. As opposed to a rational exposition of the statical forces or functional adjacencies, it proved to be a performative ontology.

In place of the ‘analytical’ principle of the primitive hut, the proponents of poetic tectonics proposed a new ‘generative’ principle; what I will refer to here as the dialectic of noetic and performative ontologies. The key to grasping its epistemological implications lies in recognizing the ‘and-ness’ of the dialectic.

To grasp this we have to return to the noetic ontology and its origins in the ‘climate’ of the *sensus communis*. Whilst numbers 1) and 2) above are purely ideational, numbers 3 & 4 contain a sensual or concrete dimension. Therefore, they require the active participation of the material impulse. The actual site conditions of geographic location, topography and atmospheric conditions all place limitations on the spatial configuration. Additionally, the structural force which emanates from the available material; its internal physical properties of strength, durability and workability, all play a part in the determination of what it can and cannot do in response to the spatial configuration. This establishes the parameters of the technology available. Hence the material impulse places both physical and conceptual limits on the spatial configuration of the formal impulse. Both ontologies emerge in tandem from their unique ‘climate’. The dialectic is therefore, a sublation of the formal and material impulses. It is what Hegel called a concrete universal. Concurrent with philosophy, architecture established a new theoretical framework; one that examined both the noetic and performative ontology of architecture as a *Poetic Unity*.

For the theorists of the poetic tectonics, these ontological images were seen as the etymological roots of architectural languages, whose theoretical implications could only be grasped through a comparative history. The purpose of which was to determine the underlying principles of style.

According to the theorists, all building was building in materiality and therefore had to adhere to the laws of physics and the nature of the materials of which it was constructed. This constituted the material impulse, and served as the source of the performative element. Bötticher called this the Core-form.[cxxxix] The comparative history revealed that it resulted from a study of the characteristics of a particular climate, material and technology. It was the infinite combination of these variables that accounted for the diversity of performative strategies. Individual styles developed or changed over time in part, as changes in the variables lead to changes in materials and the introduction of new technologies that then altered or introduced new performative strategies.

For the theorists, the comparative history revealed a necessary and non-arbitrary relationship between the stylistic motif and the nature of the materials. This proved a key principle central to poetic tectonics; the performative element was self-referential, hence the necessity of its legibility. The inappropriate use of historical forms, lead to false appearances that obscured architectures origins in the dialectic. This disjunct undermined architectures claim to truth. Therefore, to work historically was to always have the element of the new at hand.

While the parameters of a given performative strategy were shaped by the statical stresses within the structure and the nature of the materials used, the comparative history indicated that its overall proportions and form evolved over time, often starting out more rustic and over time becoming more refined. With familiarity and experience they became lighter and more economical. This meant that the original configuration had not been entirely deduced from objective laws. It pointed to evidence of experiential knowledge, as a determining factor. An early lack of familiarity led to structural

overcompensation (heavier proportions) and more rustic craftsmanship, while greater familiarity led to an increase in economy (lighter proportions) and more refined craftsmanship.

Hübsch had referred to the combination of the material factors and this experiential knowledge as the 'technostatic' force. Based as it was in the material impulse, it was still part of the performative element, but its presence indicated that the final form was to some extent culturally influenced. If it were not then the development of a style would show no regional variation, furthermore there would be no variation between independent cultures that used the same material and technology. Thus the final form of the stylistic motif had to be shaped by another influence.

Bötticher referred to this influence as the Art-form, and it dictated the final form of the stylistic motif and its proportions.[cxl] It too, was evidence of an experiential knowledge, one based upon contemporaneous cultural canons and ideals; it was an expression of the *'Fortgang'*. It was in this way that the development from one motif to another, from one style to another, and from one culture to another, simultaneously revealed the movement of spirit through time.

Serving as the noetic element within the stylistic motif, it constituted what might be termed an active formal impulse, similar to the active material impulse that permeated the original dialectic. This is so, because the determination of means and ends was rooted in human experience in the practical and cultural knowledge that constituted the *'Fortgang'*. It established both physical and conceptual limits on the performative element. Thus, both the noetic and performative emerged in tandem as a *Poetic Unity*. This was what Bötticher meant when he insisted that the Art-form and Core-form arose simultaneously.

The historical recollection reveals that the course of architecture is the continual re-genesis of the original dialectic. As practical and cultural experiences accrete they challenge the structure of the existing aesthetic code. At such moments, the architect engaged in a critical practice must stop and grasp again its form; he/she must recollect.

To do so is to submerge toward embodiment, and the concrete; to affect a renewed confrontation between architect and ever-changing 'Climate', between 'self' and 'other'. Once again the task is to re-negotiate the contingencies of usage, material, technology and ideal, to determine their ability to provide an appropriate motif in accordance with functional and cultural needs. It is out of this action that new materials, technologies and ideas are introduced and new stylistic motifs are created. This act of recollection is what engenders the sublation of the material and formal impulses and the creation of a new image/*Bild*. The design process proves to be a calling forth of images in the historicity of experience. It is praxis that serves as the originary moment/movement of architectural *poesis*.

But the recollection reveals more than just architecture's self-actualization; it addresses its entire experience. It produces a *Begriff*, a conceptualized history; a *vera narratio,* that sacrifices the aesthetic characteristics of architecture for a fuller understanding of the generation of meaning and its rationalization.

The new image/*Bild* now becomes a part of the experience of architecture as such it is destined to become an object for consciousness. It is this movement that engenders what we might liken to a doubling of the *Ansich* in Hegel's *Phenomenology*. The image/*Bild* becomes both 'object' and 'object for the contemplation of the 'I''. This doubling affects a movement toward rationality as the image/*Bild* is conceptualized as thing and

properties. Architecture identifies its self-referential character within the parataxis of its performative element and affects a division between it and the noetic.

The doubling now initiates an oscillation between the performative and noetic. The definition of architecture now swings between that of a rational science and a fine art; between the *verkehrte Welt* and the 'Beautiful Soul'. It is this doubling that creates what I have referred to as rational tectonics. It is a form of forgetting. A forgetting that the performative ontology is really not distinct from the noetic ontology, that the two are mutually dependant.

Poetic tectonics challenges this doubling, by redirecting theory towards architecture's *archai*; the dialectic of noetic and performative ontologies. It is a form of *Errinnerung*, the re-collecting of the process of signification from its inception to its rational codification.

ENDNOTES

[i] Sulzer, *Allgemaine Theorie der Schhonen Kunste*, 2 vols. Leipzig 1771- 74, Biel 1777, the latter here cited, pp. 171.
[ii] Mortiz, *Vorbegriffe zu einer Theorie der Ornamente*, Berlin, 1793, facs. repr. Nordlingen 1986. Pg. 4.
[iii] Sulzer, *Allgemaine Theorie der Schhonen Kunste*, 2 vols. Leipzig 1771- 74, Biel 1777, vol. I, p. VI.
[iv] Anonymous, *Untersuchungen uber den Charakter der Gebaude; uber die Verbindung der Baukunst mit den Schonen Kunsten under uber die Wirkungen, welche durch dieselbe herbvorgebracht werden sollen*. Dessau, 1785, 2nd ed. Leipzig 1788; facs. repr. Of 1788 Nordlingen 1986, pg. 10.
[v] Gilly, "Some thoughts on the Necessity of Endeavoring to Unify the Various Departments of Architecture in Both Theory and Practice", *Sammlung*, 1797, reprinted in *Friedrich Gilly Essays on Architecture 1796- 1799*, trans. Britt, Getty Center for the History of the Art and the Humanities, Santa Monica CA, 1994, pg. 172.
[vi] For a complete overview of the history of scholarship concerning Friedrich Gilly see Fritz Neumeyer, 'Introduction' to *Friedrich Gilly Essays on Architecture 1796- 1799*, trans. Britt, Getty Center for the History of the Art and the Humanities, Santa Monica CA, 1994, pp. 10- 25.
[vii] The competition for the Friedrichsdenkmal took place in 1796, the entries were displayed in September of the following year at the Akademie der bildenden Kunste. The exhibition made Gilly an instant celebrity and his name has since been associated with the now famous unbuilt project.
[viii] Friedrich Gentz (1764-1832) was Gilly's Brother- in– Law. Friedrich Carl Wittichen, ed., *Briefe von und an Friedrich von Gentz* (Munich: R. Oldenbourg, 1909), 1: 226- 27, quoted from Alste Onchen, *Friedrich Gilly, 1772- 1800* (Berlin: Duetscher Verein fur Kunstwissenschaft, 1935, reprint Berlin: Mann, 1981), pg. 101. See also Neumeyer, *Friedrich Gilly Essays on Architecture 1796- 1799*, trans. Britt, Getty Center for the History of the Art and the Humanities, Santa Monica CA, 1994, pg. 1.
[ix] Tieck was a famous German playwright best known as the author of *Der Gestiefelte Kater, Puss in Boots* to the English speaking world. In 1798 he moved to Jena where he became friends with the Schlegel Brothers and Novalis. His novel Der junge Tischlermeister begun in 1811 and finished in 1836 was inspired by Goethe's *Wilhem Meister.* As Verene has noted his 1799 play *Die verkehrte Welt* served as the inspiration for Hegel's chapter title of the same name in the *Phenomenology*. See Verene, *Hegel's Recollection: A study of Images in the Phenomenology of Spirit*, State University of New York Press, Albany, 1985 pg. 50.
[x] Along with Tieck, Wackenroder is considered the founder of German Romanticism.
[xi] See Barry Bergdoll, *Karl Friedrich Schinkel an Architect for Prussia*, Rizzoli International Publications Inc., New York, 1994, pg. 12.
[xii] Contrast this to the later re-interpreted etching by Frick published in 1803 that depicts the refectory in a greater light containing a total of four individuals. Here a guide instructs the gentleman on the beauties of the structure. In the copy architecture is another object to be studied analyzed and debated. One can almost hear the conversation- espousing the rational beauty of the construction or a rather academic discourse on taste. Refectory in Its Current State aquatint and etching by Friedrich Frick, from Friedrich Frick, Schlob Marienburg in Preusen (Berlin: .p. 1803, pl. xiii. Staatliche Museen zu Berlin, Preusischer Kulturbesitz, Kunstbibliothek. Reprinted in Neumeyer, *Friedrich Gilly Essays on Architecture 1796- 1799*, trans. Britt, Getty Center for the History of the Art and the Humanities, Santa Monica CA, 1994, pg. 124.
[xiii] See Bergdoll, *Karl Friedrich Schinkel an Architect for Prussia*, Rizzoli International Publications Inc., New York, 1994, pg. 14.
[xiv] Fichte's ideas referenced here can be found in his essays *"Concerning the Concept of the Wisenshaftlehre"* (in *Fichte: Early Philosophical Writings*, trans. Breazeale, Ithica: Cornell University Press, 1988 pg 94-136) and *"Die Tatsachen des BewuBtseyns. Vorlesungen, gehalten an der Universitat zu Berlin in Winterhalbjahre 1810-1811"* (Stuttgart: Cottaischen Buchhandlung, 1817)
[xv] Neumeyer, 'Introduction', *Friedrich Gilly Essays on Architecture 1796- 1799*, trans. Britt, Getty Center for the History of the Art and the Humanities, Santa Monica CA, 1994, pg. 35
[xvi] Ibid. pg 143. See Gilly's "A Description of the villa of Bagatelle, near Paris".
[xvii] Ibid. 158. See Gilly's "A Description of Rincy, A Country Seat near Paris."
[xviii] Gilly, "Some thoughts on the Necessity of Endeavoring to Unify the Various Departments of Architecture in Both Theory and Practice", *Sammlung*, 1797, reprinted in *Friedrich Gilly Essays on*

Architecture 1796- 1799, trans. Britt, Getty Center for the History of the Art and the Humanities, Santa Monica CA, 1994, pg. 165.
[xix] Ibid., pg. 165.
[xx] Ibid., pg. 169.
[xxi] Ibid., pg. 169.
[xxii] Ibid., pg. 170.
[xxiii] Gilly took this passage from Goethe's "Uber Lehranstalen zu Gunsten der bildenden Kunste", published in *Propylaen* 2, no. 2 1799 10, 13, 17. Gilly has changed some of the wording and the emphasis, which comes from three separate passages in the original.
[xxiv] Gilly, "Some thoughts on the Necessity of Endeavoring to Unify the Various Departments of Architecture in Both Theory and Practice", *Sammlung*, 1797, reprinted in *Friedrich Gilly Essays on Architecture 1796- 1799*, trans. Britt, Getty Center for the History of the Art and the Humanities, Santa Monica CA, 1994, pg. 166.
[xxv] Ibid., pg. 171.
[xxvi] Ibid., pg. 172.
[xxvii] Barry Bergdoll, *Karl Friedrich Schinkel an Architect for Prussia*, Rizzoli International Publications Inc., New York, 1994, pg. 12.
[xxviii] See Leatherbarrow, "Friedrichstadt- Symbol of Toleration", Architectural Design 53, no. 11/12, 1983, pg 22-31. Neumeyer notes, it was popular among French Huguenots who moved there after the Edict of Potsdam. Gilly's own family had escaped persecution and moved to the area. See Neumeyer, *Friedrich Gilly Essays on Architecture 1796- 1799*, trans. Britt, Getty Center for the History of the Art and the Humanities, Santa Monica CA, 1994, pg. 137 fn #4.
[xxix] Gilly's notes on his study sketches for the Friedrichsdenkmal make this reference to the *Heroum*, from the Greek *Heroion*; the shrine of a Hero. As per his notes "What were old temples. Not a Temple. Heroum. It must be completely open with no cella." See Neumeyer, *Friedrich Gilly Essays on Architecture 1796- 1799*, trans. Britt, Getty Center for the History of the Art and the Humanities, Santa Monica CA, 1994, pg. 135 fn #11.
[xxx] Gilly's own side notes on his drawings indicate this. See facsimile and translation by Neumeyer, Ibid pg 135. Neumeyer also indicates that Gilly had in his own library two images of this temple open to the sky. Ibid. pg. 91, note 188.
[xxxi] Ibid. pg 44-45.
[xxxii] Barry Bergdoll, *Karl Friedrich Schinkel an Architect for Prussia*, Rizzoli International Publications Inc. , New York, 1994, pg. 14.
[xxxiii] Among them, Gilly's school friend Joachim Ludewig Zitelmann (1768- ?), Martin Friedrich Rabe (1775- 1856), Carl Haller von Hallerstein (1774- 1817) and Carl Ferdinand Langhans (1782- 1869), the son of Carl Gottharad Langhans (the architect of the Brandenburg Gate).
[xxxiv] Schinkel, *Das Architektonishe Lehrbuch*, ed. Peschken 1979, pg. 150.
[xxxv] Mackowsky notes that it was after seeing Gilly's project that Schinkel first became interested in architecture and this prompted the friendship. See Hans Mackowsky, *Karl Friedrich Schinkel, Briefe, Tagebucher, Gedanken*, Berlin, 1922 reprinted Frank-furt am Main, 1981. p.192.
[xxxvi] At the time David Gilly ran a private architecture school and often took in students as lodgers.
[xxxvii] It is said that after having seen Friedrich's *Monk looking at the Sea*, in 1810 he decided he could never reach such a mastership in painting and turned his full attention toward architecture. Today their work hangs in the Alte Nationalgalerie in Berlin on Museuminsel. Prior to the renovation and expansion of the museums on Museum Island the pair's paintings were hung in a museum to Romantic painting in the Charlottenburg Palace, one of Schinkel's most famous residence designs.
[xxxviii] German philosopher, he is known as a theorist of romanticism and irony. In his 1815 book *Erwin, Vier Gesprache uber das Schone und die Kunst* he took issue with August Schlegel on the topic of aesthetics. Barry Bergdoll cites Muller in the claim that he had a profound influenced on Hegel, see Bergdoll, *Karl Friedrich Schinkel An Architecture for Prussia*, Rizzoli International Publications Inc., New York NY, 1994, pg 48 and fn 8 pg 227.
[xxxix] Peschken translated the *Lehrbuch* and included an introduction to Schinkel's theoretical development. *Das Architektonische Lehrbuch* (*Karl Friedrich Schinkel, Lebenswerk*), Munich-Berlin 1979.
[xl] Peschken's five phases of Schinkel's development were Zweckmasigkeit, National Romantic, Classicist, Technicist and Legitimist. Conceptually they move from an understanding of architecture 1) as function

and material disposition, 2) as a means of conveying ideas and as historical continuity, 3) as the expression of rational laws and the honest expression of structure, 4) The call for a new style through the synthesis of Greek and Gothic and 5) accepting the higher influence of history and artistic purpose as factors controlling technical purpose and function. While Peschken acknowledges the idea of the necessity of a higher ideal and the poetic in Schinkel's theory the structure of his taxonomy appears to attempt to make him conform to the dominant view of rational tectonics and less a critic of it than I would profess.

[xli] Peschkin, 'Schinkel's Tectonics', trans. Chafee, available on line at Friends of Schinkel e-library. http://www.tc.umn.edu/~peikx001/schinkel's%20tectonics.htm

[xlii] He was in Karlsbad visiting Friedrich Gilly's gravesite when he met Solger.

[xliii] Gustav Muller, "Solger's Aesthetics: a Key to Hegel", in *Corona: Studies in Celebration of the Eightieth Birthday of Samuel Singer*, Durham, N.C. 1941. I do not doubt Muller's assessment, but one must be careful the similarity of some ideas does not imply that one is derivative of the other. The idea of the artist as teacher of mankind was part of the *Systemmprogramm* of 1796 and the notion that art is the manifestation of the ideal through the manipulation of the phenomenal was present in Schiller. It should be noted that the Systemmprogram was not available to Muller, it was a lost text only discovered after Muller essay was published.

[xliv] His exchanges with Schinkel were from the hours they spent each Sunday reading Greek texts. See Barry Bergdoll, *Karl Freidrich Schinkel An Architecture for Prussia*, Rizzoli International Publications Inc., New York NY, 1994, pg. 47-8.

[xlv] Giedion, Hitchcock, Pevsner, Watkin and Mellinghof have all linked Schinkel to Durand in their commentary.

[xlvi] Martin Goalen, "Schinkel and Durand: the Case of the Altes Museum", in *Karl Friedrich Schinkel: A Universal Man*, edit Michael Snodin, Yale University Press, New Haven and London 1991, pg. 27-35.

[xlvii] Schinkel, *Sammlung architectonischer Entwurfe*, Berlin 1819- 40, Text to Plates 37- 48.

[xlviii] Peter Betthausen "Karl Friedrich Schinkel: A Universal Man" in *Karl Friedrich Schinkel: A Universal Man*, edit Michael Snodin, Yale University Press, New Haven and London 1991, pg 1-8.

[xlix] The majority of his projects apply the vocabulary of classicism, but it must be remembered that Schinkel often designed two schemes for his projects; one using classicism, and the other Gothic details and imagery.

[l] See Bergdoll, , *Karl Friedrich Schinkel An Architecture for Prussia*, Rizzoli International Publications Inc., New York NY, 1994, pg 90.

[li] See Scott Wolf, "The Metaphysical Foundations of Schinkel's Tectonics: Eine Spinne im eigenen Netz", in *Any14 Tectonics Unbound*, Anyone Corporation, New York NY, 1996 and Peschken, *Das architektonische Lehrbuch*, Deutscher Kunstverlag, Berlin and Munich, 1979.

[lii] See Bergdoll's seminal piece on Schinkel; *Karl Friedrich Schinkel An Architecture for Prussia*, Rizzoli International Publications Inc., New York NY, 1994.

[liii] Wolf uses the term 'Transcendental Idealism', I use Berlin's Counter Enlightenment to avoid the inherent problems that the term has in the English language particularly the association of both 'transcendental' and 'ideal' with the platonic *eidos*, which is disconnected from the material world and reality. See Scott C. Wolf "The Metaphysical Foundations of Schinkel's Tectonics: Eine Spinne im eigenen Netz", in *Any14 Tectonics Unbound*, Anyone Corporation, New York NY, 1996. Wolf notes that Schinkel attended the Berlin lectures of Johann Gottlieb Fichte in 1810-11 and also transcribed portions of his writings including *Die Wissenschaftslhre* (The Science of Knowledge) and *Die tatsachen des bewubsteyens* (The Objectification of Consciousness). Wolf also notes that Schinkel transposed the writings of Joseph Gorres when he wrote the unpublished essay "On German Art". Schinkel took Gorres' "On a German Constitution" 1814 and replaced the work "veerfassung (constitution) with Kunst (art).

[liv] Potts sees a shift in Schinkel's thinking about freedom and history as a move from Fichte's interpretations of these ideas to Hegel's. Alex Potts, 'Schinkel's Architectural Theory', "Karl Friedrich Schinkel: A Universal Man" in *Karl Friedrich Schinkel: A Universal Man*, edit Michael Snodin, Yale University Press, New Haven and London 1991, pg. 47-56. Potts sees a shift in Schinkel's thinking about freedom and history as a move from Fichte's interpretations of these ideas to Hegel's.

[lv] According to Bergdoll, the book he took with him was Fichte's *Vocation of Man* of 1800. It contained his idea of development of the Self, the moral imperative for action and deeds and the promotion of the state as a collective form of consciousness. See Bergdoll, *Karl Freidrich Schinkel An Architecture for Prussia*, Rizzoli International Publications Inc., New York NY, 1994, pg. 19. While the direct source for this was

Fichte's writings on the State, it was Herder who linked it directly with symbolic forms in his concept of '*fortgang'*. That idea was developed out of his idea of 'belonging' and may well have served as the basis of Fichte's political ideas.

[lvi] Schinkel, *Das Architektonishe Lehrbuch*, ed. Peschken 1979, pg. 119 (III, 15).

[lvii] Mitchell Schwarzer, *German Architectural Theory and the Search for Modern Identity*, Cambridge University Press, Cambridge, New York, 1995, pg. 173.

[lviii] Goethe, 'Von deutscher Baukunst', *Werke* XXXVII, 148 f. English trans. John Gearey in *Goethe The Collected Works Vol. 3 Essays on Art and Literature*, Princeton University Press, Princeton, 1986 pg. 8.

[lix] Schinkel, "Philosophical Notebooks" (S.M.H. III.S.1), Excerpted from C.F. von Ruhmor, *Italienishche Forschungen* (1827-31).

[lx] Scott C. Wolf "The Metaphysical Foundations of Schinkel's Tectonics: Eine Spinne im eigenen Netz", in *Any14 Tectonics Unbound*, Anyone Corporation, New York NY, 1996

[lxi] Jean Paul Richter was a German writer best known for his stories and novels. He meet and befriended Herder in Leipzig in 1797, but the friendship did not extend to Goethe and Schiller neither of whom appreciated his literary work. Where Schinkel appreciated his writing is unknown but transposed excerpts of Richter's *Vorschule der Äesthetik* of 1804 can be found in Schinkel's *"Philosophical Notebooks*" (S,M.H.I.V.A.S.15)

[lxii] A Doctor, naturalist, painter and physiologist Carl Gustav Carus was a friend of Goethe and studied painting under Casper David Friedrich. Whether Schinkel came to know of his work through Goethe or Friedrich is unknown, but transposed excerpts from Carus' *Grundzuge allgemeiner Naturbetrachtung* (Rudiments of a General Observation of Nature) of 1827 can be found in Schinkel's *"Philosophical Notebooks"* (H.I.S. 7-9). Carl Gustav Carus had put forward a theory of tectonic form mitigated by the unconscious in his text *Vorlesungen über Psychologie* (Lectures on Psychology) of 1831 and *Psyche Zur Entwicklungsgeshichte der Seele*, of 1846. In *Psyche* he used the spire of a gothic cathedral as an example of his theory.

[lxiii] Bergdoll alludes to the influence of Goethe and Humbolt on Schinkel's theory of the *Grundformen* in his article on Schinkel. "Schinkel's evolutionary search for primordial form reflects the natural history studies of Goethe and Alexander von Humbolt." See the *Macmillan Encyclopedia of Architects*, New York, The Free Press, Macmillan Publishing Co Inc., edit Placzek, vol. 3, pg. 687.

[lxiv] His ideas would eventually culminate in his lectures of 1827-8 and his Magnus opus *Cosmos* published in 1844. Bergdoll asserts that Humbolt's Cosmos was highly influential on Schinkel's theory of architecture. See Bergdoll, *Karl Freidrich Schinkel An Architecture for Prussia*, Rizzoli International Publications Inc., New York NY, 1994.

[lxv] A.von Humbolt, *Cosmos, A Sketch of a Physical Description of the Universe*, vol. 1, trans. E.C. Otte, New York: Harper and Bros. 1863-64, xii. Humbolt's *Cosmos* was not published until 1845 but the text was based on his explorations and travels in the Americas beginning in 1799. His ideas were widely circulated through his lectures in 1827-28 prior to the publication. Schinkel would have come into direct contact with them due to his close friendship with both Alexander and his brother Wilhelm.

[lxvi] Schiller, Friedrich, *On the Aesthetic Education of Man in a Series of Letters*, reprinted in *Friedrich Schiller On the Aesthetic Education of Man in a Series of Letters*, trans Snell, Frederich Ungar Publishing Co. New York, 165, pg 62.

[lxvii] Goethe, *Metamorphosis of Plants*, sec. 3; English trans. From Arber, *Goethe's Botany*, 83

[lxviii] Schinkel, ed. Peschken 1979, *Karl Friedrich Schinkel: Das Architektonishe Lehrbuch*, p. 35.

[lxix] Bergdoll made this argument in reference to the Schoss Charlottenhof. He claimed; "The whole seems almost a visualization of myths concerning the origins of architectural order, from simple human pacing to mark space to the rise of architectural order from the accidental taming of natural plants." He saw this as the influence of Alexander von Humbolt particularly his book *Cosmos* where he stated his conviction that the immediate pleasure taken from nature was the prelude to a deeper understanding of natural and human order. I would not disagree with Bergdoll's assessment except to say that I would not limit the influence solely to Humbolt nor to that single work as he does. See Barry Bergdoll, *Karl Freidrich Schinkel An Architecture for Prussia*, Rizzoli International Publications Inc., New York NY, 1994, pg. 149.

[lxx] Schinkel, *Das Architektonishe Lehrbuch*, ed. Peschken 1979, p. 45.

[lxxi] See Rand Carter, "Karl Friedrich Schinkel: The Last Great Architect", online at http://www.tc.umn.edu/~peikx001/rcessay.htm, also in *Karl Friedrich Schinkel Collection of Architectural Designs*, trans. Karin Cramer, Chicago, Exedra Books Inc, 1981Facsimile reprint of 1866 edit.

[lxxii] Wolzogen, *Aus Schinkels Nachlas*, vol. 3, 157. See also Bergdoll, *Karl Freidrich Schinkel An Architecture for Prussia*, Rizzoli International Publications Inc., New York NY, 1994, pg. 33.
[lxxiii] Schinkel, *Das Architektonishe Lehrbuch*, ed. Peschken 1979, pg. 45.
[lxxiv] Ibid., pg. 58.
[lxxv] Ibid., p. 148.
[lxxvi] It is important to note here that this was the basis of Peschken's 'Classicist' phase and the source of such interpretations later.
[lxxvii] Schinkel, *Das Architektonishe Lehrbuch*, ed. Peschken 1979, pg. 49. For a discussion of the concept of freedom found in German aesthetics of the period see Michael Podro, *The Critical Historians of Art*, New Haven & London, 1982 p. 6ff. For a discussion of the broader political implications of this notion of freedom see Terry Eagleton, *The Ideology of Aesthetics*, Oxford, 1990.
[lxxviii]Schinkel, *Philosophical Notebooks*, (H.I.V.S.40)
[lxxix] The entire quote reads as follows: "It became a lifetime's task for me to gain clarity on this issue. But the more deeply I penetrated into the matter, the greater the difficulties that stood in the way of my efforts. Very soon I fell into the error of pure arbitrary abstraction, and developed the entire conception of a particular work exclusively from its most immediate trivial function and from its construction. This gave rise to something dry and rigid, and lacking in freedom, that entirely exclude two essential elements: the historical and the poetical. I pursued my researches further, but very soon found myself trapped in a great labyrinth . . . " Schinkel, *Das Architektonishe Lehrbuch*, ed. Peschken 1979, pg. 150.
[lxxx] Gilly, "Some thoughts on the Necessity of Endeavoring to Unify the Various Departments of Architecture in Both Theory and Practice", *Sammlung*, 1797, reprinted in *Friedrich Gilly Essays on Architecture 1796- 1799*, trans. Britt, Getty Center for the History of the Art and the Humanities, Santa Monica CA, 1994, pg. 172.
[lxxxi] Wihelm von Humbolt, *Geschichte des Verfalls und Unterganges der griechischen Freistaaten*, Berlin, 1806, trans. Cowan, *Humanist without portfolio*, 83.
[lxxxii] Schinkel, Wolzogen, *Aus Schinkels Nachlass: reisetagebucher, Briefe und Aphorismen* . . . 4 vols. Berlin: Verlag der Koniglichen geheimen Oberhofbuchdruckerei (r. decker) 1862-64., vol. 2, 207.
[lxxxiii] "The various mechanical, chemical, organic forces of nature are intimately connected not only among themselves, but also with the spontaneous forces that constitute the realm of freedom; and to that extent they shape totality." Schinkel, Wolzogen, *Aus Schinkels Nachlass: reisetagebucher, Briefe und Aphorismen* . . . 4 vols. Berlin: Verlag der Koniglichen geheimen Oberhofbuchdruckerei (r. decker) 1862-64., vol. 2, 207.
[lxxxiv] See Bergdoll, *Karl Freidrich Schinkel An Architecture for Prussia*, Rizzoli International Publications Inc., New York NY, 1994, pg. 217.
[lxxxv] Humbolt, Cosmos, vol. 1, 23, 49, 72.
[lxxxvi] Schinkel, *Das Architektonishe Lehrbuch*, ed. Peschken, 1979, p. 117.
[lxxxvii] Ibid.9, p 58.
[lxxxviii] Schinkel, ed. Peschken 1979, *Karl Friedrich Schinkel: Das Architektonishe Lehrbuch*, p. 115.
[lxxxix] Schinkel, *Das Architektonishe Lehrbuch*, ed. Peschken 1979, pg. 150.
[xc] Hirt was an art historian and archeologist. In 1810 he was appointed the first professor of art history at the University of Berlin and it was here that Schinkel attended his courses. He was also an art consultant to the King of Prussia. Interestingly he also served as a tour guide in Italy where his client list included Herder and Goethe.
[xci] Schinkel, *Das Architektonishe Lehrbuch*, ed. Peschken 1979, pg. 149.
[xcii] Ibid., p. 146.
[xciii] Schinkel, ed. Peschken 1979, *Karl Friedrich Schinkel: Das Architektonishe Lehrbuch*, p. 71.
[xciv] Schinkel, *Das Architektonishe Lehrbuch*, ed. Peschken, 1979, p. 146.
[xcv] Beuth was a good friend of Schinkel and the Humbolts. He had been appointed Director of the Technische Deputation fur Gewerbe in 1819 with the mission to transform the orgnaiztion from a research group to an educational institution. Beuth's goal was the promotion of Prussian industry and manufacturing while modernizing the Prussian artisan trades. His new school was intended to educate a new generation of Prussian artisans in the highest standards of art so that art would serve as the guide for the development of mechanical production techniques being introduced. Beuth believed that this would help the Prussian state and its workers compete in the international market against both France and England. The idea that art

should serve as guide for industry would resurface later in German history in the form of the German Werkbund.

[xcvi] Peter Beuth, introduction to the *Vorbilder fur fabrikanten und Handwerker,* by Technische Deputation fur Gewerbe, Berlin, 1821.

[xcvii] Schinkel, notes in his diary, quoted by Bergdoll, *Karl Freidrich Schinkel An Architecture for Prussia*, Rizzoli International Publications Inc., New York NY, 1994.

[xcviii] Schinkel, Letter to Fontaine, October 20, 1826; Archives Nationales, Paris; quoted in *Reinhard Wegner, Schinkel Lebenswerk, Die Reise mach Frankreich und England im Jahre 1826*, Berlin and Munich: Deutscher Kuntstverlag,, 1990, p. 191- 92.

[xcix] Barry Bergdoll, *Karl Freidrich Schinkel An Architecture for Prussia*, Rizzoli International Publications Inc., New York NY, 1994, pg. 206.

[c] In his discussion of the orders Vitruvius resorted to myths to relate their distinction and origins. The Doric was inspired by the proportions of a man the Ionic of a maiden, its scroll capitol a reference to the curls of a woman hair. The Corinthian he claimed was invented by Callimachus when he saw a basket with a votive offering on the ground engulfed with acanthus leaves. Schinkel created panels depicting each of these stories and placed them around the entry doors. While the building has long since been destroyed the panels have been preserved and are installed on a back door of a government building located near the site. Vitruvius, *The Ten Books on Architecture*, Bk IV chap. 1, trans. Morgan, Dover Publications, Inc. New York, 1914, pp. 102-106.

[ci] Hübsch, 'Differing Views on Style', reprinted in *In What Style Should We Build? The German Debate on Architectural Style*, Santa Monica, The Getty Center for the History of Art and the Humanities, Univ of Chicago Press, 1992, pg. 170.

[cii] Hubsch, *In welchem Style sollen wir bauen?* (Karlsruhe: Chr. Fr. Muller Hoffbuchhandlung und Hofbuchdrunkeren, 1828), reprinted in; *In What Style Should We Build? The German Debate on Architectural Style*, trans. Herrmann, The Getty Center for the History of Art and the Humanities, Santa Monica, 1992, pg. 63.

[ciii] Hübsch, *In What Style Should We Build?*, reprinted in *In What Style Should We Build? The German Debate on Architectural Style*, Santa Monica, The Getty Center for the History of Art and the Humanities, Univ. of Chicago Press, 1992, pg. 70.

[civ] Hübsch, 'Differing Views on Style', reprinted in *In What Style Should We Build? The German Debate on Architectural Style*, Santa Monica, The Getty Center for the History of Art and the Humanities, Univ of Chicago Press, 1992, pg. 172.

[cv] Herrmann notes that Hubsch may not have known Rumohr's theoretical arguments, but that he knew him well enough personally to have sent him a drawing from Greece. See Wolfgang Herrmann, *In What Style Should We Build? The German Debate on Architectural Style*, trans. Herrmann, The Getty Center for the History of Art and the Humanities, Santa Monica, 1992, pg. 4.

[cvi] Hübsch, Die verschiedenen Ansichten über Baustil gegenuber der heutigen Zeit, Die Architectur und ihr Verhaltnib zur heutigen Malerei und Skulptur (Stuttgart and Tubingen: J. G. Cotta, 1847) chap. 14, 184-97. Reprinted in *In What Style Should We Build? The German Debate on Architectural Style*, trans. Herrmann, The Getty Center for the History of Art and the Humanities, Santa Monica, 1992, pg. 174.

[cvii] Hübsch, *In welchem Style sollen wir bauen?* (Karlsruhe: Chr. Fr. Muller Hoffbuchhandlung und Hofbuchdrunkeren, 1828), reprinted in; *In What Style Should We Build? The German Debate on Architectural Style*, trans. Herrmann, The Getty Center for the History of Art and the Humanities, Santa Monica, 1992, pg. 64.

[cviii] Ibid.pg. 175.

[cix] Hübsch, 'Differing Views on Style', reprinted in *In What Style Should We Build? The German Debate on Architectural Style*, Santa Monica, The Getty Center for the History of Art and the Humanities, Univ of Chicago Press, 1992, pg. 173.

[cx] Bötticher, "The Principles of the Hellenic and Germanic Ways of Building with regard to Their Application to Our Present Way of Building" originally published in *Allgemeine Bauzeitung* (1846): 111-25 and given as address at the Schinkelfest. Trans. Herrmann, in *In What Style Should We Build? The German Debate on Architectural Style*, Texts and Documents The Getty Center Publication Programs, Santa Monica CA., 1992, pg. 162.

[cxi] Bötticher was born in Nordhausen and in 1827 moved to Berlin to study architecture at the Allgemeine Bauschule. Botticher was deeply involved in the artistic and intellectual circles of Berlin, attaining a teaching position at the Design School of the Gewebeinstitute in 1832 with the help of Schinkel's collaborator Christian Peter Wilhem Beuth. It was during this time period that he began to write on architecture. He published several handbooks on ornamental principles of classical design and architecture including *Die Holzarchitectur des Mittelatlters* (1836) and *Ornmamenten- Schule: Ein Studien- Cursus fur die Zeichnung und Erfindung des Ornamentes nach dem von der antiken Kunst gegeben Karakterisirungsprinzipe architectonischer Formem* (1838). He began teaching architectural history at the Akademie der Kunste In 1839and and ornamental design at the Allgemeine Bauschule where in 1844 he was later appointed professor of architecture.
[cxii] They were; 1840 "Entwicklung der Formen der hellenischen Tektonik" (The Development of the Forms of Greek Tectonic), 1844, 1852 *Die tectonik der Hellen* (The Tectonic of the Greeks) and 1846 "Das Prinzip der Hellenischen und germanischen Bauweise (The Principle of Greek and German Building Methods).
[cxiii] Bötticher, The Principles of the Hellenic and Germanic Ways of Building with regard to Their Application to Our Present Way of Building originally published in *Allgemeine Bauzeitung* (1846): 111- 25 and given as address at the Schinkelfest. Trans. Herrmann, in *In What Style Should We Build? The German Debate on Architectural Style*, Texts and Documents The Getty Center Publication Programs, Santa Monica CA., 1992, pg. 152.
[cxiv] Bötticher did not limit his thinking here to the debates between Classical and Gothic, or even just Western architecture in general. Other cultures had produced art and the theory of imitation in proffering the superiority of the Classical denied the validity of them. The idea that Classical architecture might be more valid in say China than traditional Chinese architectural forms was absurd to him.
[cxv] Bötticher, The Principles of the Hellenic and Germanic Ways of Building with regard to Their Application to Our Present Way of Building originally published in *Allgemeine Bauzeitung* (1846): 111- 25 and given as address at the Schinkelfest. Trans. Herrmann, in *In What Style Should We Build? The German Debate on Architectural Style*, Texts and Documents The Getty Center Publication Programs, Santa Monica CA., 1992, pg. 151.
[cxvi] Ibid.2, pg. 152.
[cxvii] Ibid.. 151.
[cxviii] Ibid.2, pg. 150- 51.
[cxix] Ibid.2, pg. 151.
[cxx] He would pose the following questions; "How does a new style arise, and how does it define itself in terms of principles?" as the basis of his research. Bötticher, "The Principles of the Hellenic and Germanic Ways of Building with regard to Their Application to Our Present Way of Building" originally published in *Allgemeine Bauzeitung* (1846): 111- 25 and given as address at the Schinkelfest. Trans. Herrmann, in *In What Style Should We Build? The German Debate on Architectural Style*, Texts and Documents The Getty Center Publication Programs, Santa Monica CA., 1992, pg. 153. An interesting aside is that this was precisely the proper use of history as defined by Adolf Loos some fifty years later.
[cxxi] Ibid.2, pg. 151.
[cxxii] Ibid.2, pg. 161.
[cxxiii] "The true essentials have never been seriously considered; the discussion has never actually turned to the source of the art- forms and of the diversity of styles, namely, the structural principle and material conditions on which each is based." Bötticher, "The Principles of the Hellenic and Germanic Ways of Building with regard to Their Application to Our Present Way of Building" originally published in *Allgemeine Bauzeitung* (1846): 111- 25 and given as address at the Schinkelfest. Trans. Herrmann, in *In What Style Should We Build? The German Debate on Architectural Style*, Texts and Documents The Getty Center Publication Programs, Santa Monica CA., 1992, pg. 150.
[cxxiv] Italics mine. Ibid., pg. 154.
[cxxv] The complete text is as follows; "In the unformed state of the material, these forces are dead or latent. The material is aroused and compelled to demonstrate its structural strength once it has been given a form that is appropriate to it and at the same time fits it to perform a space– creating architectural function: in other words, once it has been formed into architectural members." Bötticher, "The Principles of the Hellenic and Germanic Ways of Building with regard to Their Application to Our Present Way of Building" originally published in *Allgemeine Bauzeitung* (1846): 111- 25 and given as address at the

Schinkelfest. Trans. Herrmann, in *In What Style Should We Build? The German Debate on Architectural Style*, Texts and Documents The Getty Center Publication Programs, Santa Monica CA., 1992, pg. 154.
[cxxvi] Ibid.. 162.
[cxxvii] Ibid., pg. 163.
[cxxviii] Ibid, pg. 154.
[cxxix] Ibid. pg. 154.
[cxxx] The quote in its entirety is "not to serve a commonplace reality and remain within its confines but to follow a higher calling by which, heedless of the applause or censure of the undiscerning crowd they must accomplish the task the Deity has inscribed in their hearts." Bötticher, "The Principles of the Hellenic and Germanic Ways of Building with regard to Their Application to Our Present Way of Building" originally published in *Allgemeine Bauzeitung* (1846): 111- 25 and given as address at the Schinkelfest. Trans. Herrmann, in *In What Style Should We Build? The German Debate on Architectural Style*, Texts and Documents The Getty Center Publication Programs, Santa Monica CA., 1992, pg. 149.
[cxxxi] "The structure itself is an invented form without a model in the outside world; the art- forms, though they too are mental creations, are taken from what exists in the outside world." Bötticher, "The Principles of the Hellenic and Germanic Ways of Building with regard to Their Application to Our Present Way of Building" originally published in *Allgemeine Bauzeitung* (1846): 111- 25 and given as address at the Schinkelfest. Trans. Herrmann, in *In What Style Should We Build? The German Debate on Architectural Style*, Texts and Documents The Getty Center Publication Programs, Santa Monica CA., 1992, pg. 163.
[cxxxii] Ibid.2, pg. 163.
[cxxxiii] Ibid.2, pg. 165.
[cxxxiv] Ibid., pg. 162.
[cxxxv] Ibid.2, pg. 165.
[cxxxvi] Etymology traces the development of form from one language to another by analyzing it into component parts. Identifying its cognates in other languages and tracing them to a common ancestral form.
[cxxxvii] Micea Eliade, *The Sacred and the Profane*, trans. Trask, Harcourt Brace Jovanovich, Publishers, San Diego, New York, London, 1959, pg. 30.
[cxxxviii] "It opens communication between the cosmic planes (between earth and heaven) and makes possible ontological passage from one mode of being to another. It is such a break in the heterogeneity of profane space that creates the center through which communication with the transmundane is established, that, consequently, founds the world, for the center renders orientation possible." Micea Eliade, *The Sacred and the Profane*, trans. Trask, Harcourt Brace Jovanovich, Publishers, San Diego, New York, London, 1959, pg. 63.
[cxxxix] Schinkel called this the *Trivialbegriff des Gegenstandes*- the banal requirements of the object- its material and construction technology. Reflecting science and the material impulse, it was the study of the endless combinations of component parts within a given construction. See the above section on Schinkel. I use Bötticher's terminology here because it has become the more commonly recognized.
[cxl] Schinkel called this the *Artisitschen poetischen Zwecken*- the artist or poetic aim of the object, its higher purpose. Reflecting art and the formal impulse, it was the study of the development of an artistic motif from one architectural language to another. See the above section on Schinkel. Again I use Bötticher's terminology here because it has become the more commonly recognized.

Chapter 17: The Epistemological Parameters of Poetic Tectonics

> "If by enlightenment and intellectual progress we mean the freeing of man from superstitious belief in evil forces, in demons and fairies, in blind fate- in short, the emancipation from fear- then denunciation of what is currently called reason is the greatest service reason can render."
>
> Max Horkheimer
> *The Eclipse of Reason* [i]

The early nineteenth century saw a redirection of architectural theory as it responded to the growing critique of the epistemology of science. That critique, rejected the autonomy of reason and its assertion beyond the fields of science and mathematics. It also challenged the idea that nature was static and fixed. Simple observation of the world revealed it to be dynamic, diverse, and at times incommensurate and replete with difference, while our experience of it remained interconnected and continuous. The duality of the epistemology of science had lead to a breakdown of the orders of experience that denied that continuity. The epistemology of science had lead to a truth, but not the truth of human experience. That Truth would require a new epistemological structure.

For Hamann, Herder and the Idealist philosophers, Nature was never fixed or absolute. Individual organisms in their particularity were rarely identical, sometimes similar and more often then not dissimilar in their outward appearance as they reflected the conditions of their 'climate'. If the objects of nature were never unconditioned, then

there had to be something non-objective within it; an original productivity, that did not appear as itself, but was only manifest in the products of its existence. Nature proved to be a unity in difference; a continual dialectic of ever-changing material exigencies and a more formal morphology. It was that dialectic that kept it in a constant state of 'becoming' preventing it from ever reaching the state of stasis proposed by science. The same proved true of Man. If the 'conditions' of our being did not persist then the self must be grounded in something other than its own particular individuality. It was *Geist,* the 'absolute' self that served as its constant productivity. Cognition required an object as its function and implied an opposition between that object and a knowing subject. The moment of cognition was therefore the generation of 'this' as 'I' and 'this' as 'object' for the comprehension of 'I'. If this condition was always already present, then all forms of knowing had to contain a correspondence between intellection and materiality. Whether in the form of a particular living organism and its morphology, or self and *Geist*, Reality proved to be a continuous oscillation between two basic impulses; the material and the formal. Nevertheless, our experience of their dialectic was an integrated whole; a *Poetic Unity*, brought about by their mutual sublation.

For the Idealist philosophers, this correspondence had its analog in *poesis*. In the work of art, the material may be given by Nature, but it was transformed by human ideals and values, by the will of man. Art was the reconciliation of the idea with a concrete particularity; as such it existed between materiality and intellection. The two impulses still exist, but in a dialectical relationship a true concrete universal; a *Poetic Unity*.

Poesis proved to be the *Novum Organum* through which philosophy gained access to the nature and construct of being and it proved to be the key to Idealist epistemology. The

process of self-actualization and the cognition of reality was an originary creative act of the imagination that formed an image, a *Bild*, which lent signification and meaning to experience through the creation of symbolic forms. Thus knowledge began not with conceptual thinking, but by intuition, not in abstraction, but in sensual medium. The imagination proved to be a human faculty that provided access to a whole metaphysics.

> "Where there is no word there is no reason- and no world."
>
> Johann Georg Hamann
> *Briefwechsel* [ii]

The Inseparability of Language and Thought

In *The New Science*, Vico established a clear connection between language and human knowledge as history. According to Edward Said, "When Vico speaks of a mental language common to all nations he is therefore, asserting the verbal community binding men together at the expense of their immediate existential presence to one another."[iii] This idea was also present in the German writers as well. Like Vico, Hamann asserted that language, art and thought were all intertwined as a medium of expression, relying on each other and developing as one with thought. It was the individual's immersion and participation in this milieu, or 'climate', that Herder referred to as 'belonging'. It contained the central patterns by which each genuine culture was identified and the ground from which its symbolic forms emerged. This meant that the history of symbolic forms should reveal this organic relationship, including language and architecture. The inseparability of language and thought lay at the center of Vico's *courso e recourso* in *The New Science*, Schiller's outline of the development of Man in *On the Aesthetic*

Education of Man and Hegel's experience of consciousness in the *Phenomenology*. Therein, lays the first parameter of poetic tectonics the inseparability of language and thought.

This must be seen within the context of the critique of the epistemology of science. In Descartes metaphysics the *cogito* placed all aspects of thought in the mind (*res cogitans*). Language was located in the body (res extensa), and seen solely as an external means of expression that served to translate previously formulated ideas within the mind. The *cogito* effectively established a separation of language and thought. This separation was not limited to Descartes. Both rationalists and empiricists defined language as a tool, a transparent medium, to convey information. For the Port Royal, Bernard Lamy and Antoine Arnauld in particular, language functioned as a picture representing thoughts already formed in the mind. Locke defined language as an indicative sign that pointed to an a priori thought. For them the function of language was to convey the rational content of the *cogito*; that meant that its' form had to correspond to the structure of reason. Language became rational, meaning it was to be demonstrative and derived from premises. Given their rejection of the *cogito*, it is no wonder that the Counter Enlightenment philosophers would question this separation.

This was mirrored in architectural theory with the development of rational tectonics. The Mechanisms of Structure and Disposition were rational, demonstrative expositions of the performative aspects of the buildings design. They admitted no concern with *pathos*, with the emotive content of architectural iconography or the detail as an expressive element. In the case of Durand the detail was secondary to the rationality of the designs plan. Nowhere was this more evident than in his *mechanism*, the Grand Durand, admitted

no content other than the rationality of its own organization; the actual details mere after thoughts. Rational tectonics rendered the language of architecture apodictic, demonstrative of its performative elements.

For Vico, this rational speech was indicative of an age dominated by what he called the Intelligible Universal; an age when men thought in abstract concepts. Here the function of the mind was to sort and analyze through a system of abstraction that searches for qualities common to various objects allowing them to be classified by class and genera. He called this age 'The Barbarism of Reflection', because its' knowledge produced only an understanding of things, and not a true Wisdom in the form of self-knowledge. He contrasted this to his Imaginative Universal, a basic cognitive faculty that translated sensory experience into mental images that were then given expression in the form of metaphors. Vico associated the first with science and rational logic and the latter with *poesis* and what he termed poetic logic.

Schiller too, had postulated a similar distinction in his outline of the development of man in the form of the material and formal impulses. Like Vico, he saw man moving through various stages dominated first by the material and then by the formal. In the latter stage men adopted rigid principles, which they worshiped like idols, as if they came from some unquestionable authority. For him, this was a barbaric age that left Man only a fragment of his true potential. He called it the *Vernuftstaat* and associated it with the Enlightenment and the epistemology of science. Like Vico, he saw *poesis* as a form of resistance to it and a means to man's further development.

It is important to note, the identification of two distinct forms of language and thought was not limited to Vico and Schiller. A similar distinction can be found in the

writings of Victor Hugo who identified them metaphorically as 'Architecture' and 'Printing'.[iv] The idea can also be found in the writings of Mircea Eliade who referred to poetic language and utilitarian language.[v] Claude Levi-Strauss referred to them as the Bricoleur and the Engineer.[vi] Ernst Cassirer referred to them as intuitive and discursive speech.[vii] And more recently, Ernesto Grassi has referred to them as the speech of the *archai* and apodictic speech.[viii] Like Vico, each associated one form of thought and its' expression with *poesis* and the other with ratiocination. Like the Idealist philosophers, they all held that understanding the relationship between the two was essential to any understanding of the human condition and self-knowledge.

These two forms are two means of cognizing the world; of creating a symbolic order. Verene notes that each uses a different means of structuring the syllogism. The first is as an *instrument of demonstration* wherein the syllogism is a mode of formal presentation of thought, as is found in Descartes *cogito*. It is the speech of science, the definition of the syllogism per Aristotle. Its' logic is the deduction of propositions from axioms. It is the speech of Vico's Intelligible Universal. The second is as an *instrument of intelligibility* where the syllogism describes the means, whereby thought is formed. It is the definition of the syllogism found in Renaissance philosophy, in particular that of Giordano Bruno. As Verene describes it; "In this second sense of the syllogism, the middle term, is all important, because it is the commonplace, or *topos,* out of which the other two terms are drawn forth. The syllogism as the form of the creation of thought begins not with the problem of properly arranging premises and conclusions, but with the problem of creating premises- the problem of formulating an enthymeme and expanding it into a demonstration."[ix] It is an originary form of thought, one that is generative as opposed to

analytical. As Verene points out, it is a form of poetic or mythic speech, the speech of the Vico's Imaginative Universal.

For Vico, while the two languages and corresponding forms of thought are essential to the development of the *corso e ricorso* of human history, they are not equivalent. As he claims, the language of the Imaginative Universal is far richer, more real and more expressive. "Languages are more beautiful in proportion as they are richer in these condensed heroic expressions; that they are more beautiful because they are more expressive; and that because they are more expressive they are truer and more faithful. And that on the contrary, in proportion as they are more crowded with words of unknown origin, they are less delightful, because obscure and confused, and therefore more likely to deceive and lead astray"[x] What does Vico mean by this, how is the Intelligible Universal and ratiocination obscure?

Grassi explains the philosophic problem in the following way. "We claim that we know something when we are able to prove it. To prove {*apo-deiknumi*}, means to show something to be something, on the basis of something. To have something through which something is shown and explained definitively is the foundation of our knowledge."[xi] He refers to this as 'Apodictic' speech. Like Vico's Intelligible Universal, it is epistolary, mediating and demonstrative. Like the method of science that it reflects, it demonstrates through the tracing back to first principles, or *archai*. Following Aristotle, he identifies a problem in that these *archai,* by definition, cannot be 'demonstrated' to be true.[xii] We must simply accept them. A point made by contemporary theorists of science.[xiii] Therefore, the *archai* cannot be the 'object' of reason, of apodictic speech. If they could they would cease to be *archai*. Therefore, we are forced to acknowledge that the initiative

structure of knowledge is not restricted to the rational demonstration, or its system of logic.

Apodictic speech is obscure, because it cannot explain its own origins. Grassi calls this the tragedy of modern metaphysics. "Outside the symbolic world of the system we have only silence and mystery."[xiv] Philosophically speaking, reason can provide no real knowledge outside of itself. It provides no real access to the human condition or self-knowledge. This is what Schiller meant when he claimed that in the *Vernuftstaat,* man can never develop the harmony of his being 'instead of imprinting humanity on his nature, he becomes merely the imprint of his science.'[xv]

Like Vico, Grassi postulates an originary speech, the speech of the *archai*.[xvi] According to him, the *archai* is purely indicative and this requires an imaginative transference of a signification, an application of meaning by the mind. "The ingenious act of imagination is original because the capacity to lend meanings (*meta-phe-rein)* -the imaginative activity- itself presupposes seeing similarities (*similitudines*) between that which the senses reveal and human needs that must be satisfied."[xvii] The *archai* is a metaphoric trope that generates a symbolic order making the phenomenal world comprehensible. Thought is not derived from the rationality of the *cogito*; but from *ingenium,* the imagination and its ability to 'see' similarities. Within the originary speech of the archai there is no separation of language and thought.

The originary speech of the *archai*, like Vico's Imaginative Universal, is the metaphoric speech of poetic logic. Since the basis of rhetoric as it is defined in classical philosophy from Plato, through Aristotle, the Roman Rhetoricians and into the

Renaissance is metaphoric speech; we are forced to recognize that the primary speech of the *archai*, of the Imaginative Universal, is rhetorical.

The epistemology of science not only prefaced the apodictic speech of the Intelligible Universal, it also rejected the metaphorical speech of the *archai* and the rhetorical tradition it was associated with. Once again the culprit was the *cogito*. Dana Kay Harrington notes the negative view of the body and the senses in the *cogito* proved antithetical to the rhetorical tradition, which drew on the sensual and imaginative faculties and assumed a necessary connection between the mind and body.[xviii] The establishment of the *logos* of reason in the mind effectively eliminated the role of the body in cognition. More significantly, it located the senses and all *pathos,* all emotive content, in the body, which was subsequently seen as a hindrance to the clear ideas implanted in the mind. Because the imagination relied on the senses, it too was located within the body, relegating it to a lower status as a cognitive faculty. As Descartes claims, the senses and the imagination are 'confused modes of thinking arising from the union and, as it were, the commingling of the mind with the body."[xix] His metaphysics and the epistemology of science associated reason with the ability to arrange one's thoughts in a clear and distinct manner. In *Discourse on Method* Descartes redefined 'rhetoric' as a form of apodictic speech. "Those who possess the most forceful power of reasoning and who best order their thoughts so as to render them clear and intelligible can always best persuade one of what they are proposing."[xx] This was also picked up by later writers, who began to insist that emotions and passions were a hindrance to 'clear and distinct ideas'. The use of *pathos*, and emotive elements common to traditional rhetoric were

increasingly seen as ornamental to apodictic speech, and eventually rejected as unessential.

Grassi notes, this shift effected a redirection from traditional rhetoric; what he calls *rhetorica interna,* where *pathos* was internal to the discourse of philosophy, to *rhetorica externa* where it was external, ornamental and unnecessary. But in doing so, *Rhetorica externa* maintained a separation of *verba* (language as a means of expression) and *res* (thought) and continued to deny thought access to that which was distinctively human. This was what Vico meant when he claimed it only provided knowledge of things and not a true Wisdom. *Rhetorica externa* can provide us with no more insight into originary thought and the *archai* of signification and meaning than apodictic speech.

This concern was echoed in Piranesi's critique of Laugier's primitive hut. The reduction of architecture to the apodictic demonstration of the performative elements means that it exhibits no concern for its noetic elements, which were expressions of the *pathos* of the *sensus communis*. The architect is rendered nothing more than a decorator who applies *pathos* as externally applied ornament to the construction. His designs and plates in the *Parere su l'architecttura* showed the absurdity of this position, but its' theoretical attach was aimed squarely at the separation of *verba* and *res*, of language and thought, affected by Descartes *cogito*. The critique was echoed a generation latter, when men like Schinkel argued that the organic relationship between construction and the detail had vanished making architecture arbitrary, obscured and deceptive.

The apodictic speech of rational tectonics and its Mechanisms of Structure and Disposition had effected a separation of *verba* and *res* and transformed the noble art of architecture into a *rhetorica externa*. As Gilly noted, it was denied its rightful place as an

art form, as a manifestation of spirit and a means to truth, and denigrated to the science of construction. In architecture, as in philosophy, the answer came in a return to the *archai*. Like the metaphor, Gilly's *Ur* form and Schinkel's Grundformen contained both *verba* and *res*, architecture had to return to the archai of the dialectic of noetic and performative ontologies if it was to once again be a complete speech.

I have attempted to show, the fundamental philosophical problem for many of these thinkers was the search for meaning: *How does the mind have anything before it at all? And how does signification and meaning arise?* Such questions should be seen as a response to the failure of the epistemology of science, with its inherent separation of language and thought, to answer such questions in the quest for self-knowledge.

The answer came in the insistence on their inseparability. It was an affirmation of the necessity to recollect the speech of the *archai*: of metaphor and the originary act of *poesis* that creates a symbolic order and advances knowledge. This was what was meant by declaring *poesis* the *Novum Organum*. Vico's Imaginative Universal, the sublation of *Poetic Unity* (found in Fichte's *Anstoβ*, Goethe's 'morphology', and Schiller's definitions of man and art), and Hegel's concrete universal are all a return to the *archai*: to the speech of the metaphor and union of language and thought.

> "The metaphor is not the enigma, but the solution of the enigma."
>
> Paul Ricœur
> *The Metaphorical Process as Cognition, Imagination and Feeling* [xxi]

Metaphor as Praxis: The Reasoned State or Capacity to Act

The underlying premise of Idealist philosophy is what I have termed, *Poetic Unity.* Implicit within it is a return to the idea of metaphoric speech and the identification of metaphor as the fundamental cognitive function. Verene notes, for Vico "The metaphor is that by which identity is originally achieved in perception. It is the form perception most immediately takes."[xxii] Admittedly, with the exception of Vico and his Imaginative Universal, none of the protagonists of Idealism address metaphor directly, instead referring to it as the fundamental strategy of *poesis*. Nonetheless, I would assert they all allude to it. It is evident in Fichte's '*Anstoβ'*, in the idea that the confrontation of 'self' and 'other' initiates self-actualization and cognition. It is evident in the sublation within *Poetic Unity* found in the work of Goethe and Schiller. We find it in Hegel, who begins his thought with the *Bild*, the concrete universal. And it is present in the generation of the *archai* that leads to the dialectic of ontology in architecture. All of which, operate metaphorically through an originary juxtaposition of two disparate phenomena whose rapprochement engenders the manifestation of an identity.

To be clear, the metaphoric action here embodied is not the literary process of transference.[xxiii] It is not a simple this is like that. Neither 'self' nor 'other' are 'named' prior to their metaphoric assimilation. Their 'names' arise, and are given meaning, within an existing cognitive gap. As Paul Ricœur has noted; "The metaphor is not the enigma, but the solution of the enigma."[xxiv] Therefore, we should see metaphor, not as a passive

'discovery' of a similarity, but as the active identification of similarities that affects rapprochement and revelation. Metaphors form thought though a logic of correlation whose oppositions are not resolved into a synthetic order, nor are they dissolved into the category. As Verene notes, "The metaphor is always a unity-in-difference, which is different from an analogical combination of elements."[xxv] It is the creation of the middle term, an 'identity' between elements that structures the orders of experience bringing the *Poetic Unity* into intelligibility. The ultimate middle-term of middle-terms is Vico's *verum- factum* principle; the true is convertible with the made. In the *New Science* he argues, metaphor is not solely a means of thought for a given type, i.e. mythic mentality, but the ground of thought itself. This is what Grassi alludes to when he identifies metaphoric speech as the *archai* and what I would claim to be at the heart of Idealist epistemology.

In classical rhetoric the search for the middle-term is called Topics, and it concerns itself with the theory of arguments or points of departure which have to be available in a concrete situation for a discussion. According to Aristotle, the function of rhetoric is not persuasion, but the detection of the persuasive aspects of each matter. "Rhetoric may be defined as the faculty of observing in any given case the available means of persuasion."[xxvi] The objective of the rhetorician is to establish the basis of argumentation for the justice of a given subject, to establish its' admirability and its' advisability.

Quintillion claims that, in rhetoric "it is not the first conflict . . . but what comes out of the first conflict, namely the kind of question [that it raises]" that is the true subject matter. What we understand from him is that the subject matter does not consist of an existing state of affairs; instead it is composed of the entire questionable-ness of the

particular situation. Topics begins with the interrogation of the presuppositions of the given. This requires engagement and speculation. Before I can make an argument I must chose a position. This interrogative action is also true of the originary moment of consciousness. Our understanding of the world is what it is, because it is conceptualized as an answer to an unformulated question; *'What is this thing I sense?' 'What is its purpose in terms of my will?'*

Grassi notes that, for the Greeks this questioning of phenomena was to 'accuse', to define being as one thing or another. Quintillion traces this to the word *categoria*. From this Grassi concludes, "if the specific situation of man consists of his having to define all that is ,i.e., of having to 'accuse' it in terms of categories, in order to set up a human order, then being can appear only as *quaestio*, and we can respond to it only as to something of concern to us."[xxvii] It is this questioning that locates the *topoi*, the middle term of the metaphor. Both rhetoric and philosophy share this in common; they are both the art of the question. I would argue, so too is architecture. All genuine architecture begins with the 'questioning' of a given situation with the intention of finding premises. It is from these that one argues the merits of a given design solution. That solution presents itself simultaneously as both argument and image/*Bild*. Rhetoric and metaphor stand in a triangulated relationship to philosophy and art as the fundamental means of finding premises from which deductions are made and put into action.

Aristotle refers to rhetoric as a techne; a form of practical reasoning, or *phronesis*.[xxviii] But to be clear this is not techne in the sense of *poesis*. It is not the production of an *erga*, a work. We are not talking about metaphor as a reasoned state of capacity to make. When we speak of metaphor as a cognitive function we are speaking of techne as a reasoned

state of capacity to act. Metaphor is the reasoned state of capacity to raise the question, to take a position, to formulate the premise, to construct the argument, and to persuade others to action. It is metaphor as a form of praxis.

In classical rhetoric, the purpose of metaphor is 'to make appear', or 'to bring forth', the *logos* of a thing. This can be traced to Aristotle who noted that diction, elocution and style, the lexis to which metaphor belongs, makes discourse 'appear'. It is through the action of the metaphor that meaning and signification are 'revealed' or 'brought forth'. The Ancient Greek term for this is *theorein*. Therein lays the second epistemological parameter of poetic tectonics: the *archai* is a theory of metaphor as praxis: as a reasoned state of capacity to act.

> "As rhetorical man manipulates reality, establishing through his words the imperatives and urgencies to which he and his fellows must respond, he manipulates or fabricates himself, simultaneously conceiving of and occupying the roles that become first possible and then mandatory given the social structure his rhetoric has put in place."
>
> Stanley Fish
> *Rhetoric*[xxix]

Sensory Topics: The Body of the Sensus Communus

In the *Rhetoric*, Aristotle notes that Topics are the basis of dialectical reasoning. As such, they are lines of reasoning that emerge from the *sensus communis* as generally held beliefs, opinion or truisms. Aristotle provides a discursive definition of Topics, wherein a premise is transferred forming the *topoi* of the dialectic. This interpretation is backed up by Aristotle's comment, "Metaphor consists in giving the thing a name that belongs to something else."[xxx] It is based on the translation of the Ancient Greek *metapherein* as 'to

transfer'. This places metaphor in the context of mimetic theory. Mark Johnson sees this as objectivist, in that the structure of metaphor is based on an objective reality out there. It assumes the similarity exists independent of the subject and are expressed in literal propositions.[xxxi] But this interpretation only holds sway under the suppression of Aristotle's own assertion that metaphor makes discourse appear. Here the concentration is on the active drawing forth. In this interpretation, the purpose of metaphor is to make appear, or to generate, the *logos* of a thing. What is missing in Aristotle's examination of Topics in the *Rhetoric* is the question; *'How do such commonly held beliefs emerge in the first place?'*

This is precisely the question Vico asks in the *New Science*. In place of the Discursive Topics of Aristotle, he proposes Sensory Topics, an assertion that the *topoi* emerge from commonly felt unities; of sense, feeling and emotion. This common sense is the ground from which all symbolic forms of a given culture emerge. The origin of intelligibility lies in this *sensus communis*, as an originary speech common to all men that forms the common experience and cognition of the world. As Vico states; "common sense is judgment without reflection shaped by an entire class, an entire people, an entire nation or the entire human race."[xxxii] Our ability to communicate is based upon this *lingua mentale comune.* This is the third parameter of the poetic tectonics: the metaphor is by nature dialogic.

This was also true for Hamann who saw the source of language as *pathos*, the recollection of images from passion and our response to external sensory experience. For him, our thoughts and beliefs were commonly held; they were the expression of a given people, in a given time. This collective *pathos* formed the stream of images within which

the individual was born and which constituted his/her sense of 'belonging', what Herder referred to as our common sense as a nation.

Sensory Topics and the metaphor create 'identities' through the connection of two disparate phenomena without reduction or synthesis within a logic of correlation. This means the metaphor bears an 'identity' to its given particularity in time and space. To be clear we must distinguish between the 'logic of correlation', which is the stratagem of the metaphor, and the actual metaphor, the image/*Bild*, that is its' result. The metaphor as image/*Bild* has 'identity' because it is tied to the particularity of a given situation. But the stratagem does not. Because of the inherent variability the logic of correlation and the dialectic that results must constantly be re-negotiated. This means that within the dialogic structure of the metaphor there is always a dialogue, between the particularity of the moment and all other subsequent moments. As Verene notes, the ingenious power of the metaphor is "the power of the subject to move from one act of formation of sense to others, to create further acts of formation and to have past acts combine and influence present ones. *Ingegno* arises from the fact that, in any act of forming sensation there is present all that is necessary to transform all of sensation into a world of meaning."[xxxiii] This is evident architecturally in Gilly's Ur form and Schinkel's *Grundformen*, which, in their logic of correlation, bear no real identity outside of their manifestations within the particularities of time and space, as individual works and styles.

Within the inter-subjective dialogue both the originary 'identity' and the *sensus communis* are coeval members of a collective 'we'.[xxxiv] Because they are active co-participants Sensory Topics resists both an errant individual subjectivity and sociologism; the tyranny of history. There can be no over determination of either. There is always an

interplay of speaking and answering (responding). Each new metaphor must anticipate a response. This response comes from the ground of the *sensus communis* and the existent stream of images that constitute its sense of 'belonging'. Therefore, it must acknowledge the history of images that constitute its ground, without which no understanding can occur. Each new image/*Bild* takes on its meaning through its association with a previous image/*Bild*. As Bakhtin noted, "Language . . . is populated- overpopulated- with the intentions of others."[xxxv] It must acknowledge the *sensus communis* from whence it is emerging. Thus all subsequent metaphors, all emergent images/*Bild*, maintain a sense of the originary 'identity' of the first moment of signification. This was what Bötticher meant when he stated the Art-form preserves the memory of historical development of construction practices, balancing out the potentially dynamic forces of technological advance. Metaphor and its subsequent image/*Bild* preserve the dialectical correlation, while acknowledging the dynamics of history.

Because we always already exist within this stream of images, we can never return to the originary moment of 'identity', to the Imaginative Universal, to the *archai* or to the *Ur* form or *Grundformen*. Nevertheless, we are compelled to history and its development of symbolic forms. We must re-collect the *archai*; the metaphor and its *topoi* to re-initiate the dialectic of ontology. Verene notes to do this, is to move into the *Ideal Eternal History,* to the re-collected *fantasia* of the imagination. As a principle of *memoria*, it allows us to fix the particular of human history as *certums*, whose philological study allows us to fix points around which culture can be understood. The theorists of poetic tectonics did this when they identified classical architecture as self-referential and romantic architecture as an expression of spirit. Because each metaphor, each image/*Bild*,

initiates the *verum-factum* principle (the true is convertible with the made), the history of symbolic forms as a whole illustrate truths and patterns that are its philosophic truths. This is what Vico called providence, a total sense of the order of human consciousness. Vico's *corso e ricorso,* Schiller's progress of man and Hegel's movement in architecture from symbolic, to classical, to romantic are all *Ideal Eternal Histories*.

> ". . . there shall be a partnership between the formal and the material impulse, that is to say a play impulse, because it is only the union of reality with form, of contingency with necessity, of passivity with freedom, that fulfills the conception of humanity."
>
> Friedrich Schiller
> *On the Aesthetic Education of Man*[xxxvi]

Metaphor and Design Cognition

The Aristotelian and Humanist traditions, understood metaphor as a fundamental part of the cognitive process. The work of Coluccio Salutati (1331-1406) serves as a prime example. In his *De Laboribus Herculis*, he claims that *scientia* has its origins in metaphorical activity, which consisted of the discovery, or invention of similitudes (*similitudines),* which identify, on specific occasions, the constantly changing and differing meaning of being.[xxxvii]

According to Salutati, the pursuit of knowledge originates in the passions. It is artistic Eros, the Muses Clio, Euterpe and Melpomene, that motivates the lover of wisdom, with their desires for glory, pleasure in learning, and perseverance. These three are then followed by three actions. For Salutati, the origin of cognition lies in sensory *perception*, in the appeal and our passionate response to the abyss of what is un-definable in the

phenomenal world. The passionate experience of the senses is the instigator of knowledge. But he points out passion and perception alone do not produce *scientia*, only its originary moment.

True *scientia* requires the assistance of two more Muses, Mnemosyne and Erato, memory and the ability to identify similitudes. Memory is necessary because we need to be able to remember, to return and call forth the perceptions of sense. But this must be matched with the identifying of similitudes (*similia inveniens*). Grassi notes that the purpose of Erato, is "to provide a premise for the transfer of meaning, to discern the origin of *metapherien* . . ."[xxxviii] It is this discernment that leads to the creation of a new truth. For Salutati, the *archai* of *scientia* is metaphor as praxis; the identification of similarities.

Salutati's conception of *scientia* is encapsulated in Vico's definition of memory which serves as a major centerpiece in the *New Science.* According to Vico, "Memory thus has three different aspects: memory when it remembers things, imagination when it alters or imitates them and invention when it gives them a new turn or puts them into proper arrangement and relationships."[xxxix] This makes his work clearly part of this earlier tradition. But I would argue that Salutati's description of *scientia* bears a strong correlation to the ideas of the Idealist philosophers as a whole.

> "And human nature, so afar as it is like that of animals, carries with it this property, the senses are its sole way of knowing things."
>
> Giambattista Vico
> *New Science,* par. 374

1- Metaphor and the Body: The Reasoning from the Particular

Salutati's premise that knowledge originated in the body and sense perception– in the 'appeal' and 'response'- was part of a long standing tradition within rhetoric, dating back to Aristotle that was also a key component of Humanist Thought. As Grassi noted; "It is the sensory 'veil', as the Humanists say, that we make use of in metaphor and which in no way is a hindrance, but is rather the necessary and appropriate instrument for the realization of man's existential act of 'being-there' (*Dasein*)."[xl] Vico continued this tradition. Paraphrasing Aristotle he claimed; "the human mind does not understand anything of which it has had no previous impression from the senses."[xli] Our sole way of knowing things was from the senses and the body. The Imaginative Universal was the prime example of this concept, wherein knowledge of the body was metaphorically juxtaposed onto what was unknown in an attempt to understand it and apply meaning. For Vico, language and thought always bore this sense of corporeality.

This idea was also essential to Hamann, who saw language (and by extension all symbolic forms), not as mere invention, but as a reminiscence of images created by passions, stimulated by external sensory experience. Language, thought, art and religion were our response to external stimulation from our continued dialogue with reality. The same was true of Herder, who argued that knowledge began in sense perception. For him, life was a unity of experience that included the passions, emotions, desires, feelings and

physiological reactions. These were the concrete facts of human experience and as such were the true basis of knowledge and reality.

The idea of the 'appeal' and 'passionate response' of the body was also true, if less directly, of Fichte's '*Anstoβ*' and Hegel's '*Ansich*'. For Fichte, the originary moment of self-actualization arose from the confrontation of the body with the 'other', which then resulted in an emotional response. For him, I am who I am because I am responding to something outside me. The opposition of 'self' and 'other' was initiated by the body and sense perception. In Hegel's *Phenomenology* consciousness began in sense-perception, the sensing of both the 'this' as 'I' and the 'this' as object for the contemplation of the 'I'. For the Vico and the Idealist philosophers, knowledge emerged in metaphoric praxis the self-actualizing of *ingenium*. This action had its origins in the concrete experience of the lived world in the body and sense perception.

This must be understood as the foundation of the Idealist critique of the epistemology of science. Descartes *cogito* asserted that knowledge began with ratio, in the universal concept implanted in the mind. The argument that the world as we come to know it arose from the concrete exigencies of the lived experience of the body inverts this, arguing instead that knowledge emerged from the particular. This was a key element in Hegel's thought. For him, true reason, as opposed to the 'Understanding' of the *Vernuftstaat*, was the unity of thought and reality. In the *Philosophy of Right* he called this unity the concrete universal and it was an argument that all reason must be grounded in the concrete experience of the lived world. As he claimed, the philosophical idea was the union of the form, which in its most concrete signification was speculative knowing, and the content which was reason as the substantial essence of actuality.[xlii] The idea of the

concrete universal was also central to his theory of aesthetics and played a significant role in overturning the aesthetic traditions of mimesis and imitation. Therein lays the forth epistemological parameter of poetic tectonics: the reasoning from the particular.

While the architectural theorists of poetic tectonics did not directly address the body and sense perception, they nevertheless asserted that architecture and architectural knowledge began with the particular, with the material and the given particularities of the site. But it would be a mistake to assume that the body and sensory perception was not a concern for them.

Our interaction with architecture is inherently a sensed and haptic experience. The manipulations of material, texture, temperature, and light, all key components of architecture, are designed to affect the body and sense perception. If this was not specifically addressed by these theorists, it was certainly a major part of the contemporary architectural debates on tectonics as was the reasoning from the particular.

It is important to note that the assertion that the origins of thought are in the body have once again gained status. Marcel Danesi has noted contemporary paradigm shifts in Linguistic Theory, Cognitive Science and Computer Sciences have trended toward this idea of metaphor as the basis of cognition and its basis in the body. Nowhere is this more evident then in the work of George Lakoff and Mark Johnson and their notion of experiential knowledge. They reject the rationalist theory of cognition, precisely because it posits a disembodied mind. Like the Idealist philosophers they claim, that we comprehend the world not solely by what is objectively in it, but by how we interact with the world given our bodies, our cognitive organizations and our culturally-defined purposes. That is to say that our grasp of reality is “defined not just by what is in the

world objectively-but by our nature as living beings and by our interactions within a real environment . . . Basic-level categorization points to an embodied, experientialist view of cognition, rather than a disembodied, objectivist view."[xliii] In defining what he calls image- schemata, Lakoff asserts that abstract reason originates in bodily experience its "metaphorical projections from concrete to abstract domains. . . . the metaphors are not arbitrary, but are themselves motivated by structures inhering in everyday bodily experience."[xliv] According to Lakoff and Johnson, metaphor is responsible for the image-schemata that make all cognition possible.

> "In metaphor discourse assumes the nature of a body by displaying its forms and traits thus is a kind of quasi-bodily externalization."
>
> Paul Ricœur
> The Metaphorical Process as Cognition, Imagination and Feeling[xlv]

2- A Theory of the Image: The Concrete-ness of the Metaphor

For Salutati, true *scientia* required the assistance of Mnemosyne, memory, because we need to be able to remember and call forth the perceptions of sense. This remembrance was a conscious act, a form of praxis, the return to a previous experience, idea or image. Vico referred to this aspect of memory as imagination, which he claimed "is nothing but the springing up again of reminiscences" [xlvi] The word imagination comes from the Latin *imago,* or image, it is the ability to form mental images. Within the Aristotelian tradition the imagination was understood as a form of memory, the calling up of images immediate with sense perception, or with past sense perceptions which are then re-experienced. These images from sensation were then moved to the faculties of thinking and judgment. This was what Vico meant when he claimed thought had its

origins in *fantasia*: the imagination. As Verene claimed the 'Imaginative Universal' was basically a theory of image.[xlvii]

The power of the metaphor consists in its ability to vividly 'set before the eyes' the sense that it displays. Ricœur has referred to this as a kind of pictorial dimension, or picturing function, of metaphorical meaning. To explain it in another way, the metaphorical process by bringing to the fore the stream of images blurs the distinction between *Sinn* and *Vorstellung* between sense and representation. This compels us to explore the borderline between verbal and non-verbal, between sensed object and representation to essentially confront and question the very ontology of meaning. This faculty is important to discursive thought, which needs the imagination to provide it with its content.

The metaphoric image is the production of what Vico called a *certum* (a certain particular). This *certum* is not convertible with the *verum* (true), but they are held together in an indissoluble bond. As Verene has noted "What is made is not a single fact. The particular that is made manifests a universal element that connects it to all other particulars with a total mentality, which makes up its intelligibility, its dimension of verum."[xlviii] This productive aspect of the metaphor means that it is not merely *Vorstellung*; a mental picture of something, but the actual display of relations in a depicting mode. It is in this sense more 'concrete'.

This is present in Vico's concept of *coscienza*, and his emphasis on philology as a key component of his method. Beginning with Lodoli's stylistic organization of architectural history, the philological ordering of history plays an important role for the theorists of poetic tectonics. But the idea of memory, of the image/*Bild*, as the concrete display of

relationships in a depicting mode is most notable in Gilly's Friedrichsdenkmal and Schinkel's Potsdam projects and his Altes Museum in Berlin. All are theaters of memory that re-collect architectural images from our cultural memory and place them in a depicting or didactic order.

For Salutati, Mnemosyne must be followed by Erato, the identification of similitudes. It is here that the discernment of the metaphor leads to the creation of new truths. For Vico, this was memory as 'invention when it gives them a new turn or puts them into proper arrangement and relationships'. Throughout the *New Science* he used the terms *invenzione* and *ingenio* interchangeably. Both were part of the broader theory of Topical invention in classical rhetoric that carried over into Humanist aesthetic theory. Not surprising, this theory was rejected by the Port Royal and the proponents of the epistemology of science.[xlix]

In the *Ad Herennium,* Cicero defined invention as the devising of matter, true or plausible, that would make the case convincing.[l] In the Fifteenth century, the Renaissance Humanist and architect Leon Battista Alberti used the term *invenzione* in reference to the selection of subject matter in painting. He advised the artist to take lessons from 'poets and orators' who knew how to choose subject matter.

In Renaissance art theory *ingenio* was generally understood as the artist's familiarity with both subject mater and techniques. This was assumed to come from both individual and cultural experience. In *On the Ancient Wisdom of the Italians,* Vico pointed out that both *ingenium* and *natura* meant the same thing. He postulated that it was the nature of humanity to invent and to create. He asked "is it because just as nature produces physical things, so human ingenuity gives birth to mechanical things, and just as God is the

artificer of nature, so man is the god of artifacts?...Or is it because human knowledge consists solely in making things fit together in beautiful proportion, which only those of ingenuity can do?"[li] As he used the word it involved the innate capacity for insight, to find identities in diverse things, to synthesize and to invent.

In Sixteenth century Venice, *invenzione* still referred to the subject matter, which the artist either chose himself, or which was presented to him by others. But it also began to imply the way in which that subject was translated into an image. As such, it represented a bridge between the subject matter (the content of the work, its *res*) and the image with an emphasis on its' emotional character as a means of expression (its form or *verba*). *Invenzione* was the way in which an artist manipulated the image in such a way as to tell a story giving it a rhetorical quality. This was generally referred to in Italian art theory as the *impresa* and it played a significant role in humanist thought.

In 1556 Ruscelli set up the first rule of the *impresa*; that its meaning comes from the interrelationship of figure and motto. As such, it had a dialogic and metaphoric structure. By 1601 Andrea Chiocco defined it as; "an instrument of our intellect, composed of figures and words which represent metaphorically the inner concept of the academician."[lii] Its' construct was one of images and words which when combined, expressed the conscious thought of the composer. For theorists like Ruscelli and Domenichi, words and mottos were not necessary to its function. By the time of the Mannerists the *impresa* was associated with the term *concetto*, meaning concept, opinion, notion or idea. This linked it with the art of rhetoric. The *impresa*, it should be noted, was not conceived as a visual representation of a concept, it does not contain a separation of *verba* and *res*. Rather it is the image of one; it is a thought-image. Klein explains it in this

way; "expression imitates the articulations of the thought, which are those of the object, and thus authorizes the logic of *impresa;* . . . [and] invention and representation re-create the concept within sensible matter, and this process founds not an aesthetic, but a *techne*; a science of the art of the *impresa*."[liii]

The manifestation of the idea in a sensuous medium was central to Idealist aesthetics and poetic tectonics were it was subsumed under the idea of sublation. For Schiller, the work of art was the creation of a new reality that embodied both material and form (the expression of the formal impulse- *verba*), the latter a manifestation of the *ideal*. As such, it was the manifestation of a particular human potentiality as material reality was transformed through the formal impulse in the form of an idea. It was in this way that the work of art was a production of human world. It was the sublation of material (material impulse) and expression of the *ideal* as form (formal impulse) that was the *Poetic Unity* of the work of art.

For Hegel it should be remembered, the work of art was a concrete universal. As he claimed; ". . . the concrete content itself involves the factor of external, actual, and indeed even sensuous manifestation."[liv] It was the process of presencing the inner world in the world of appearance. As Desmond has noted, this was the objectification of the self, which for Hegel was arts fundamental role. "Art has no other mission but to bring before sensuous contemplation the truth as it is in the spirit, reconciled in its totality with objectivity and the sphere of sense."[lv] It was important to note that for Hegel the ideal can only become manifest in the sensual, thus this transformation of the metaphor proved to be an essential moment in its development. The metaphor creates this sensuous image,

what Hegel called the *Bild*. While He makes no overt reference to metaphor (because he does not ask how the *Bild* is formed), it was nonetheless, central to his thought.

It is here that we see the manifestation of Vico's *verum-factum* principle- the true is convertible with the made- as the metaphor moves from its noetic function as a cognitive process to its performative function. This is achieved through its sublation with material contingency, what Schiller referred to as the material impulse. This affects the transformation of the metaphoric image into sensuous form, making it a concrete universal. The product of the metaphor, the image/*Bild*, becomes a true *poesis*, the creation of a third element. This is the fifth epistemological parameter of poetic tectonics: the sublation is the transformation of the metaphor from a form of praxis; the reasoned state or capacity *to act*, to a form of *poesis*; the reasoned state or capacity *to make*. This process is the establishment of the dialectic of ontology.

> "Until we express the Ideas aesthetically, i.e. mythologically, they have no interest for the people, and conversely until mythology is rational philosophy must be ashamed of it."
>
> Hegel, Holderlin, Schelling
> *Systemprogramm*[lvi]

Bild/Bildung: The Construing and Constructing of Architecture

In their critique of the epistemology of science the Idealist philosophers challenged Descartes *cogito* and its' inherent separation of language and thought. In an effort to overcome the separation and the lack of *pathos* found in apodictic speech they turned to *poesis*; toward the speech of the *archai* and metaphor. Its' combination of *pathos* and

logos made it a true and complete speech and a means of resistance to the epistemology of science and the *Vernuftstaat*.

It is in the theoretical investigation of the *archai* that we come to recognize the indicative character of metaphor makes it a generative principle of cognition and the ground of *phronesis,* practical wisdom. Metaphor proves to be techne in both its' forms; as the reasoned state or capacity to act and the reasoned state or capacity to make. As such, it serves as a hinge between art and philosophy making it the foundation upon which the unity of theory and practice must be built.

Thought is born in *poesis*. But, it is not enough to recollect the originary power of the metaphor and the speech of the *archai*. To fully comprehend *Poetic Unity* we must recognize it as a moment of praxis; the conscious or unconscious collective activity of the *sensus communis*. Along side the study of the poetic, there must be the study of the historic. It is the dialectic of the noetic and performative aspects of metaphor; its movement between the dual forms of techne, that brings about an oscillation between the material and formal impulses. It is only through the recollection of the image/*Bild* that we bring about the submergence into the concrete and once again affect sublation and re-cognize the world. This is the experience of consciousness, the endless cycles of oscillation, submergence and sublation.

The true theoretical investigation must include the study of how *poesis* and recollection, as a form of praxis, form the unity of this experience. That requires the recognition of the mutual dependency of the *Bild* and the *Begriff* within the overall experience of consciousness. For the Idealist philosophers and the proponents of poetic tectonics this was the key to self-knowledge. There has to be sublation between the

metaphoric speech of the archai and the apodictic speech of the dialectic, between poetic and scientific speech.

From this position, we can understand Humbolt's claim that the union of art and science was the precursor to *Bildung*. It was what prompted Gilly to write "When science and art unite at a common central point, when they work in concert, and when they place equal reliance on the lessons of experience, then they will progress more swiftly toward their goal; and each stands to gain by mutual extension of their powers to encompass even the remotest social purposes."[lvii] It was precisely this point that lead Schinkel to assert that the study of architecture required the poetical and the historical. It was why his etymological research included both the study of the *Trivialbegriff des Gegenstandes* (the science of architecture) and the *Artistischen poetischen Zwecken* (the art of architecture) and why he believed the study of both were essential to the search for a new style and the advance of architecture.

In the *New Science* Vico stated; "Providence gave good guidance to human affairs when it aroused human minds first to topics rather than to criticism, for acquaintance with things must come before judgment of them. Topics has the function of making minds inventive, as criticism has that of making them exact."[lviii] While the mind needs to be inventive, it also needs to be exact. We cannot, nor should we try to escape the dialectic and apodictic speech.

The apodictic speech of science and rational tectonics makes the mind and reason exact. It allows for the clarification of and perfection of systems that lead to a necessary economy and efficiency. It serves to make architecture literate and useful. But, while necessary if we seek exactness in construction, it nevertheless contains an inherent

separation of *verba* and *res*, and lacks *pathos*. With its concentration on means as opposed to ends, it has a tendency toward technique, which, in its assumption of neutrality, denies *ethos*. As such it can possess no true or complete philosophical inquiry.

To overcome technique, architecture turns to *poesis* and the recollection of the *archai*. But as Verene notes, we cannot return to the originary moment of the Imaginative Universal. We are always already born into the stream of images that constitute our 'belonging'. To create a true critical practice, architecture must submerge and once again engage in the art of the question and re-identify the topoi. Only in this way can it once again engage the dialectic of ontology and produce meaning and signification.

But to be a means toward *Bildung*, architecture must relinquish its aesthetic component and sublate itself with philosophy. To be a means of true knowledge of the unity of theory and practice it must grasp the rational of the metaphor in its dual capacity as a techne; as both a means to praxis and a means to making. It must affect a theory of the archai as a means to both *phronesis* and *poesis*. In other words, we must re-collect *archi-tectonike*; the *archai* as a theory of metaphor as praxis and *tectonike* as the techne of *poesis*. Only then can we say with the authors of the *Systemprogramm* that she gains the higher dignity, becoming "at the end once more, what she was in the beginning- the teacher of mankind; for there is no philosophy, no history left, the maker's art alone will survive all other sciences and arts."[lix]

ENDNOTES

[i] Max Horkheimer, *Eclipse of Reason*, Continuum, New York, 1992, pg. 187.
[ii] Hamann; *Briefwechsel*, edit. Walther Ziesemer and Arthur Henkel, Wiesbaden and Frankfurt, 1955-79: Insel, 7 vols. v 95.21.
[iii] Said, Edward; *Beginnings: Intentions and Method*, Columbia University Press, New York, 1985, pg 373.
[iv] Hugo, Victor; see *The Hunchback of Notre Dame*. In the chapter entitled 'This will Kill That' Hugo claimed that the development of thought, language was simultaneous and interdependent. He used tow images 'architecture' and 'printing' as metaphoric tropes to address the broader philosophical issues of language, thought, expression and consciousness. He proposed that the shift from architecture to printing represented a fundamental shift in the means of expression and human consciousness. For Hugo, architecture stood for a form of thought that was based in the sensory experience of the body. In contrast printing stood for a form of thought that was systematic and abstract, wherein arbitrary signs stood for an absent present.
[v] Eliade established the dichotomy of poetic and utilitarian language as the basis of this thesis of sacred and profane. Like Vico, the poetic is a form of mythical thinking that is related to both art and the creation of meaning. Eliade, Mircea; The Sacred and Profane: The Nature of Religion, trans. Trask, Harcourt Brace Jovanovich, San Diego, New York and London , 1959, pg 16.
[vi] Levi-Strauss argues that there are "two strategic levels at which nature is accessible to scientific enquiry: one roughly adapted to that of perception and the imagination: the other at a remove from it." He identifies theses two modes of coming to terms with nature as the Bricoleur and the engineer respectively. See Levi-Strauss, *The Savage Mind*, The University of Chicago Press, Chicago, 1966, pp. 1-34, quote on pg. 15.
[vii] For Cassirer, the distinction is related to two modes of conceptualization that lie at the heart of all symbolic forms the mimetic and indicative gesture. This distinction is a key foundational point in his theory of symbolic forms. See Ernst Cassirer, *The Philosophy of Symbolic Forms*, Vol. I, chap. 2, Vol. II, chap. 1, Yale University Press, New Haven, 1955. See also Cassirer *Language and Myth*, Dover Publications Inc., New York, 1946.
[viii] For Grassi, the distinction is related directly to cognition and the source of reason. It is the failure to grasp their distinction that for him is the great scandal of modern metaphysics. See Grassi, Ernest; *Rhetoric as Philosophy: The Humanist Tradition*, The Pennsylvania State University Press, University Park and London, 1980, pg 19.
[ix] Verene, Donald Phillip, *Hegel's Recollection: a Study of the Images in the Phenomenology of Spirit*, State University of new York Press, Albany NY, 1985, pg 48.
[x] Vico, Giambattista; *The New Science of Giambattista Vico*, trans. Bergin & Fisch, Cornell University Press, Ithica and London, 1948. par 445.
[xi]Ibid., p. 19.
[xii] See Aristotle *Nichomachean Ethics*, bk VI, chapter 3-6. Aristotle identifies scientific reasoning as being demonstrative and derived from universals. He claims that, the first premises of this demonstrative reasoning cannot be based in premises, but must be based in inductive reasoning.
[xiii] This critique can also be found in theorists and historians of science such as Lakantos, Fyerabend and Kuhn, who argue that the core propositions upon which science are based are effectively beliefs that cannot be proved, at least not using the methodology of science. They argue that science sets up structures to protect the core propositions and shield them from interrogation. For them this is the greatest hindrance to its advance.
[xiv] Grassi, Ernesto; *Rhetoric as Philosophy: The Humanist Tradition*, The Pennsylvania State University Press, University Park and London, 1980, pg. 5.
[xv] Schiller, Friedrich; *On the Aesthetic Education of Man in a Series of Letters*, reprinted in *Friedrich Schiller On the Aesthetic Education of Man in a Series of Letters*, trans Snell, Frederich Ungar Publishing Co. New York, 165, pg 40.
[xvi] The idea can also be found in the writings of Mircea Eliade who refers to poetic language and utilitarian language,[xvi] and Ernst Cassirer who refers to them as intuitive and discursive speech,[xvi] Like Vico, all three associate one form of thought and expression with *poesis* and the other with ratiocination. Like the Counter

Enlightenment thinkers they all hold that understanding the relationship between the two is essential to any understanding of the human condition and cognition.

Eliade established the dichotomy of poetic and utilitarian language as the basis of this thesis of sacred and profane. Like Vico, the poetic is a form of mythical thinking that is related to both art and the creation of meaning. Eliade, Mircea; The Sacred and Profane: The Nature of Religion, trans. Trask, Harcourt Brace Jovanovich, San Diego, New York and London , 1959, pg 16.

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[xvii] Grassi, Ernesto; Vico Verse Freud: Creativity and the Unconscious, *Vico Past and Present*, edit. G. Tagliacozzo, Humanities Press Inc. NJ, 1981, pp. 147. Also see *Vico and Humanism: Essays on Vico, Heidegger and Rhetoric*, edit. Verene, Peter Lang, NY, 1990.

[xviii] Harrington, Dana Kay; *Rhetoric, Composition and the New Science: a Study of the Changes in Disposition, Invention and Pedagogical Practices in the Early Modern*, UMI Dissertation Services, Ann Arbor MI, 1994, pp 20-26.

[xix] Descartes, Rene; Meditations on First Philosophy, Meditation Six, in *Rene Descartes Discourse on Method and Meditations on First Philosophy*, trans. Cress, Hackett Publishing Co. Inc. Indianapolis Ind. 1993, pg. 99.

[xx] Ibid. Discourse on Method, pg 4.

[xxi] Paul Ricœur, The Metaphorical Process as Cognition, Imagination and Feeling, *On Metaphor*, Edit Sheldon Sacks the University of Chicago Press, Chicago London, 1978. pg 144.

[xxii] Verene, Donald Phillip, *Vico's Science of Imagination*, Cornell University Press, Ithaca & London, 1981, pg. 79-80.

[xxiii] A common interpretation of metaphor is as a literary device of transference or deviance. This interpretation can be traced to Aristotle's comment "Metaphor consists in giving the thing a name that belongs to something else." (Aristotle, *Poetics*, 21. 1457b. 6-7) But there are several fundamental problems with this interpretation in general, and in terms of the Counter Enlightenment specifically. Mark Johnson sees this as objectivist in that the structure of the metaphor is based upon an objective reality out there. Furthermore, in this theory the similarity is presumed to exist independent of the subject. He claims that "the distinctive feature of comparison theories is their insistence that the similarities revealed through the metaphorical transfer exist objectively in the world and are expressible in literal propositions." (Johnson, Mark, *The Body in the Mind: The Bodily Basis of meaning, Imagination and Reason*, The University of Chicago Press, Chicago and London, 1987, pg 68.) For Karsten Harris, this interpretation places metaphor in the context of mimetic theories of language and art. He sees this as placing the *telos* of the metaphor beyond the poetic act. "In such a view metaphor has to open the work of art to a dimension that transcends it; thus it destroys our experience of the work of art as a self-sufficient whole." (Karsten Harries, Metaphor and Transcendence, *On Metaphor*, Edit Sheldon Sacks the University of Chicago Press, Chicago London, 1978. pg 72.) He warns that given such an interpretation of metaphor, the work of art must resist it, if it is to be autotelic, a self-sufficient whole that carries its purpose in itself. Thus, the interpretation of metaphor as literary device is at odds with the aesthetic theory of the Counter Enlightenment, which asserted that the work of art was neither imitative nor objectivist, but an autonomous human activity.

[xxiv] Paul Ricœur, The Metaphorical Process as Cognition, Imagination and Feeling, *On Metaphor*, Edit Sheldon Sacks the University of Chicago Press, Chicago London, 1978. pg 144.

[xxv] Verene, Donald Phillip, *Vico's Science of Imagination*, Cornell University Press, Ithaca & London, 1981, pg. 41.

[xxvi] Aristotle, *Rhetoric*, Bk 1chapt 2, 1355b, 26-7.

[xxvii] Grassi, Ernesto, *Rhetoric as Philosophy: The Humanist Tradition*, The Pennsylvania State University Press, University Park and London, 1980, pg. 50.

[xxviii] Throughout the *Rhetoric* Aristotle refers to it as an art, i.e. a techne, but distinguishes it from the other practical arts in that in its technical character it is not concerned with any special or defined class of subjects. *Rhetoric* Bk I Ch I 1355b 9-22 and Ch. 2 26-36.

[xxix] Fish, Stanley, Rhetoric, in *Critical Terms for Literary Study*, edit. Lentricchia and McLaughlin, The University of Chicago Press, Chicago and London, 1990, pg. 208.
[xxx] Aristotle, *Poetics*, 21. 1457b. 6-7
[xxxi] Johnson notes; "the distinctive feature of comparison theories is their insistence that the similarities revealed through the metaphorical transfer exist objectively in the world and are expressible in literal propositions." Johnson, Mark; *The Body in the Mind: The Bodily Basis of Meaning, Imagination and Reason*, The University of Chicago Press, Chicago and London, 1981, pg. 68. Karsten Harries sees this as fundamentally problematic in terms of aesthetics. As he claims it places the *telos* of the metaphor beyond the poetic act. As he notes, "In such a view metaphor has to open the work of art to a dimension that transcends it; thus it destroys our experience of the work of art as self-sufficient, whole." He warns that given such a definition of metaphor, the work of art must resist it, if it is to be autolelic, a self-sufficient whole that carries it s purpose in itself. See Harries, Karsten, Metaphor and Transcendence, in *On Metaphor*, edit. Sacks, The Univerity of Chicagp Press, Chicago and London, 1978.pg. 72.
[xxxii] Vico, *The New Science*, trans. Bergin Fisch, Cornell University Press, Ithaca and London, 1968, par. 142.

[xxxiii] Verene, Donald Phillip, *Vico's Science of Imagination*, Cornell University Press, Ithaca & London, 1981, pg. 105.
[xxxiv] For an explanation of the dialogic character of the metaphor see Hwa Yol Jung, Vico and Bakhtin: A Prolegomenon to any Future Comparison, in *New Vico Studies*, vol. 3, edit. Tagliacozzo and Verene, The Institute for Vico Studies, New York, 1985, pp. 157-165.
[xxxv] Bakhtin, Mikhail Mikailovich, *The Dialogic Imagination*, edit. Holquist, trans. Emerson & Holquist, University of Texas Press, Austin TX, 1981, pg. 294.
[xxxvi] Schiller, Friedrich, *On the Aesthetic Education of Man in a Series of Letters*, reprinted in *Friedrich Schiller On the Aesthetic Education of Man in a Series of Letters*, trans Snell, Frederich Ungar Publishing Co. New York, 1965, pg 77.
[xxxvii] For a complete explanation of Salutati's argument see Ernesto Grassi, *The Primordial Metaphor*, trans. Pietropaolo & Scarci, Medieval & Renaissance Texts and Studies, Binghamton NY, 1994, pp. 10-14.
[xxxviii] Ibid. pg. 13.
[xxxix] Vico, *New Science*, par. 819.
[xl] Ernesto Grassi, Vico Verse Freud: Creativity and the Unconscious, *Vico Past and Present*, edit. G. Tagliacozzo, Humanities Press Inc. NJ, 1981, pp. 158. Also see *Vico and Humanism: Essays on Vico, Heidegger and Rhetoric*, edit. Verene, Peter Lang, NY, 1990.
[xli] Vico, Giambattista; *The New Science of Giambattista Vico*, trans. Bergin & Fisch, Cornell University Press, Ithica and London, 1948. par 363. See also Aristotle, *On the Soul* 432a 4f, "since according to common agreement there is nothing outside and separate in existence from sensible spatial magnitudes, the objects of thought are in the sensible forms, viz. both the abstract objects and all the states and affectations of sensible things. Hence (1) no one can learn or understand anything in the absence of sense, and (2) when the mind is actively aware of anything it is necessarily aware of it along with an image; for images are like sensuous contents except in that they contain no matter."
[xlii] Hegel, *The Philosophy of Right*, trans. Knox, Oxford University Press, London & New York, 1952, pg 12.
[xliii] *Lakoff, George: Cognitive Semantics, Meaning and Mental Representations*, edit. Umberto Eco, Santambrogio, Violi, Indiana University Press, Bloomington and Indianapolis, 1988, pp. 134-5.
[xliv] Lakoff, George: Cognitive Semantics, *Meaning and Mental Representations*, edit. Umberto Eco, Santambrogio, Violi, Indiana University Press, Bloomington and Indianapolis, 1988, pp. 144.
[xlv] Ricœur, Paul, The Metaphorical Process as Cognition, Imagination and Feeling, *On Metaphor*, Edit Sheldon Sacks the University of Chicago Press, Chicago London, 1978. pg 141-157.
[xlvi] Vico, *New Science*, par. 699.
[xlvii] Verene, Donald Phillip, *Vico's Science of Imagination*, Cornell University Press, Ithica and London, 1981, pg 68.
[xlviii] Verene, Donald Phillip, *Vico's Science of Imagination*, Cornell University Press, Ithaca & London, 1981, pg. 83.

[xlix] Topical invention posed problems for the Port Royal, who saw it not only an inferior means of invention, but also one that 'corrupted' judgment, because it confined intellectual inquiry to the area of the probable as opposed to the certain. This mode of argumentation was seen as undermining and threatening the claims of 'stable' and 'fixed' truths by the epistemology of science. Harrington argues, the separation of language and thought led to new modes of invention that embodied Cartesian and Empiricist approaches to knowledge. As science gained in dominance, the topical definition of invention was replace by scientific definition derived from Bacon's *Novum Organum*, one where invention was the observation and documentation of the new. The result was a rejection, by Descartes and others, of the writings of Ancient authors as authorities, believing that they could provide no new knowledge of the world.
[xlix] Along with this came a rejection of the necessity to study language and philology in the pursuit of knowledge.
[l] Cicero, *Ad Herrenium*, I.II.3
[li]Vico, *On the Ancient Wisdom of the Italians*, from Leon Pompa, *Vico Selected Writings*, pg. 70
[lii]As quoted by Robert Klien, in *Form and Meaning*, pg. 5
[liii]ibid., pg. 12
[liv] Hegel, *Hegel's Aesthetics, Lectures on Fine Arts*, vol. I trans. Knox, Clarendon Press, Oxford, 1975, pg 71.
[lv] Ibid., pg. 623
[lvi] The reference here is to the text written by Hegel, Holderlin and Schelling in 1796 entitled the 'Earliest System-programme of German Idealism', see H.S. Harris, *Hegel's Development: Toward the Sunlight 1770-1801*, Oxford, 1972.
[lvii] Gilly, "Some thoughts on the Necessity of Endeavoring to Unify the Various Departments of Architecture in Both Theory and Practice", *Sammlung*, 1797, reprinted in *Friedrich Gilly Essays on Architecture 1796- 1799*, trans. Britt, Getty Center for the History of the Art and the Humanities, Santa Monica CA, 1994, pg. 172.
[lviii] Vico, *New Science*, par. 498.
[lix] The reference here is to the text written by Hegel, Holderlin and Schelling in 1796 entitled the 'Earliest System-programme of German Idealism', see H.S. Harris, *Hegel's Development: Toward the Sunlight 1770-1801*, Oxford, 1972.

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