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TACTILE INTERFACES: EPISTEMIC *TECHNE* IN INFORMATION DESIGN

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Clemson University

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Doctor of Philosophy
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by
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ABSTRACT

This dissertation is a study of the rhetorical concept of *techne* and how it might inform the field of Information Design, specifically in an Instructional Design space. I argue that current models of Information Design draw insights from (a) the scientistic models that emphasize rational and universal reach (b) the craft tradition that places emphasis on mechanistic acquisition of the right skills and (c) an interpretive rhetorical model. These perspectives dominate the Instructional Design paradigm, rendering systems-based design processes that at times eschew designing in favor of organizing. I suggest that the discipline requires a remediated epistemic *techne* shaped by models proper to the crafts and broadened to physical embodiment and sculpting physical knowledge. This enhanced model emerging from practices in sculpture and enhanced by participatory/meta form of design is epistemic *techne*, given that the philosophy of *techne* is a high form of practical reasoning whose adaptation to Instructional Design is knowledge in making.

Because the literature of Information Design is vast and still emerging, my analysis emphasizes the dominant perspectives. The challenge posed by both the histories of *techne* and of Information Design is that of a series of rhetorical paradigms that have at once prescribed and defined these concepts. What we see emerging, and certainly, what I wish to put forth, is a genuine *ethos of expertise* amenable to changing strategies of Information Design demonstrative of an epistemic *techne*.

DEDICATION

To my children, Andrew and Sarah whose lives I upended when I went to graduate school. Thank you for being model children of a graduate student mom. To my mom and dad, thank you for your love and support.

ACKNOWLEDGMENTS

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CHAPTER ONE

Overview and Justification

Statement of the Problem

Developments in communication technology, the abundance of information, and the changing nature of audiences have created the need for purveyors of information to develop theories and adapt methods from those theories as best practices. Those developments have paved the way for Information Design that "requires an interdisciplinary approach that combines skills in graphic design, writing and editing, Instructional Design, human performance technology, and human factors" [stcsig.org]. The concept of Information Design itself has been defined as "the art and science of preparing information so that it can be used by human beings with efficiency and effectiveness" (Horn 16). That definition suggests that well designed information conveys order in form and in content to foster understanding, a technological goal permeating the practice of Information and Instructional Design.

Unfortunately, literature indicates that Information Design, as currently practiced, relies on assumptions that presume reason and objectivity that "privilege an overly cognitive and instrumental view" (Williams 1-3) while negating the emergent and affective aspects of meaning in form and agency (cf. Johnson). This cognitive approach also influences the overly logical processing of Information

Design, which, as Bolter and Gromala indicate, accord us a transparent interface (Bolter and Gromala 6). It's been noted that the tendency to the positivistic instrumental may be influenced by among other things the communication model and information theory (see Kinross).

Robin Kinross observes that guidelines derived from the communication model and from "human information processing," with the former based on sender, channel, user, and the latter on the user's ability to decode the information have found their way into Information Design (Kinross 139-141). Indeed the work of practitioners such as Albers and Mazur; Horn and Tufte in one way or another reflects this inheritance, if you will, perhaps because they desire a design that is "objective and not equivocal" (Margolin 17), but precise.

Further, as Kinross has posited, Modernism contributed to a wider acceptance of the position that information was rational and therefore neutral (Kinross 140). This specter of modernism is responsible for the notion of simplicity, ease-of-use, and a trend toward (scientific) certainty (Kinross 138). Moreover, both information theory and modernism propagated the notion that human communication could be transactional and supported by such technology as the Morse code, and the telegram. Emerging from that research, practitioners of Information Design perceived of its purpose as being expository (Pike and Mumper) and at its most basic about making information accessible and usable (an expedient goal even as it sets up a utopian ideal), a notion that dominates the literature (see Lupton).

Perhaps to counter this tendency, Saul Wurman and Nathan Shedroff have focused on order as enabling users of information to make sense of what would otherwise be data, thereby advancing toward an epistemic in Information Design. Similarly, Sean Williams has argued for "an expanded notion of Information Design" that values people rather than users" (Williams 1) and therefore calls for a different approach to design. Still, this practical craft (often described in such physical traits as "'bringing together," (Shriver 10-14); "preparing" (Carliner 571-76); and/or "translating" complex, unorganized, data into valuable, meaningful information "(Wurman 23) is deliberated and delivered in cerebral terms as the parameters for knowledge. In doing so, practitioners neglect the tactile material dimension of the epistemic. I suggest the tactile is a necessary component in Information Design.

In addition, Information Design, in purporting rational inquiry, assumes designers as neutral entities in a contingent situation who will act the same way every time to present the objective reality of the situation (see Kostelnick, "Text Design"). The assumption seems to neglect the fact that meaning emerges as a function of the information sharing patterns inhabited by the designer agency, as well as the material and creative means privileged by the Information Designer that render Information Design a creative productive art (Buchanan, "Design") reflecting the art of the orator (as Cicero, *De Inventione*) demonstrates.

Given its foundations, research in Information Design has given us Usability (Dumas and Redish; Nielsen), Document Design (Shriver), along with Universal Principles of Design (Lidwell et al.), with most of it privileging a content only

interface as the preferred mode of the discipline (Bolter and Gromala 25-27). I argue

that viewing the material/technical aspect of Information Design allows us to reflect

on and gain meaning from the hitherto unacknowledged material creation that

supports the interface. This approach will make oscillating between form and

content (Lanham, *Attention*), transparency and reflexivity (Bolter and Gromala),

mind and body (Viola; Beuys) possible. These oscillatory aspects are better

understood from both cognitive and performative viewpoints that capture the

aesthetics and embodied experiences explored by Isocrates and documented by

Toulmin and Goodfield. Conceptual sculptors, in particular, such Beuys, Viola, and

theorists of sculpture such as Rosalind Krauss, have given us a model we can

emulate to repurpose the material as a counter to abstractionism. This model allows

us to utilize the tension between the material and conceptual, by allowing the art of

sculpting to serve as an organizing framework for knowledge in the information

design process. Because sculpting is tactile, it shapes knowledge through the

physical arranging, and ordering of material, images and texts to form meaning.

That *techne* is physically epistemic.

Sculpting offers tactile material affective capacities so pertinent in the

creative and exploratory ways of invention (Bolter and Gromala 24-25). In

instructional spaces, for example, sculpting principles range from thinking, creating,

molding, and producing that require a tactile epistemic interface. A revised *techne*

would illuminate the epistemic quality inherent in the tactile materiality that

informs the process through skillful application of technique and materials. It

would foreground the ability of Information / Instructional Design to create knowledge, albeit through both theoretical and practical means. I will thus seek to answer the following question: How might a reconcpetualized *techne* that encompasses materiality and the tactile dimension as ways of knowing inform and relate to Information Design?

This view of *techne* may also account for human agency as it emerges in creative acts and materializes in form. At the very least, it will draw attention to the initiators of this profession, who decried the "mechanistic reproduction of texts" (cf. Leff 89-100) and instead used them as resources to invent Information Design as a new profession (see Horn). First, a historical overview of *techne*.

Review of Literature

This review of scholarship will focus on histories of *techne* that illuminate the attributes of *techne* and how they are tied to the broader conceptualizations of the term. The review will further show how *techne* since the development of modern science and technology has become technique, tool, technology, or technological rationality. Out of this investigation of *techne*, the review will seek to extract the distinctive features that render *techne* a tactile epistemic.

Classical Readings

In *On Rhetoric*, Aristotle opines that an art determines how success at something is achieved, either accidentally, by habit, or by "following a path" (Aristotle 28). These three ways of knowing have since been distilled into *techne*, knack, and tuche or chance (Garrett 290; Johnson 24, 43-50; see also Pender), with *techne* being the more rationalistic and therefore preferred[i]. Philosophers who have explored *techne*, including Plato in his *Republic* and in the *Gorgias* and later Dunne (*Rough Ground*) and Atwill *Rhetoric Reclaimed*, have focused on the *techne*/knack antithesis, designating *techne* a technical rationality different from mere habitude, while neglecting attributes of materiality as ways of knowing coupled with the role of the maker. Going beyond this antithetical understanding of *techne* by negation allows us to see *techne* that is instrumental yes, but more importantly, materially epistemic.

While crediting both Plato and Aristotle with inscribing a logical framework to explain and justify theories, in *Architecture of Matter* Toulmin and Goodfield note that the two diverged on the exclusivity of reason as the domain of knowledge. Plato looked to the exactitude of mathematical calculation and abstract forms (Toulmin and Goodfield 74-75), while Aristotle went beyond abstraction to include a physical approach (Toulmin and Goodfield 83-85), enshrined in the four causes (mostly mechanistic; cf. Berryman 352-355). The authors' history spells out the relationship between philosophy and the craft tradition defined by on the one hand "the

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speculative scientist" and on the other "the practical craftsman" (Toulmin and Goodfield 25). They plausibly argue that in the interaction between theory and practice, science has drawn on the craft tradition and profited from its experience" (Toulmin and Goodfield 25) even as it sets itself apart as the true form of knowledge. And yet, for example, without writing (craft) we would have no record of philosophical (theory) musings, whereas material crafts, because they are physical, we are more certain of their existence. Consequently, examining physical artifacts accords us the means to understand the theory that informed their making.

Before this separation of thinkers and craftsmen, a manifested *techne* meant mastercraftsmen who could deliberately manipulate materials for utilitarian or even aesthetics purposes (Goodfield and Toulmin 19-24). Instead, out of the "archai" (Toulmin and Goodfield 44) the philosopher identified the material components of a thing and how it came to be. In time, however, one group of philosophers focused on understanding why and another on doing (Toulmin and Goodfield 45-48), hence the myth of rationality. Could it be that Aristotle's "rationally calculating," (Nichomachean Ethics [hereafter *NE*] 1139a15) has its roots in this place? In any case, these divisions limited knowledge to the realm of reason and in a disembodied form as opposed to knowing based in the physical tactile world of materials and aesthetics.

When in the *Phaedrus*, Plato indicates that a *techne* is not explicit and is incapable of being clearly stated once acquired, he points to a 'tacit' kind of knowledge heralding Michael Polanyi's "we know more than we can tell" (Polanyi

4), implying that these tacit forms of knowledge cannot be clearly explicated. It also calls to mind Susanne Langer's expanded view of feeling as a mental cognitive process, not articulated, but present in the process of presencing (Langer, *Feeling and Form* 53-55; see also Heidegger "Concerning Technology"). In this tenor, we see a tacit dimension to *techne*. That knowledge (seemingly out of nowhere, yet not out of context) contrasts with iterative approaches in a "creative tension" out of which creativity and innovation are manifest (Polanyi 90). Still, in Book 10 of the *Republic*, Socrates references "three technai[1] (using, making, and imitating) that pertain to all other arts, suggesting that the *techne* of the user (man) determines the excellence, beauty, and rightness of everything (relative to man's intentions) that is made" (*Republic* 601d1ff). In ascribing mastery to the technite, one who has a sound grasp of her craft, Plato alludes to a technical form of reason, surprisingly given his preference for dialectic as the genuine path to knowledge and as the art of philosophers (*Republic* VI 511b).

Gorgias, on the other hand, maintains that *techne* is an art whose knowledge is time and context based; the way McComiskey sees it, Gorgias can be understood to have introduced *kairos*, a temporal element, into *techne* along with a kind of knowledge not considered rational. This non-rational knowledge was for Gorgias belief-based and yet an exhibit of *techne*. Based on past, present, and future, such knowledge is not wholly accessible to and is relative to the moment (McComiskey).

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[1] The word *technai* is the plural form of techne

This relativist approach fits the mode of an evolving uncertain element of knowing inherent in the sophistic position.

Aristotle has said *techne* "is identical with a state of capacity to make, involving a course of reasoning" (*NE* VI 1140a11), privileging reason as a procedural role in rhetoric. As he puts it, "All art is concerned with coming into being, i.e. with contriving and considering how something may come into being which is capable of either being or not being, and whose origin is in the *maker* and not in the thing made" (*NE* VI, 1140a11-16 emphasis added).

While Aristotle maintains that *techne* is a form of knowledge, like Plato, he limits its realm to the rational, "for episteme is a rational formula [logos], and the same logos explains a thing" (*Metaphysics* 1046b4-9 ellipsis added). Further, Aristotle ascertains that rhetoric, because of its function and object is a *techne* (*Rhetoric* 1.1.1355b8-21) shows just how *techne* brings about persuasion (*Rhetoric* 1.2.1355b35-39) through artistic and inartistic means. Some of these means are style, considered foundational to knowledge by Cicero's *De Oratore*. Cicero perceives style as an organizing principle of thought (De Oratore 3.173; Katz, *Epistemic* 126), whose pertinence to Information Design I shall explore.

Quintilian, on the other hand, stresses that a good man speaking well embodies the ideal of *techne* "art [as] a power reaching its ends by a definite path" (*Inst.* 2.19.2) and therefore is "an active...art" (2.18.5). We see here a *techne* that is embodied in a human, albeit ideal form. Quintilian moves us from the abstract logical structures that characterize knowing to concrete forms of doing and knowing

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(*Inst.* 11.3.95). In placing emphasis on the body and its role in oratory and delivery, he is well within the tradition of rhetoric as expounded by Isocrates before him, who valued the importance of a creative performance and physical delivery as a *techne* in pedagogy. That tradition suggests a tacit form of understanding between orator and audience as embodied and manifested in the physical delivery. In Chapter one, I will have a discussion on the sophistic tradition from Gorgias to Quintilian, where tactility is emphasized and its epistemic component upheld.

In summing up, while both Plato and Aristotle concur that "every *techne* has a determinate end" (Aristotle, *EE* 1218b2-4; Plato, *Republic* 333a) and that *techne* are deterministic, aimed toward a particular goal/end they both privilege the forms, and the rational as the true paths to knowledge (Handelman 7). I wish to go beyond the means-end conception endemic to Greek philosophy as propagated by both Plato and Aristotle and reclaim the epistemic dimension of tactile craft in *techne* as knowledge. This conceptualization recognizes, as Heidegger puts it, that "art is knowledge" different from that of scientific knowledge (Aristotle, *Metaphysics* 170).

Techne into Technology

Extrapolating the possibilities of both *techne* and technology entails what Dunne describes as utilizing *techne* as "a generative source (arche) of useful things" (Dunne 249)" empowered to reliably produce and reproduce (Dunne 250). Technology as a system of tools and tasks is a rational means for achieving ends in a

physical world. It is, as Walter Ong says, a "human construction" whose ability to realize human potential is invaluable in both practical and intellectual ways (Ong, *Orality and Literacy*). It fits Agamben's notion of an apparatus as interventionist, but without the ideological dimension.

In fact, technology can be thought of as both process and as practice related to a variety of human activities such as design and dexterity. This does not mean that technology has replaced *techne*. Rather, technology as Carl Mitcham has exemplified, acts as the study of the grammar of rhetoric (Mitcham 129) as exemplified by Peter Ramus' appropriation of [print] technology, as a form of the "reorganization of the whole of knowledge" (Ong, *Method* xv). Ramus' move resulted in, as Michael Heim notes, "understanding which was previously connected with audible verbal utterance, [but] was now conceived in graphic spatial terms" (Heim 45). Ramus, in effect, created method, not just as a mechanical process, but also as a way to physically reason through ideas—an epistemic *techne* of technology, that restructures thought (Ong, *Method*).

Foucault also references technological systems and procedures, suggesting that *techne* was a factor in man's quest for establishing himself. Far from operating under generalized rules and formula that apply uniformly, the human, is driven by personal "quest that individualized his action, modulated it, and perhaps gave him a special brilliance by virtue of the rational and deliberate structure his action manifested" (Foucault, *Sexuality* 62). To take back the power is to take on the *techne*.

Martin Heidegger's foray into *techne* can be traced to Aristotle's concept of

techne, its propensity to systematic technique, and its applicability beyond verbal

argument (Aristotle, *Analytics* 2.19.100a6-9). Heidegger observes that the power of

techne is a way of knowing and revealing. From the Greek meaning of *techne*, he

deduces that it is "[T]o bring forth [which] is *tikto*" affirming that "*techne* is founded

on knowledge of the causes," and is why it ensures that such knowledge is applied

(Heidegger qtd. in Brogan 46). Bernard Stiegler challenges us to think about the

relationship between 'technics and time' given the daily novelties we encounter

(Stiegler 14). We need invention and innovation through artistic and creative ways

to destabilize existing institutions, so as to usher in a new relationship between

techne and episteme.

With technology comes mechanization, a process that circumvents creativity,

and, with it, agency. It may foster expertise and rational technocracy, but it subverts

the agency of individuals such as Instructional Designers. Operating in the realm of

techne, we can balance among tradition, materials, and means of production (cf.

Benjamin 222) even as we are mindful that "[T]echne is fundamentally oriented

toward particulars instead of toward the efficient production of many things of the

same kind" (Mitcham 123).

Theodor Adorno and Max Horkheimer, held that a certain kind of knowledge,

associated with the Enlightenment, was idealized to the point of dominating all

other kinds of human inquiry (Adorno and Horkheimer 30), giving us a tool and a

means as "instrumental reason" or, a "purposive rationality," in pursuit of

instrumentality. However, as a counter is Jurgen Habermas' "communicative rationality" (Habermas 294), resulting from human consensus.

Joseph Dunne in *"Phronesis" and "Techne"* argues that *techne* grants the craftsperson the ability to both create and recreate. Thus one who follows a pattern provided by someone else without being able to engage intelligently with the matter is not exercising *techne*. Others such as Jay Gordon, Robert Johnson, and Janet Atwill suggest that "a genuine *techne* embodies both theory and practice because the former supplies 'rationality' that explains and justifies the latter" (Gordon 156) and involves knowledge and reasoning that is explicitly "temporal and contextual" (Atwill 68). Carolyn Miller prefers to reinforce *techne* as that bridge between theory and practice or what she calls "praxis" (Miller, "What's Practical" 23). All of them, though, focus on the practical element of *techne*, even as they emphasize its technical rationality. More importantly, they omit the tactile element. Yet most designs are often innovative objects that "recapture the imagistic notations that preceded" alphabetic expression (Lanham, *Attention* 98). That is, the *techne* as tactile-epistemic art that is applicable to Information Design, validated as and meant to build knowledge.

Method

In all the theory briefly reviewed in the last section, what is missing, or has been submerged, is the dimension of *techne* in which craft is a way of knowing—that

is, tactility as an epistemic form. This study seeks to establish a dimension of *techne* as a tactile epistemic. Doing so entails a close reading of historical and contemporary texts on *techne* as/in rhetoric. I further review prior conceptions of *techne* in order to extrapolate a model of *techne* that includes craft, art, technique, technology, technological rationality, system, etc. But conceptions of *techne* are more complete when they include the unacknowledged form of the tactile epistemic. I revisit the traditional notions of *techne* as craft, while bringing to bear twenty and twenty first century critiques of technological rationality, automation, information theory, and cybernetics, for instance, and the epistemic relation between rhetoric and the body. Of special interest in my dissertation, I draw from and incorporate sculpture and theories of sculpture in my examination of the rhetoric of embodiment and the epistemic nature of the sense of touch, thus circumventing or subverting the history of *techne* as it evolved since the development of modern science and technology where *techne* has become a scientific abstraction, or technology.

Out of this investigation of *techne* that includes tactile and physical forms of knowing, I develop a multi-dimensional model of *techne* that includes the various dimensions of *techne* that have emerged in its rhetoric throughout history, as well as contemporary rhetorics of sculpting, touch, and the material. I then discuss models of Information Design to show that the multifaceted nature of the discipline calls for the kind of knowledge construction that is not just rational, but also embodied. Out of these, I develop a model to apply to specific elements of Information Design, and

that are applicable to Instructional Design, in particular an analysis of the

Commonwealth of Learning (COL) template, upon which case I can draw some

conclusions in the final chapter. This approach re-invigorates if not reinvents the

tactility of craft in Information Design, and could be used to address issues

associated with Information Design, particularly designing the instructional space in

open and distance learning (ODL).

 A re-envisioned *techne* far exceeds the template model that is both

mechanistic and reductive. In Instructional Design, selecting and identifying the

content/form patterns into perceived objects to create relationships in ways that

communicate knowledge through physical means is paramount. Nowhere is the

ability to shape and sculpture knowledge more pertinent than in Instructional

Design spaces, the push toward automation notwithstanding. A tactile epistemic

model, such as I develop can be applied to Instructional and Information Design in

ways that give material expression to learning content

I hope to demonstrate that our ability as human beings to fashion materials is

a marker of our technological evolution and essential to our meaning making

through multiple associations and connections between material technologies, such

as human drawing, sculpting, etc., ways that enable interrelationships among these

realms of human enterprise.

Significance of the Study

My embrace of a re-envisioned form of *techne* arises from what I consider the importance of practice-based knowledge that may also be experiential or even tacit, Michael Polanyi would say. Such knowledge, unlike the propositional kind of knowledge (see Grayling) that can be verbally articulated is both research and practice based. This is the domain of Information Design that calls for a situated creativity that interfaces texts, meaning and agency, left unaddressed by current models. Having been disquieted with the escalating challenges of managing content in the face of a *techne* models of design within the pervasive presence of technological capabilities, I am convinced that this epistemic *techne* design model will be transformative to Instructional Design spaces. In web 2.0. This *techne* expands the perceptual and tacit capacities needed to visualize Information Design and materiality beyond instrumental and technical rationality to an epistemic act of sculpting and constructing knowledge.

Chapter Overviews

Designing information exerts an incredible influence upon society and the way we acquire information, and knowledge. If we understand *techne* as situated form of knowledge that operates materially in a tactile manner, that understanding helps us render Information Design epistemic. It allows us to look at technology as an integral part of Information Design in a digital media space that encourages and complements new ways of making meaning. The following chapters are a detailed

discussion of these ideas and are an attempt to appropriate ancient ideas to contemporary design/craft challenges.

Chapter One introduces the study, identifies the exigency and states the problem. It explores the Information Design landscape and surveys *techne* as/in rhetoric. It then examines the materiality of Information Design from the point of view of sculpture in practice before scoping out the method of study and stating its significance.

Chapter Two is a study in *techne*, its histories and interpretations over different eras and by different philosophers and practitioners. Titled "Concord and Discord," it seeks to offer an inimitable perspective on the interaction among *techne*, *kairos*, expertise, virtue, technology, the sophistic tradition, and episteme. This study is done in the form of a survey of ancient Greek understandings of *techne* in the service of a remediated *techne* capable of informing and affecting Information Design. In order to justify a re-envisioning of *techne*, it exposes the narrow conceptions offered by Plato, whose focus is on abstract forms, and Aristotle whose split between art and craft places emphasis on the technicity of craft, which predisposes it to skilled application of process. Separating art from craft splits the artist from the material and tactile dimensions of their work and wouldn't work for a discipline such as sculpture, dependent as it is on the three dimensions. That separation may nevertheless have affected the practice of Information Design as it eschews material and tactile aspects while placing emphasis on correct forms.

This chapter, while heavily grounded in Greek philosophy, also examines secondary readings from such scholars as Miller; Dunne; Heidegger, and looks into the association of *techne* with *praxis*, *kairos*, *poiesis*, technology, and expertise. It is from these primary and secondary analyses that I draw my own redefinition of *techne* as epistemic, allowing me to propose a return of a sophistic framework in Instructional Design concerned with the practice as situated and epistemic.

With this view, I lead into Chapter Three wherein I survey Information Design, its emergence and evolution. Not surprisingly, Information Design, like *techne*, is defined from more than one vantage point. To understand these perspectives, I bring scholarship in Information Design in a dialogue to highlight the tendency of designers who subscribe to the dominant paradigm in Information Design to draw from the Cartesian and scientist perspectives for their models. They downplay the material/tactile import of the subject while underscoring transparency and representation as Information Design. Others are modernists seeking to formalize and streamline the practice to project an aura of universality, often for utilitarian goals. Still others engage the rhetorical aspect, largely focusing on interpretation.

Chapter Four goes to the heart of materiality and design where tactile interfaces are generated. Beginning with an analysis of the manner in which materiality specifically operates in sculpture, I engage in a critical explication of that theory and how it might characterize an epistemic *techne* operational in Instructional Design. In sculpture, unlike other design arts, the artist and her

materials work to visualize the artifact, much like Information Design does. My intent is to at once show how sculpture already adheres to an understanding of *techne* that does not separate its conceptual framework from the material and tactile dimensions, and to advocate for a different perspective that we as information designers could adhere to in our information design processes.

In Chapter Five, Designing for Instructional Design, I examine the template produced and distributed by the Commonwealth of Learning (COL) as a model for designing open and distance learning (ODL) materials. I offer an analysis and discussion of the template, with particular reference to the manner in which this template is appropriated in Namibia's Polytechnic, a hub for ODL in that country. In essence, I underscore the importance of an epistemic *techne* and how beneficial it is to Information Design. Thereafter, I conclude in Chapter Six by drawing from theories of participatory design, to propose an epistemic *techne* that engages participatory meta-design. This new epistemic model does indeed present Information/Instructional Design with new modalities of creating presence in information and instructional spaces. I then point toward additional implications for the solidifying Information Design as a tactile interface, a result of epistemic *techne*.

CHAPTER TWO

Concord and Discord: Toward an Epistemic *Techne*

Introduction

In this chapter, I examine the philosophy of *techne* and its place in the quest

for human knowledge. As a philosophy, *techne*, also known as craft, is attributed to

Greek philosophers, who, as R.G. Collingwood has noted, "worked out the idea of

craft" (Collingwood 17) in their philosophical musings. From major Greek texts,

Collingwood identifies key elements of *techne*, elements distinguish between

"means and ends; planning and execution; form and matter; material and artefact"

(15-17), and within these are interrelationships and hierarchies such as tools that

result in or are a result of materials. For Collingwood, though, "forethought was

absolutely indispensable to *techne*" (16).

While Collingwood does a great job distinguishing the elements of *techne*, my

intent in this chapter is to interrogate those elements, spanning as they do, the pre-

Socratics, the Sophists, Plato, Aristotle, the Romans, and later modernity, with a

view to re-envisioning a *techne* that encompasses the material tactile dimension as

an epistemic way of knowing. Ultimately, I aim to determine how this

reconceptualised *techne* informs and is applicable to the craft of Information Design.

Understanding *Techne*

While *techne* is understood as a craft, its meaning goes far beyond the commonly held view of craft as a manual, mindless skill. This *techne* is an analytical tool, whose process, according to my reading of Aristotle, is enquiry in that it devises and results into "some good" (*NE*109a1-2). Consider the medical practitioner's use of her *techne* (based on knowledge of the human anatomy) to find solutions to the ailments of the human body. That is a form of *techne* (see *Phaedrus* 270b10f). Consequently, in classical rhetoric, *techne* is conceptually linked to other forms of knowledge at the level of enquiry (*NE* 6.7.1141A17-20) in that it is able to give a rational account of itself with respect to a specific subject matter such as medicine or navigating (*Gorgias* 464d4-e1; and Heidegger's discussion of *techne* as *poesis* in "Concerning Technology" 9-13). When *techne* incorporates both the knowing how and knowing why, one who possesses *techne*, or a technite, also has the ability to explain and account for this knowledge often relying on an underlying logos, or set of principles. This relationship between logos and *techne* grants prominence to logos over ethos and pathos. What the literature affords us is a commanding view from which to understand *techne*. It is all this and other attributes that comprise what I consider an expanded view of *techne;* these attributes are what make *techne* the epistemic tool it is, capable of informing and enhancing the practice of Information Design.

Understanding *techne* as craft necessitates examining what craft entails. A craft, because it is adaptable, can be transformative and can be engaging and innovative when it is informed by knowledge pertaining to the subject. A craft such as this is applicable to human concerns. To that end, scholars such as Carolyn Miller in "What's Practical about Technical Writing" see in craft the practical wisdom necessary for good judgment in deciding on a course of action (Miller, "What's Practical" 68). Understood as correct judgement, or praxis, in that it pertains to human conduct, *techne* as craft becomes a form of ethical knowledge, "a productive state that is truly reasoned" (Aristotle, *NE*6 VI). Notice that there is no privileging of the practical over reasoning, as reasoning, or the conceptual informs production. Miller has suggested that *techne* is the bridge between the conceptual and the practical (Miller, "What's Practical" 68), for without the one there can be no other.

If *techne* is a craft practical, theoretical, and productive, it follows that *techne* is capable of creating knowledge. As a form of inquiry, then, *techne* shouldn't be limited to replicating existing knowledge, but to discovering new forms of knowing and making, adaptable to human needs and concerns.

In Kennedy's translation of *On Rhetoric*, Aristotle offers that an art determines how success at something is achieved, either accidentally, by habit, or by "following a path" (Kennedy 28). That art, for Aristotle, is *techne*, which he says "is identical with a state of capacity to make, involving a course of reasoning" (Aristotle, *NE* VI, 1140a11). This means that *techne* is a method of inquiry. It possesses a procedural role. As an art, a *techne* accords its possessor the ability to consider or

even devise how something may come into being. Further, from this text we gather that a *techne* is an embodied form of knowledge whose origin is in the maker (*NE* VI, 1140a11-16). We can see this in, say, the technique exhibited by a talented surgeon, which manifests in the manner she handles her instruments, and the precision with which she operates on her patients. Her practical, yet embodied knowledge dictates her movements and results in some good such as repair of physical deformities. This process speaks of technique and craft, but not mindless application.

Virtue and *Techne*

Aristotle discusses virtues in the same vein as he does reason and a practical art. This has led several scholars to attribute *Nichomachean Ethics* to the study of the virtue and ethics of Aristotle (Nussbaum; Miller; Doheny-Farina). Their reading has some traction, because in discussing a set of virtues, namely wisdom and courage, as involving the rational soul, Aristotle also alludes to *techne*. Moreover, these virtues pertain to how the particulars emerge from the theories, giving us this interaction between theoretical and practical and how it yields the highest good (Aristotle *NE* 1098a5). Similarly, Aristotle's position that human beings are born with "natural dispositions," but are capable of acquiring additional dispositions through repeatedly practicing the appropriate actions (Aristotle *NE* 1103a16-26) seems to refer to skills rather than to moral values (virtue), even though Aristotle attempts to make it true in the case of virtues and the virtuous person, which of course forms character and gives us practical reason (phronesis). The three,

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"natural endowment, study, and constant practice" as Donald Lemen Clark argues, are also considered elements of education (*Rhetoric in Greco-Roman Education*).

Yet other scholars (Dunne, *Rough Ground*; Atwill, *Rhetoric Reclaimed*) concur that the text in question references *techne* even as they agree that a *techne* involves an application of theoretical understanding in the making of a thing. Thus, the surgeon's knowledge is a successful interpretation of the abstract understanding of surgery by translating it into actuality such as mending a broken limb. It is clear that Aristotle valued reason and thought as necessary for right (ethical, virtuous) choices realized in actions. This thinking also informs Aristotle's concept of *techne*, which he closely aligns with thought and intellect (Aristotle *NE* 1139a22-35). The question that begs an answer is: why does Aristotle need a model of the technai to explicate issues related to virtue?

But Aristotle foregrounds virtues of thought (Aristotle *NE*) and how they relate to *techne* —the rational (being scientific) and the "rationally calculating," (Aristotle *NE* 1138b) noting that the best of each indicates the state of virtue. Accordingly, as per Aristotle (and Plato), one who follows a pattern provided by someone else without being able to engage intelligently with the matter is not exercising *techne*. He suggests, as Jay Gordon puts it in "*Techne* and Technical Communication," "a genuine *techne* embodies both theory and practice because the former supplies 'rationality' that explains and justifies the latter" (Gordon 156). This rationality may be understood as conceptual knowing pertaining to the subject. And such knowing is for the sake of informing a process of production.

Plato too discusses virtue and knowledge in the same breath. To understand

Plato's concept of virtue and *techne*, David Roochnick in *Plato's Techne,* examines

several Platonic dialogues[2] and concludes that "Socrates' perpetual question to his

interlocutors (what is it?) seeks an answer to the specific virtue that undergirds the

knowledge espoused, which knowledge is modelled on *techne* " (Roochnick 89),

thereby asserting a virtue-*techne* .

Still, Plato emphasizes the "importance of *logos*, seen principally as

knowledge of the causes relative to a field of activity" (Cuomo 12) and so the kinds

of technai he supports are underscored by "mathematical reasoning and established

hierarchies where the value of a *techne* was directly proportional to its

abstractness" (12-13). In this regard he is very much like Aristotle in (t)his

emphasis on abstractions and theories.

None of these positions, however, assert that *techne* is inherently good.

Rather, it would appear that a *techne* is value-neutral as is demonstrated the notion

that "You can use technology as well for detecting as for committing cheating"

(Tripp NYT). Further, in themselves, technai do not necessarily lend themselves to

action. We learn from Socrates, for example, that "Of all the technai some consist

mostly of production (*ergasia*) and require little speech, some require none at all

but accomplish their work in silence, such as painting and sculpture" (*Gorgias*

450c7-10). The consensus appears to be that *techne* are beneficial, but are morally

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[2]Roocknik lists "seven dialogues in which '*techne*' occurs at a rate of 1.0 times per Stephanus page or higher": *Cleitophon, Ion, Amatores, Statesman, Phaedrus, Gorgias, Sophist*, and *Republic* Book 1 (194).

vague. And that *techne* are particular and specific and so, "each *techne* benefits us in its own peculiar way, different from the others. For example, medicine gives us health, navigation ... safety while sailing" (Plato, *Republic* 346a).

But rounding out the relationship between *techne* and virtue, it is important to see them both as knowledge exhibited by the craftsman and the wise man (Tiles, "*Techne*"). For example, in *Technology and Culture,* Serafina Cuomo sees Aristotle's link between *techne* and virtue as "the realization of a potentiality" (Cuomo 12) in production of persuasive acts, proofs, and intangible goods like healing, all of which result from knowledge gotten from books, applied in production, and perfected through experience (Cuomo 12). This distinction is important, because *technai* are value free and can be used for good and bad. In the end, the two positions posit for us a relationship between, on one hand, the technical realm and, on the other, the ethical. It's my opinion that these distinctions simply contribute to the potentiality of *techne*.

Determinate Ends and *Techne*

One sign that signifies mastery of craft is displaying the kind of knowledge that works toward a determinate goal. Understanding the goal, of, say content developers, is fundamental and intrinsic to an artist's craft, if she is to affect the situation. Indeed Plato's dialogues offer that every *techne* has a determinate end, an idea he frames in the question: "doesn't every *techne* differ from every other in having a different power?" (Plato, *Republic* 346a). That power of intentionality

reflecting what the craftsperson knows and what that knowledge produces is crucial because it suggests a reasoned sense of knowing, which lends credibility to the outcome.

While for Plato, the technai are grounded in the distinctions between the body (concerned with pleasure) and the soul (as the seat of "rational account" *Gorgias* 465c), this narrow conception connotes that a pleasurable act cannot possibly have benefits for the soul or be conceived through reason. It is true that for Plato knowledge is not so much physical, as it is philosophical (his examples consist of subjects such as astrology, mathematics, and even navigation which do not yield definitive products), even conceptual. The craft I espouse, however, is not knowledge for its own sake. Rather, it manifests as expertise at making and so fits the category of a determinate matter. Indeed, in the *Phaedrus*, Plato offers a distinction between genuine *technai*[3] and mere techniques (see *Phaedrus* 268a ff) in which he alludes to the notion that techniques are but a part of the range of skills a craftsman may possess; they do not amount to a craft *per se* (see also *Gorgias* on knacks and genuine crafts, 500a ff., 503c-d). In any case, the examples he offers, such as cosmetics, are dismissive of craft. However, I posit that crafts (aside from knacks and techniques) are grounded in knowledge, and are therefore epistemic.

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[3] *Technai* was the term used to refer to more than one *techne*

On *Kairos* and *Techne*

Kairos, which essentially is the concept of timing, is of great import in understanding the notion of craft as evidenced by the numerous scholarly work on the subject (Jasinski; Atwill; Miller; and Poulakos). Also known as 'the opportune moment,' *kairos* speaks of the timely recognition on the part of a crafts person to seize the right moment as it presents itself. Thus a craft person, who understand *kairos*, which is temporal, would know *when* to act and *how.* Scholars such as James Jasinski have underscored the importance of *kairos* by the early teachers of rhetoric where it presented an opportunity for inventing or intervening in a situation (Jasisnki 149). Craft then has to recognize *kairos* as the opportune moment that activates it.

Some categories in which right timing may be utilized for rhetorical mastery include what Jasinski has called the "evolving nature of the rhetorical" (Jasinski 149) situation and the opportunity it grants the craftsperson to act. Recognizing the time during which it is most advantageous to act is essential for the craftsperson, because the success of a craft depends on sensitivity to audience expectations and knowing what message it is poised for at a given time.

Of all the practitioners of the craft of rhetoric, the sophists are credited with utilizing *kairos* in the service of rhetoric to their advantage. In *Against the Sophists*, Isocrates declared of oratory that it "is good only if it has the qualities of fitness for the occasion, propriety of style, and originality of treatment" (Isocrates 13). These

qualities speak to *kairos* as a *techne* in terms of suitability and decorum, with the possibility for novelty. If *kairos* can be seen as Cuomo puts it, the "fluidity... that creates opportunities" (Cuomo 13), craft becomes the next level that takes up those opportunities to transform them into responsive products.

The perception in exhibiting the kind of knowledge that suits the occasion is telling of the expertise of the knower. This expertise is epistemic especially when a craftsperson's actions demonstrate ingenuity, creativity, subtlety, and even nuance in ways that offer the potential for new knowledge. That's because the ensuing discoveries are not a result of rules and procedure; rather, they defy the safety that comes with playing by the rules. Consider Gorgias' *Encomium of Helen*, in which he departs from the received knowledge surrounding Helen to articulate a knowledge relative to the times in ways that are not only convincing to his audience, but also that generate a novel narrative on Helen. He does so by (a) seizing the moment, and (b) selectively weaving together a selective script into a new narrative.

Craft also operates within the realm of tacit knowledge, which means that cannot necessarily be articulated, even though it does yield knowledge, albeit, relative knowledge. And *kairos*, we know, is consistent with the sophistic notion of relative knowledge, based on the here and now as opposed to pure rational knowledge often predicated on the referential. Eric Charles White in *Kaironomia* has noted that for Gorgias, "*Kairos* stands for a radical principle of occasionality, which implies a conception of production of meaning as a process of continuous adjustment to and interpretation of the context" in ways that subordinate "meaning

to [the] occasion" (White 14-15). White's observation suggests a fluidity between meaning and occasion; a fluidity that affords a craftsperson the occasion to deploy her skill, given that such knowledge is embedded in her actions as craftsperson. Granted the notion of relativist knowledge is destabilizing, however as Bruce McComiskey has opined, Gorgias' "relativist epistemology" is satisfied by empirical knowledge garnered through "public discourse" and is "particular to cultural contexts" (McComiskey 24-25). Thus, Gorgias' approach is, in fact, a system of knowledge-making; a system that may begin with a tacit understanding, of choosing one logoi over another, but that then progresses through active participation to knowledge-in-action (how knowledge is used in practice). In time, such knowledge becomes a part of the paradigm, and may even be considered objective.

Ironically, it is precisely this situated sense of knowing based on the contingent (rather than stable forms) that Plato finds troubling. As Patricia Bizzell and Bruce Herzberg have so astutely observed, Plato considers that this "[F]alse rhetoric is precisely that of the Sophists, rhetoric that relies on *kairos*...to determine the provisional truth of the matter under discussion, the probable knowledge available about it" (Bizzell and Herzberg 27-28). Plato, of course, offers that a rhetoric can attain respectable status if it meets certain qualities, among which are mastering the technique of dialectic as a means to the true Forms (as he demonstrates in the *Phaedrus*). However, for the Sophists, situadeness is in itself an opportune moment, a resource that a craftsperson can capitalize to engage in the

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kind of discourse that can frame a new reality. *Kairos* can be said to be normative to rhetoric, and to craft.

On Cunning and *Techne*

A craft's strong suit is embodying the kind of nimble intelligence that easily translates into practical solutions as needed. This kind of intelligence has a mythological aspect to it for it suggests being cunning and wily so as to intelligently and practically find one's way out of a problem every time. I must say that this art or craft of clever cunning is rife in African folklore. The possessor of this craft is often benevolent and his skill is always in the service of humans geared toward their survival in a harsh world. Being cunning then has been considered a component of *techne* (see Detienne and Vernant's detailed myth of *metis*), defined as the mental and "intellectual behaviour which combine[s] flair, wisdom, forethought, subtlety of mind with resourcefulness, vigilance, [and] opportunism" (Datienne and Vernant 3; also see Johnson's *User-Centred*). Further, Bernard Stiegler in *Technics and Time* also explores this component in which the cunning Prometheus uses wily and scheming means to bestow humanity with *techne* (hitherto reserved for the gods). According to that myth, *techne* is man's gift from Prometheus, who, unlike his hindsighted brother Epimetheus, had the foresight to equip humans with both *art* and *fire*, which he skillfully stole from the gods. That *techne* then became a tool in human hands, one of whose function is to reveal humanity and constitute humans (Stiegler 1-3).

Techne is associated with skill, creativity, and with cunning intelligence as well as foresight. That may be partly because of that myth (of Prometheus).

This mythical allusion to *techne* is meant to showcase *techne* as a defining human quality. As a quality that characterizes the master craftsman, the myth is meant to show how closely associated with her craft *techne* was for it meant presiding over the process of production as both visionary and practitioner as opposed to being a part of the process. As Stiegler puts it, "[F]or to make use of his hands…is to manipulate—and what hands manipulate are tools and instruments. The hand is the hand only insofar as it allows access to art, to artifice, and to tekhné" (Stiegler 114). The myth then underscores the importance of practical intelligence and the knowledge to act and to make as need arises. It is a tacit form of knowledge, embodied in the maker and manifest in her craft.

Unfortunately, this kind of knowledge is seen by some as incomparable to theoretical knowledge. Plato's preference for a contemplative philosopher and Aristotle's hierarchies of knowledge, as well as the era of the Enlightenment and how that history has affected modernity's view of inquiry, permeates our approach to knowledge. Yet possessing certain knowledge does not guarantee solutions to contingent and emergent issues needing solutions.

A cunning strand of *techne* as human power is necessary as situated (rather than certain) knowledge. As Michael Gagarin and Paul Woodruff write in *Homer to the Sophists*, "We conquer by *techne* things that defeat us by phusis" (Gagarin and Woodruff 74). In other words, *techne* is man's answer to an untamed and often

unpredictable nature (earthquakes, collapsed mines, rig explosions). If indeed man's cunning can extricate him from unforeseen circumstances, that ability becomes certifiable epistemic knowledge as recent solutions to capping an exploded rig a mile below the ocean surface in the waters of the Gulf and in extricating trapped miners in a Chilean desert mine have shown. Such knowledge is now certifiably available and can be procedurally documented to be on hand, should similar incidents occur.

Stiegler's *Techniques and Time* sets up the originary human as being so introverted that "everything is inside ...where the origin is" (Stiegler 116). The moment of exteriorization for man comes when he uses his limbs as tools to connect with the world outside manself, such as speech, touch, etc., and that the totality of these moves is essential to "the process of humanization" (116). Speech, touch and other external moves become a "prosthesis" suggesting that "any exit outside of oneself is a denaturalization" (116) and therefore, a *techne*. Notice, however, that his conflation of technics and the "process of humanization" suggests that "the appearance of the human is the appearance of the technical" (141). Stiegler's framework essentially declares that "human is technics" (Dominic 18). Thus for Stiegler, originary man would be moot without exteriorization, without technology and technics. Stiegler sees in *techne* the harbinger of ingenuity, of skill, and of cunning—the gift of Prometheus.

The kind of *techne* associated with human power suggests resourcefulness, ingenuity, skill, all of which allow humans to tame nature, or to access for humans

what nature cannot. In many ways, Stiegler's argument posits *techne* as ingrained with human power, a conclusion similar to one drawn by Serafina Cuomo. Cuomo writes that "Prometheus...[is] an icon of change: through his gift of fire to humanity, precipitates a very dramatic mutation, a passage from sub-human to fully human condition" (Cuomo 39). The notion that *techne* is the kingpin of human evolution is, according to Mark Schiefsky's "Art and Ancient Mechanics," "rooted in the tradition of Greek thought and *techne*" (Schiefsky 11), where the Greeks believe that *techne* empowered humans, who would otherwise be helpless without it. The arts then, and the skills that come with it, are the hallmark of humanity summed up in the mantra: we need skills to save us from calamity (cf. *Prometheus Bound* 469-471). They are tactile and involve touching and shaping, both of which are sculptural tools. They instantiate the internal materiality associated with making. Even when associated with seizing the opportune moment, as in *kairos*, *techne* as human power manifests itself as mastering the various components related to the context and subduing them, or subjecting them to human will.

To emphasize the somatic nature of knowledge, Debra Hawhee has explored this concept of metis as "cunning intelligence" in *Bodily Arts* (Hawhee 48), which for her speaks to the "practical intelligence of wily bodies" and necessary in responding with cunning to rhetorical situations. The kind of pedagogy she proffers, wrought with lessons from the gymnasia (of rhythm, movement) contrasts sharply with the sedentary and rote form of learning implied in the handbooks. What Hawhee allows

us is to begin to associate mind and body working toward the goal of meaning making.

Cunning and craft is really a depiction of body and the mind working in sync to create and communicate knowledge. There is an inherent logic in the craft of bringing together mind and body to bear on unique and uncertain situations with a goal to find a solution. There is an epistemology to the craft process, both intuitive and reflective. Craft seen in this sense becomes a discipline in itself, one that speaks to a kind of knowledge that is special to persons in creative acts in disciplines such as engineering, architecture, sculpture, art, and now Information Design, in a 'designerly way of knowing' (cf. Cross, *Designerly Ways of Knowing*). In such creative acts, designers engage the design process, and, perhaps, reflect on that activity through repetition, rhythm, and response (the three Rs of rhetorical training) to render knowledge.

The attribute of cunning as a component of *techne*, or craft should not be seen as malevolent in its intent, for being quick on one's feet speaks well of the craftsperson (think Odysseus). Craft as cunning suggests that one is actively engaged with the issue and can strategically interpret that situation to advance knowledge. Unfortunately, the way Marcel Datienne and Jean-Pierre Vernant characterise *metis* is that it is fraught with deception, reversal, and duplicity, suggesting that it is ethically challenged. Further, *metis*' association to Greek mythology accords it a mysticism of sorts with traits of a "strange and secret power" (Datienne and Vernant 194, 281) that is both at one with nature and can therefore

use that knowledge to work against nature. A craftsperson endowed with cunning then is able to can avoid danger by blending with the environment (again, Odysseus) in order to, in interplay between nature and art, intelligently determine the right course of action.

The essential feature of *metis* is its malleability, which allows its craftsperson to usefully invent through cunning strategy: through art. *Techne* as deceptive cunning and trickery (such as the kind Penelope engages in as she awaits her husband Odysseus [cf. Pratt 70]) is still a useful art. It demonstrates the situated creativity advanced through her active engagement in the moment. While this element casts a shadow on *techne* as expert knowledge and wisdom, it's important for us to remember that Plato's *Phaedrus* contains a distinction between the technai and mere *techne*mata, or 'techniques' (see 268a ff.) and to note the differences between 'craft' and 'craftiness' as well as 'art' and 'artfulness' as not simply a matter of semantics.

On Expertise and *Techne*

Many have offered the view that there is a relationship between technai and specialized competence, or expertise. Both Aristotle and Plato, for example, have said that the mark of *techne* is the ability to offer the right solution commensurate with a correct diagnosis. However, doing things correctly in itself is not expertise. That may simply be a mark of proficiency, whereas the expert has to be able to give a theoretical account of the decisions that inform both the diagnosis and the

solution (e.g., *NE* 1148b7-9; *Republic* 33IC, 3 32a; *Gorgias* 465a, 501a, 518c).

Expertise then is rooted in reason, and in applying careful thoughtfulness to a

creative act. So how does craft manifest itself as expertise?

Techne as expertise shows mastery over a specific subject-matter. Mastering

subject matter is also reflected in the systematic set of procedures one takes that

involve savvy understanding of theoretical knowledge and putting that knowledge

to meet the task at hand. Plato's dialogues go into the discussion on the relationship

between *techne* and control with the element of control rooted in knowledge,

rationale, and the intellect. That is why he associates *techne* with specific subject-

matter.

Expertise also has to do with knowing why something should be the case,

which makes it, as J.E. Tiles puts it in "*Techne*," "inextricably tied up with

understanding what is to be done... with practical thought and deliberation" (Tiles

61). However, interpreting *techne* the Tiles way leads into the territory of praxis,

which writers like Carolyn Miller have interpreted as "social action" (Miller

"Practical" 224). Sticking with *techne* as craft, however, expertise would mean

polished know-how as opposed to proficient and practiced. Expertise would

encompass "embodied cognition and affective skills" (cf. Dreyfus "Distance

Learning") shown through the manner in which the craftsperson leverages dexterity

in any given situation. This kind of expertise undermines the notion of universality,

because, an expert would not be needed where work requires merely mechanistic

acts.

Embodied cognition and affective skills are certainly on display in the TV

Drama, *Something the Lord Made.* The drama based on a true story, tells the story of

a gifted black carpenter turned lab technician, Vivien Thomas, who demonstrates

such thought and deliberation by being instrumental in helping surgeon Alfred

Blalock perform ground-breaking heart surgery, primarily because of Thomas'

ingenuity in designing surgical tools. His understanding of what would make

possible the stitching techniques and procedures the shunt would require to keep

blood flowing to the heart during surgery is pertinent to the success of the

procedure. Thomas was not a surgeon, but as a trained carpenter, he understood

that the principles underlying the use of tools to accomplish a goal were the same.

He reached inside himself and emerged with a never before seen tool and suturing

technique, first practiced on a dog, that worked perfectly well for the first, so called

'blue baby[4].'

This story illustrates the notion of precision, which is emblematic of

expertise, and often attributed to *techne.* A *techne*-expertise is reflected in Robin

George Collingwood's definition in *Principles of Art* of the Greek idea of *techne* as

"the power to produce a preconceived result by means of consciously controlled and

directed action" (Collingwood 15). This assertion suggests that reason and

purposeful resolve are always superior, which, of course is open for discussion as

Paul Fayerabend has shown with regard to scientific expertise (see *Against Method*).

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[4] This story based on a magazine article "Like Something the Lord Made" by Katie McCabe, was made into a film directed by Joseph Sargent, written by Peter Silverman and Robert Caswell.

What we can take away, though, without offering a relative epistemology, is the sense of rigorous critical thought that underscores *techne* as reasoned, as geared toward specifics, and as capable of being accurately configured.

So, given the critical role of human intelligence and *techne*, does expert *techne* necessarily lead to objectivity? For example, Ian Worthington in *Greek Rhetoric* observes that "[A] *techne* is a domain in which the expert deserves authority precisely because of his expertise" (Worthington 77) and that expertise brings with it authority. Cyclical logic, I know, but it helps explain why Socrates contests Gorgias' claim of expertise in rhetoric precisely because Gorgias bases his expertise on his ability to persuade to a given point-of-view. Hardly expertise in Plato's view as noted in his *Republic* that "each of [the sailors thinks] that he should be the captain, even though he's never learned the *techne* of navigation, [and] cannot point to anyone who taught it to him"(*Republic* 488b).

What I draw from this discussion is that if *techne* is reliable and transferable through instruction, is systematic, and can draw on tacit and tactile means of meaning-making, it is epistemic. In the next section, I delve deeper into this element of the epistemic and *techne*.

The Episteme/*Techne* Distinction

A discussion of *techne* and episteme has to be framed within the larger context of technology and knowledge, a historically long-held/ debated view. We read in Richard McKeon's *Introduction to Aristotle* of Aristotle's references in *NE* to art and knowledge. Similarly, Edwin Layton's "Technology as Knowledge" validates this linkage between *techne* (ology) and knowledge by observing that the notion of "detailed procedures" and skilful application suggests operating from an informed position in which the "ability to use one's knowledge effectively" is demonstrated (Layton 33-34). These positions certainly allude to technology as being associated with knowledge.

Several scholars have associated *techne* with episteme. For example, Serafina Cuomo observes that "The teachability of *techne* make it episteme" (Cuomo 13), while Bernard Stiegler notes that when "Philosophy separated *techne* from episteme" that act devalued technical knowledge, which accounts for our low perception of *techne* as non-epistemic, (Stiegler 1). Stiegler's position suggests that there was a time when *techne* was epistemic, while Cuomo's claim is rooted in pedagogical possibilities. C.D.C. Reeve in *Philosopher Kings* offers that Plato's learned *techne* was based on the understanding that it is the "paradigm of knowledge" (Reeve 39), which is why his (Plato) corpus contains passages that closely associate *techne* with rationality. Plato, however, limited the realm of *techne* by differentiating it from episteme. He contrasted the two in ways that show, as

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Richard Parry writes in *Episteme and Techne*, that a *techne* "has a function (*ergon*)" (Parry 3). A *technite* knows more than just how to do or make certain things. She knows the goal, which is informed by knowledge. Parry reminds us that Plato considers that "Unlike empiric practice (*empeiria*), *techne* has an account to give by which it provides the things it provides, an account of what their nature is, so that it can say the cause of each" (*Gorgias* 465a). This passage indicates Plato's esteem for *techne*, while revealing the reason behind his disdain for rhetoric's claim to *techne* as demonstrated in the *Gorgias*. Rhetoric, he says lacks a subject that informs it. Plato seems skeptical to the idea of a *techne* that is informed by an understanding of form, but open to one that leads to the discovery of truth. Aristotle too offers that something is epistemic if it is based on first principles (*Metaphysics* 993b30-31).

This *techne*—as an epistemic concept— has been broached by more neo-Aristotelian scholars such as Robert Johnson in *User-Centered Technology* and Janet Atwill in *Rhetoric Reclaimed*, both of whom perceive a relationship between *techne* and reasoning. Atwill notes that its aim is "neither to formalize a rigorous method nor to secure and define an object of study but rather to reach an end by way of a path that can be retraced, modified, adapted, and 'shared'" (Atwill 69). In a similar fashion, Carolyn Miller's "Humanistic Rationale" links the term *techne* to theory and practice, as "*techne* requires both particular and general knowledge, both knowing-how and knowing-that; *techne* is both applicable and conceptualized" (Miller, "Humanistic" 21). Thus, Miller also reinforces the bridge between theory and practice. It takes Joseph Dunne who explores the concept of *techne* and the

pedagogical possibilities in *Rough Ground* to add a dimension of "a clear conception of the why and wherefore… of the making process" (Dunne 9) to *techne*.

All of these scholars harken back to the classics from the *Phaedrus*, to *Gorgias* and even *Institutes of Oratory* where Quintilian makes the case for a *techne* of rhetoric as "a power reaching its ends by a definite path that is by ordered methods" (Quintilian 345). So while we have *techne* as an art itself that creates knowledge through its understanding of time and context since there is no other knowledge than that which the art creates as ably demonstrated in the *Encomium of Helen*, we also have Plato, who seems to indicate that a *techne* is not explicit and is incapable of being clearly stated once acquired. Still, where does all this sense of control, human power, and complete mastery leave Michael Polanyi's 'tacit' knowledge?

While there is rational, explicit knowledge that is verifiable and therefore preferred by these philosophers the kind of knowledge often associated with practice is experiential, tacit, and even process based. We learn from Polanyi the importance of integrating this kind of knowledge with the theoretical precepts, given its predilection to creative disciplines such as Information Design, art, and architecture.

While most of these scholars argue against constraining *techne* by limiting it to process, and even product, they argue for a *techne* that is consistent with a transferable set of skills. They agree on understanding *techne* as knowledge in production, as intervention and articulation rather than representation (Atwill 2). So to understand an epistemic *techne*, we cannot limit ourselves to the theory and

the praxis, but need to examine it in terms of the specific attributes that speak to its tactile productive process. As well, we have to consider what Atwill calls the "transferable strategies contingent on situation and purpose" (Atwill 7) from which we can consider both the principles and the process evident in production, the whole corpus of which render *techne* episteme.

I have attempted to show in this section that some degree of episteme is involved in *techne*. For, in order to "produce things under the guidance of true reason" as *techne* is wont to do, craftspersons must have reference to some stable principles and have some way of showing why these principles are important. The epistemicity of *techne* such as I propose, is different from Aristotle's and Plato's in that it is not concerned with reason or theory alone. Rather, it expands on the conceptual to incorporate the perceptual and the material in a mind-body synthesis that informs the practice and is evident in production.

Techne as Technology

Walter A. Brogan observes that contemporary technology has lost sight of an important characteristic of *techne* as a way of *knowing* and *revealing*. Martin Heidegger, who explicitly discusses the relationship between *techne and* technology, takes us back to the root of the word *techne when* he writes:

> To bring forth or to produce is *tikto*. The word *techne*, technique, belongs to
> the verb's root, *tec*. To the Greek, *techne* means neither art nor handicraft but
> rather to make something appear within what is present, as this or that, in

this way or that way. The Greeks conceive of *techne*, producing, in terms of

letting appear. (Heidegger, *Poetry, Language, Thought* 157)

Heidegger, like Brogan in "Physis and *Techne*" seems to indicate that the process of

knowing is made possible by *techne*, whose role it is to bring forth. That assumes

that "*techne* never signifies the action of making" (Brogan 46) that it is in fact the

raison d'être.

While *techne* is primarily a human activity, it can be manifest in the work that

has been unconcealed because art (*techne*) lies within nature (*physis*). That art,

however, has to be applied, not so much through maxims and rigorous method, or

ways that are consistent with habit. Its predisposition to logos, a necessary

condition in discovery, obviates this mechanical tendency. Discovery and

manifestation, both of which are at the heart of design, are crucial in that *techne*

makes explicit that which was hitherto obscured.

The link between art and technology carries connotations of creativity and

human ability. A *techne* as a human act conceives of and renders a product through

physical/tactile means. It is this trajectory of mind and body into product that

makes possible the flow of meaning in making tactile interfaces epistemic. The

incongruity, however, is that over time, episteme has been associated more with

ideas and abstractions and less with material enactments, stripping them

knowledge and aligning them more with trial and error, or mere technique. Roger

Osborne in *History of the Western World* writes that "*techne was* for farmers;

episteme for scholars" (Osborne 286). If *techne was* for farmers, it evoked certain

traits such as recurrence, repetitive patterns, while scholars focused on understanding the causes. Those sharp distinctions notwithstanding, recurring patterns as technology solidify certainty. As Cuomo notes, it "gives the impression of being about 'facts' and 'reality' (Cuomo 169), which is somewhat more believable.

Over time, scholars have explored the ways in which *techne* meets/morphs into technology, how it embodies ideologies and values even as it purports neutrality. Walter Ong, Marshall McLuhan, Jacques Elul, Elizabeth Eisenstein, and Friedrich Kittler, have each shown in different ways that the material characteristics of technology eventually morph into the intellectual attributes associated with that technology. So, for example, orality's dominance identified the orator with the knowledge (hence presence) but print came to be seen as stable and fixed, and therefore unquestionable knowledge (see Eisenstein, *Printing Press*). Digging even deeper, Ong touts the benefits of technology to humans, notably its ability to transform consciousness (Ong, *Orality* 78 ff.) and to enable potential. The kinds of technology Ong references are orality, writing and print, and what he calls a "secondary orality" in which electronic modes of communication such as telephone or television operate on similar patterns (spoken word forms, true audiences) as those in oral cultures. Still, the ability to produce, reproduce, and disseminate knowledge speaks well of literacy technologies.

As we learn from Ong, the more physical writing is, the less appealing it is to Plato, and yet, paradoxically, that physicality, that writing ability is what enabled him to elucidate his ideas (Ong, *Orality* 164). Writing became both a tool and a

transparent medium in / through which ideas could be conceived and transmitted. And this same writing helped promulgate what Robert C. Scharff and Val Dusek in *Philosophy of Technology* have decried as "the drive to standardize things" (Scharff and Dusek 504). As writing became the avenue for revealing, unconcealing rational, firm truths, they became referential.

Michel Foucault, well known for probing into issues of power and society, looks at discipline as the means of regulating and ordering bodies to enforce specific kinds of obedience (*Discipline and Punish*). Normalizing and mechanization are some of the ways in which discipline is enforced, ways that Foucault considers far removed from *techne*'s Greek roots (Foucault, *Sexuality* 138). Those roots conceived of *techne* as an individualized skill that afforded humans the ability to show excellence manifested in actions that nevertheless solidify their individuality. As he writes, "This *techne* created the possibility of forming oneself as a subject in control of his conduct… a sense of right time and right measure" (Foucault, *Sexuality* 139).

We can deduce that through *techne,* the individual manifests her corpus with a distinct signature style. Instead, when mechanization replaces *techne,* it ushers in conformity to standards of correctness whose origins people may not even know. *Techne* then is what gives humans back that capacity over the docile body propagated by uniformity. It is the power to craft and distinguish oneself from mass production.

Richard McKeon's *Essays in Invention* links invention to the idea that technology changes the way we act by giving rise to new ways of being. Therefore

technology should lead us to discover new forms of "knowing, doing and making" based on an "architectonic productive art" that eschews repetitive patterns (McKeon 1-24). McKeon, like Heidegger, offers the revealing power of *techne* in contrast to manufacturing, which technology does best. This ability to reveal though, is only attained in the work of art, because technique in itself has the tendency toward automation given that it evolves faster than culture (see also Stiegler, *Technics and Time*).

As we can see, the philosophy of *techne* charts a path toward technology. Indeed Heidegger's treatise on technology overtly makes this connection when he writes, "There was a time when it was not technology alone that bore the name *techne"* (Heidegger, "Concerning Technology" 339). The act of bringing forth contained in the Heidegerain terms 'enframing,'' revealing,' and 'destining' contain the essence of modern technology (Heidegger, "Concerning Technology"330) and qualifies as (an evolved) *techne.* However, for him art allows the conditions in which objects can be disclosed and so it cannot be constrained by a predetermined way of making. Thus, the *techne* and the craft owes its being to 'poesis' (Heidegger, "Concerning Technology"335), which is the artistic way of bringing things forth. Poesis does not adhere to correctness or logic, even though it utilizes both, for the "poesis of the fine arts was also called *techne"* (Heidegger, "Concerning Technology"339). With poesis, we can resist the urge to master, and instead embrace indeterminacy out of which we can reveal novelties.

Having an instrumental outlook toward technology drives the need for maximum efficiency and absolute convenience. Instrumentality creates technology that executes tasks with little or no human exertion. Technology perceived this way is problematic if, as Jacques Ellul in *Technological Society* offers, it is "the totality of methods rationally arrived at and having absolute efficiency ... in every field of human activity" (Ellul xxv). *Techne* as a technology is not a craft, if it tends more toward the instrumental. It should align itself more to value, to the arts, or the aesthetics.

Some technology theorists have considered that modernity has perverted the original understanding of technology. Langdon Winner in "Do Artifacts have Politics?" for example, notes that the "original" understanding of technology as a means "must apply to that which is appropriate" (Winner 127) because the ancients knew "the meeting point at which ethics, politics, and technics came together" (Winner 327), unlike the contemporary outlook that has corrupted this intent. To counter this quest, Winner suggests technologies that are "intelligible to non-experts," which in turn render them dispensable should they be found wanting" (Winner 327; see also *Autonomous Technology* 24-27). We need to limit the use of technology to that which is appropriate. And in the hands of non-experts, such technology is mutable, and flexible enough that they can apply it with understanding. That human combination of knowledge and understanding *why* would render technology a craft, a *techne,* as opposed to technological determinism.

A *techne* as poesis allows for aesthetics, artistry, creativity, and, the material tactile. It allows for potentialities of invention and creativity by empowering the craftsperson to go beyond neutral and reliable tools of making. Poesis is important, as is nature, because they both guard against instrumentality in technology. Moreover, if the role of philosophy is to unconceal, that *techne is* what moves the human into being as rhetorical and serious man.

Techne and the 'Sophistic' Tradition

In investigating the sophistic tradition and its place in inquiry, I wish to accentuate sophistic techniques in designing and in advancing knowledge. Sophistic modes of inquiry range from the conceptual, to the bodily, and the tactile, as opposed to Aristotelian and Platonic ones that are primarily conceptual. Thus, a rapproachment of the conceptual and artistic (as represented by the sophists and, in the academy between the liberal arts and the design arts) can yield a rigorous epistemic *techne* such as I aim to remediate as applicable to Information Design.

If we are to believe Plato, the sophistic tradition brings with it a paucity of epistemology, a dearth of methods, and a deficiency in ethical character. These charges are made in both the *Gorgias* and *Phaedrus*, where Plato alleges that Gorgias' art is lacking in logical structure, because it's lacking in subject matter (*Gorgias* 465e; *Phaedrus* 261c). Unfortunately, that perception has forever tainted the sophists.

The ethical charges have to do with what Plato considers Gorgias' manipulation of audiences through cunning and cleverly worded arguments, making the weak appear to be the stronger (*Gorgias* 453a) and by clever use of antithesis (which may relate to the discussion of *techne* as cunning). Indeed Gorgias in the *Encomium of Helen* appears to confirm this perception when he compares "the effect of speech upon the condition of the soul ... to the power of drugs over the nature of bodies" (Gorgias, *Helen* 14) maintaining that "All who ... persuade ... do so by molding a false argument" (Gorgias, *Helen* 8). In appearing to advance the notion that truth does not exist, or that if it does, it is relative to the moment and contingent to the audience, Gorgias adds to the distrust. But that assessment is not true for all sophists, nor is it patently false. Isocrates, for example, as Erika Rummel observes in "Isocrates' Ideal of Rhetoric: Criteria of Evaluation" that advances a rhetorical ideal that reflected a "high level of integrity" (Rummel 25). Plato and Aristotle perceive an estrangement between rational thinking and sophistic techniques, primarily because they perceive the latter is preoccupied with style. However, the practical, embodied ways that the sophist utilizes to creatively and imaginatively exercise judgment in contextual situations cannot be discounted.

Granted, communal knowledge is something Plato does not subscribe to, given his preference for the philosopher king, but Gorgias' virtuous intent—the good of the community—is reflected in his philosophy. Moreover, that knowledge is epistemic. Consider Gorgias' claim in *Helen* that "Astronomers who, substituting opinion for opinion, taking away one but creating another make what is incredible

and unclear seem true to the eyes of opinion"(Gorgias, *Helen* 13). Gorgias appears to liken empirical scientists to rhetors, both of whom invalidate others' arguments with cleverer, more engaging narratives, all the while advancing different takes on knowledge.

From the kind of sophistic philosophy represented by Isocrates and Gorgias we gather that their *techne* was meant to be flexible, that is "not rigid" (cf. Terry Papillion "Isocrates' *Techne*"150), but malleable if it is to knowingly benefit from *kairos*. While grasping the fundamentals of a subject is important, that is by no means the end of knowing. A craftsperson builds an argument fitting to the occasion, albeit based on those foundations. It is true that Isocrates advocated learning by example and that that approach would lend itself to imitation and repetition. But as Papillion has opined, his *techne* was "a combination of precept and examples" (Papillion 157). This art widely credited to the Sophists, is ably demonstrated (materially and stylistically) in Gorgias skillful and poetic language in retelling of an ordinary tale.

A craftsperson utilizes concepts of *kairos*, dissoi logoi, and antithesis, to create a coherent narrative elemental to the moment and, couched, of course, in suitable language and style. Such a narrative that helps audiences generate knowledge out of the opposing views is made possible by conceptual and physical ingenuity and knowledge of the subject matter. This craftsperson would satisfy Richard Lanham's ideal of man as both rhetorical *and* serious man (see *Rhetorical*

Ideal). The works of a craftsperson enable audiences to construct a new logoi; even one that may be contrary to accepted forms of knowledge.

What we learn from this *techne*, a mix of nurture and nature (cf. *Dissoi Logoi* 6; Sprague, *Older Sophists*) is that it can be taught. Thus good rhetors may be born, but they do hone their skills through good instruction. In her discussion of the Sophistic tradition, Debra Hawhee in "Bodily Pedagogies" investigates the connection between rhetorical training and athletic training as illustrative of Sophistic activity where both skills-based and philosophical topics were worked out. This connection gives us yet more insight into the materiality of knowledge. Hawhee notes that a "syncretism between athletics and rhetoric yielded a particular crossover in pedagogical practices and learning styles, a crossover that contributed to the development of rhetoric as a *bodily art*: An art learned, practiced, and performed by and with the body as well as the mind" (Hawhee, "Bodily Pedagogies" 144). This spatial quality of athletic performance releases a bodily intelligence that can engage, create, and transform.

Building bridges across technologies of meaning is an element of *techne*, not limited to the usual suspects (reason, logic, mind). Broadening the scope for *techne* is inclusive of the non-discursive realm that explores feeling alongside mind as that which makes us human. This reconceived *techne allows* us to determine how formal logic and everyday reasoning contribute to our cumulative acquisition of meaning. From such marginal philosophies as tacit knowledge, [ii]aesthetics, the non-discursive, phenomenology, and nature, we understand that a form of knowledge

lies in the realm of affect (Katz, *Epistemic Music;* Langer, *Feeling and Form*). This understanding lends credence to the personifying aspect of not just finding meaning, but delivering it.

Considering *techne in* these terms forces us to confront the triangulation of agency, art, and technology and to recognize that because human behaviors are embodied, certain things are not learned from direct instruction. This reasoning gives merit to Isocrates' combined direct instruction with imitation. This combination makes knowing both theoretical and practical/tactile. Accordingly, neither empiricism, nor rationalism alone can account for our way of knowing as Francis Bacon and Descartes would argue. And so it is untenable to formalize all knowledge to the exclusion of other forms of knowing. Merleu-Ponty's phenomenology is important because it once again erases the subject/object divide that plagues our discourse.

Concluding *Techne*

The classicists' exposition of *techne* muddles the distinction between *techne* as natural born-talent and *techne* as strategy in realizing an objective. Aristotle and Plato, for example, seem to adorn the technite with mastery, with little to credit to the actual making actual making process. They both espouse theoretical knowledge as epistemic, while relegating the practical experience to a set of techniques that

focus on ends. Their kind of *techne* aims for higher ideals—knowledge of the causes—a realm of Sophia.

Their influence has yielded an understanding of *techne* in which there is a merging of the logos, so that *techne* becomes a "state of capacity to make involving a true course of reasoning" (Aristotle, *NE*6.4). By this logic, the explanatory power of making trumps the productive element. My expanded *techne* obviates these binaries. I offer that the productive tactile *techne* such as is practiced by sculptors and bodily arts renders it equally epistemic and suggest that information and situationality are paramount to meaning. Information may have been stripped of its body (see theory of information), but it cannot exist apart from its material entity. There is value in materiality and meaning making that can be realized through utilizing the relation between creative artistry and mechanistic reproduction; theory and practice; the discursive and non-discursive; as well as the role of human agency in realizing these possibilities.

CHAPTER THREE

Modalities in Information Design

Overview

If Information Design is defined as well structured information to convey

order in form, then, too often, Information Design is likened to skill or proficiency,

or what we delineated in the preceding chapter as craft. When we explored the

notion of craft, however, we found that while craft is valuable, it cannot be the

answer to such a valuable discipline as Information Design, especially when

considered a mindless, manual skill. Those aspects fail to embody the elements of an

epistemic *techne*. Even worse, craft is often associated with advocating solutions and

then going in search of the kinds of problems the solution may help (as we'll see in

Chapter Five).

An embodied craft, however, engages mind and body as it habituates a

craftsperson to the point of enacting in practice what she conceives of in mind. This

skill, valued by the sophists and applicable to both physical/material knowledge and

philosophical learning (Hawhee, "Bodily Pedagogies" 145) is a *techne.* It embodies

stylistic, practical, and poetic devices as ways in which communities fashion

themselves through actively engaging their material world with transformative

results. It is descriptive of what information designers do. And it is epistemic. But it is missing in the practice of Information Design, as we will see in this chapter.

Categories of Information Design range from pictogrammatic, diagrammatic, spatial, and even alphanumeric (see *Graphic Design Archive*). I identify three competing models of Information Design, namely: the scientistic perspective with emphasis on representation and transparency; the modernist perspective, where designers operate under a scientific and technology paradigm (see for example Walter Gropius; cf. Margolin) paving the way for mass production; and the Interpretive perspective whose focus on how we make meaning of designs. The differences between the modernist and scientistic perspectives are subtle, but exist. My analysis of current models should identify the constraints in their approach in order to demonstrate some of the limitations designers face and what readers encounter in accessing the end product: information.

Measuring Information Design against the sophistic predisposition to poetic imagination where language was not a mode of representation, but subject to play, I suggest that Information Design as representation falls short of its potential. According to Bizzell and Herzberg, language as a trope "creates and changes the opinions that are our only available knowledge" (Bizzell and Herzberg 43). Information Design can take on a stylistic and intellectual approach to making knowledge without characterizing itself as an aggregating device. It can visually display knowledge, in ways that allow audiences to form associations and make sense of their world. That's an epistemic craft.

I will suggest that in order to qualify as epistemic *techne*, Information Design must keep logos in perspective, because, according to Gorgias logos is "a powerful master" in persuasion(Gorgias, *Helen* 8). In focusing on human inquiry and what it meant to be human (cf. Guthrie; Kerferd; Roochnick), Information Design can emulate the sophists' success in inventing new narratives out of which emerge new truths. Thus, a rapproachment of the conceptual and artistic (as represented by the sophists and, in the academy between the liberal arts and the design arts) can yield a rigorous epistemic *techne* applicable to Information Design

Introduction

Even before the first Information Design conference was held in Cranfield, England, in 1984, Information Design represented widely different perspectives to different people. Those perspectives have shaped current approaches to Information Design. Some Information Design models favor a transparent representation of information through clarity, precision, and efficiency.   Yet, *techne*, we learned, is an analytical tool, whose process, according to my reading of Aristotle, is enquiry in that it devises and results into "some good" (*NE* 109a1-2). This approach to Information Design fails to see the altering, and stabilizing, even interventionist role it plays as an apparatus. According to Giorgio Agamben, engaging acts that range from practices or mechanisms that entail decisive action, as well as technological acts render them apparatus. These acts are also power inscribed, and knowledge related (Agamben 32 ff.). Thus when information

designers such as Wurman and Albers, who perceive a modernist representation of knowledge do so through accurate visual/aesthetics, they are not exhibiting *techne*. Relying on technological values steeped in universal systems that appeal to human perception is not *techne*. As we saw in Chapter Two, technology cannot simply be contained as a physical inorganic tool. And yet it serves an important role in advancing Information Design's ability to redefine the way people approach the functional and structural space of text.

The Graphic Model

Visual design, first known as Information graphics, seems to signal the first response to the Information Design needs of its time. Those needs necessitated rendering specialized knowledge using scientific illustration and disseminating it to the general public. Within that category is the work of William Playfair, who, according to William Spence in *Oxford Dictionary*, invented "statistical graphs" including the time-series line graph, the bar chart, and the pie chart. In an interesting twist, Spence chronicles that Playfair's graphics were initially resisted, partly because all manner of scientific illustration was met with cool reservation (Spence 4-5). Still, Playfair's creation later caught on as a *concise* means of conveying information like he himself had envisioned when he wrote:

> The giving of form and shape, to what otherwise would only have been an
> abstract idea, has, in many cases, been attended with much advantage; it has

often rendered easy and accurate a conception that was in itself imperfect,

and acquired with difficulty. (Playfair 3)

Playfair here underscores the value of graphical representation by assigning graphics a role of giving *material* form to abstract concepts through visualization. Playfair was exhibiting the kind of embodied, material knowledge befitting a *techne*.

Following Playfair, others such as Francis Galton graphically displayed weather patterns, a previously abstract concept known to exist, but beyond which existence ordinary people knew little. Howard Wainer chronicles in *Graphic Discovery* that with Galton's entry into visual graphics, a transition to scientistic representation of phenomena was completed (Wainer 5-8). The notion of representation is of course problematic in rhetorical theory. We know from Plato that mimetic text was never considered authentic, or original. We therefore need to resist representing this discipline in terms of representation.

Still, at the time, this history shows us that visual graphics served as an extension of human memory in ways that obviated the mind/body binary. And as we learn from Walter Ong, this is a marker of literacy. In transitioning to orality, literate societies were better equipped to produce, preserve, and share knowledge and ideas, because of *techne* (of literacy). It is telling that before the visual displays of weather patterns, of regional and world maps with precise locations of continents, the countries, and their topography, people were constrained by the limitations of memory (which meant relying on repeated patterns and formulas). Visualization made possible the instantiation of knowledge, and therefore made it

possible for informed decisions to be made on the basis of the tactile interface upon

which data was plotted. Today, however, Information Design is described in terms

of gathering, organizing, structuring (Jacobson; Carliner; Shedroff) in order to

present information effectively. Seen that way, Information Design seems a mere

form of representation of otherwise existing data and not, a *techne*.

Playfair's practical and innovative rendering of information may have

inadvertently advanced the idea that information graphics are like scientific

instruments informed by rational means and are therefore objective. In that regard,

Playfair can be said to have conceived information graphics as an apparatus. As

Agamben has shown, an apparatus is systematic, instrumental, and locates the

meaning in the technology (Agamben 121). Thus when graphics were equated with

scientific knowledge, they took on the human realm of meaning. They began by

aiding human perception and then in turn took over that role, and that

technologized the practice.

The graphic model as a method of representation and analysis is neatly

captured in the aptly named "Rose diagrams" of Florence Nightingale, which are an

early form of Information Design. Nightingale's diagrams extended beyond the

technical aspects such as clarity to the affective and indeed persuasive message she

intended to convey. Those affective aspects certainly changed public and official

policy in ways that statistical information alone had failed. Nightingale can be said

to have exhibited *techne* in that she consciously controlled and directed her actions

to produce a preconceived result. She meets the criteria in RG Collingwood's definition in *The Principles of Art*.

Not only that, Lee Brasseur in "Visual Rhetoric" has classified Nightingale's the first form of visual rhetoric owing to its persuasive intent. Nightingale's aim was to change the policy regarding the "common soldiers" engaged in the Crimean war (Brasseur 161-164). She achieved this by combining statistics with graphics in a way that displayed a remarkable understanding of audience which successfully influenced a change in policy in that war (Kimball 2-3). She thus demonstrates a rhetorical perspective of Information Design, without necessarily articulating it. While Henry Woodbury has cautioned against the seductive nature of visual displays of data, such as in Nightingale's diagram, wherein "we assume its conclusions without examining its data" ("Nightingale's Rose"), her foray into information graphics is pertinent to the emergence of a profession now known as Information Design.

Rationalist/Objectivist/Scientistic Model

Rational and objectivist technicality alone cannot address the complexities that govern human communication. Information Design requires *techne*, for it has the potential to be rendered explicit and certain, and even formalized. And yet the objectivist model of Information Design seeks to locate knowledge outside of human subjectivity where it is considered stable.

Stability is fundamental in the rational model due to the perception that stable is objective. The preeminent information designer, Edward Tufte's approach embodies that ethos in which effective visuals because they are stable are rational, truthful, and even objective, perhaps because of the widely held view that scientific knowledge is the best model for the advancement of objective and rational knowledge as it satisfies the 'consistency condition' (cf. Feyerabend; Feyerabend and Preston). Further, the notion of pre-established knowledge in stable circumstances does not hold stable every time. Moreover, human communication also requires situated understanding of situations and the practical wisdom to address those concerns.

Tufte's approach to Information Design as visual design reflects the values of universalism. In his words, Information Design principles "are universal-like mathematics-and are not tied to unique features of a particular language or culture" (Tufte, *Envisioning* 10).Universalizing principles of Information Design by emphasizing efficiency and effectiveness, Tufte makes a leap between effectiveness and objectivity, supporting the notion that "superior methods are more likely to produce truthful, credible, and precise findings" (Tufte, *Visual Explanations* 27). There are several issues around universalization. As we saw in Chapter Two, the sophists (particularly Gorgias) favored the kind of knowledge that could be realized "in each individual communicative situation" where "the linguistic rhetorical choices that are, at that particular time and place, most effective" (McComiskey 30). While Gorgias considers the exigency of the rhetorical situation pertinent to

initiating discourse, Tufte's approach is subsumed in information graphics that make complex data visible so that in visualizing complex data, the information designer somehow appeals to the human innate perceptual abilities that are universally extant. The kind of knowledge emanating from Gorgias' approach is mostly grounded in the *doxa*, and is thus widely accepted, with no claims to universality.

Tufte fits the description of the philosopher for whom knowledge is privileged and its sources and art concealed and accessible only to the philosopher. For example, we know Tufte's philosophy from his statistical training because it is very much at play in his approach. In practice, Tufte does exhibit expert practice. In statistics, language is not just complex, but particular to individual groups. The way language manifests through different registers creates an aura of ambiguity (cf. Arney, "Statistics as Language"). And yet even expertise requires conscious deliberation and engaging with the situation. To get devise statistical language that is clear, concise, and universal is not *techne*. None statisticians among us can take up sophistic skills that capitalize on poetic forms of composing indirectly manifest knowledge. We can retain the manner in which communal knowledge is generated rather than cede to universalization.

For Tufte, visualized data, even the most complex numerical data, can be accessible to users if presented in clear, smart, and comprehensible designs (Tufte, *Envisioning* 14-33). To do so, Tufte identifies sources of confusion (the challenge the designer has to overcome), such as differences in perception of events that result

from different contexts and experiences. Such differences, he finds, hamper the meaning intended by the designs. Consequently, Tufte offers a rules-based approach that consists of visual designs such as tabular representations, considered a true reflection of data as they embody numerical proportions (Tufte, *Visual Display* 38-41). In aligning visual clarity to comprehension, Tufte seems to support Aristotle's claim that "The soul never thinks without an image" (Aristotle, *De Anima* 431a17). The difference is that Tufte's justification is more cognitive than it is affective.

We learn from the sophists that making claims to truths and absolute knowledge is inconsistent with being human (Isocrates, *Antidosis* 21). However, Tufte seeks to mitigate such a flaw wherein statistical language can be manipulated to obfuscate accuracy and therefore lie through misrepresentation, by suggesting uniform graphics. He claims that uniformity in graphics can minimize anomalies that arise through graphical distortions of data and likely mislead audiences (Tufte, *Visual Display* 47-49). Tufte fails to see in his approach the kind of systematization that brings with it ordering and 'normalization,' both acts that embody power differentials as we learn from Agamben and Foucault.

Further, Tufte seems to suggest that the visual design itself, if done well *is* meaningful data and therefore persuasive. We may recall that Isocrates who was suspicious of such absolute claims offered that "it is not in the nature of man to attain an episteme by possession of which we can know positively what we should do or what we should say" (Isocrates, *Antidosis* 21). Isocrates gives us a sense that

pursuing an extant episteme stifles ingenuity and inventiveness and might, in fact, proliferate a mechanistic reproduction of knowledge.

Associating cognitive thinking with good visual design induces the viewer to think about the substance rather than about procedure. It poses the risk of interpellating individuals who may become role bearers responding to stimuli without the benefit of reflection. Paul Smith in *Discerning the Subject* offers that because individuals are always already a subject, "they are dominated as subjects in the discourse of "ideological apparatus" (Smith 14-21). Further, it is possible that a very tactile involvement is called for that marshals cognitive, but also artistic and certainly rhetorical constructs to determine the right course rather than a simplistic formula that involves data and labels.

Tufte's expertise in graphics fails to acknowledge that text labels are a genre unto themselves and are therefore designed to be read differently. Several writers such as Leister Faigley, Diane George, and Cynthia Selfe have (individually) written about understanding images and have shown them to require a different literacy. Therefore, Tufte's assertion that text and images are both data, while true, prompts him to integrate the two without distinction is misleading.

The differences in the way we perceive text and images are stark, as Scott McCloud has shown in *Understanding Comics*. Because a graphic is primarily a visual, rather than a textual medium, the difference precludes texts from being seamlessly integrated into graphics. Texts are read as a whole. The two are different technologies of writing and so are perceived differently (see Ong). We can thus infer

that where texts evoke linearity, visual (technology) does not. Similarly, Johanna

Drucker in *Labyrinth* has shown that letters are not simply windowpanes into

linguistic data, but are art and are thus laden with cultural significance (Drucker 50-

56) that carry epistemological and phenomenological sense.

The principle that data graphics draw the viewer's attention to the substance

in the data often drives the rationalist designers' need to maximize the information

in a graph. The resulting data, a term consistent with the way statistical information

is represented, becomes the basis upon which conclusions are drawn. However,

Tufte takes a step further by introducing the concept of "small multiples" to define

the grouping of similar information capable of providing context where a single

visual cannot do justice to detailed and complex information (Tufte*, Visual Display*

170). Small multiples accentuate the data by emphasizing 'variations' in the data

rather than 'changes' in the design (Tufte, *Envisioning* 170). They are meant to get

readers to focus on the data. Such variations could be color and bullet schemes,

block paragraphs, etc., that help keep the content "within the reader's view" (Tufte,

Envisioning 76) while allowing readers to build knowledge. Color is especially key to

Tufte's model of Information Design as it can alternately label, measure, represent,

and enliven (81); hence his caution that designers use "earth tones" so as not to

"distort the visual field" (80). He recognizes that a good graphic without data is of

no use.

While Tufte's emphasis on data is commendable as is integrating texts with

images, his reasoning is prescriptive and thus doctrinaire. It emphasizes correctness

in integrating texts and images, and intimates that that alone allows users to create associations that ultimately make it possible to *envision* information. In this case, the technology of the visual takes the determinant role, inscribing a form of technological determinism.

Interestingly, current design software can allow for interactivity, with the user making choices on what to highlight, and what to foreground, etc., as is the case with the *New York Times*' multimedia timelines. There is a humanistic and material element in appropriating information embedded in design of this text that Tufte does not take into account.

The techniques for displaying data in scientistic models are driven by concision, logical patterns, and clear labeling. Tufte's informational visuals reflect this characteristic. And perhaps, as a result, his designs are mostly functional in nature. What concerns me is his emphasis on technique. While technique is uniquely human and drives human ingenuity, William Barrett in *The Illusion of Technique* shares the concern that humans are more than technique (Barrett 70-76). He is troubled by its (technique) tendency toward the instrumental and its propensity to become the means by which humans live. This functional element is what characterizes Tufte's designs. Barrett nevertheless posits that we can no more deny technique than we can our own selves (Barrett 207-208). Information Design can avoid succumbing to patterns that engender a domination of technique and uphold the craft that invents, innovates, and uncovers novel technologies. That craft when firmly in human agency, allows us to exercise the freedom to create, to invent, and

to adapt. It is also a *techne* embodied in human agency, so that ceding agency to technique erodes our Being and ourselves.

Maps that fall into the spatial and cartographic category of Information Design provide that rich detailed content that allows readers to oscillate among text, art, and image in a converging interface. In them we can identify Tufte's principle of macro/micro design that provides both a detailed rendering of a place so that "it is not how much empty space there is, but rather how it is used" and "how effectively" the information is organized (Tufte *Envision* 50). But we can also form topological knowledge from landscapes, a rather material tactile entity. Not surprisingly, critics such as Ben Barton and Marthalee Barton, as well as Miles Kimball, have identified the paradox inherent in Tufte's maxim offering that he "rests between two potentially contradictory dictums: to?? "'eliminate chartjunk,' but 'to clarify, add detail'" (Kimball 377). Kimball adds that "The difficulty is figuring out which details are 'junk' and which details 'clarify'—and from whose cultural viewpoint" (377). These critiques focus on interpretation, but they point to the underlying shortcoming in Tufte's (rational) model. Experiential knowledge is certainly in play.

The Interpretivist Model

The argument for aligning form and content is in partly influenced by Sophistic philosophy that values both a subject and its delivery. Indeed Isocrates is said to have built his approach to rhetoric on a three-legged-stool that comprised

"style, content and purpose" (Rummel 26), with style marked by ornate language and content, intent inherently ethical.

Naturally, the concept of visual graphics and aesthetics as components of Information Design raises questions on numerous levels. For example, do information designers suggest that visuals are neutral and therefore ideology free? Does that (perceived) neutrality also translate into absolute certainty? If the answer to these questions is affirmative, there is still the little matter of how people perceive and interpret visuals.

Interpretivist models of Information Design operate from the premise that Information Design is primarily rhetorical (see also Kinross; Ehses; Bonsiepe). In the article, "Rhetoric of Text Design," Charles Kostelnick observes "visual language has always been rhetorically charged" (Kostelnick 189), thus discounting the notion of neutrality in design. Design in fact embodies values embedded in the dominant *doxa*. It can be used to support dominance of one group or even to subvert others. Carl Mitcham in *Technology* offers a perspective that allows us to explore the crux of this claim of neutrality. He observes that "what can be grasped or known by *techne* through logos is the form, and so artistic creations are, by nature, artificial; they are mimetic" (Mitcham 121). The origins of art are not in nature but in the human process that produces them, which is the *techne*

I consider literacy technologies such as print and writing both tactile material entities as well as intellectual pursuits. These technologies are a result of both practice and theory. As tactile enterprises, they record philosophical musings

and circulate them in physical form in ways that are not simply representational, but rather transformational of the nature of thought (Ong, *Orality* 267*)*. Going back to the notion of universalism, we are challenged by Barton and Barton in "Rhetoric of Visuals" along with Kostelnick "Visual Design" to consider the ideological value that certain graphics connote. The authors offer that visuals are not without baggage and so claiming neutrality is at best a delusion (Barton and Barton, "Ideology" 52-53). They suggest a rhetorical approach to Information Design couched under the broader perspective of creating a persuasive argument.

Rhetorical models directly challenge scientistic claims of clarity, precision, and efficiency that are supposedly made possible through graphical excellence (see Selle; Kaufer and Butler). It is true that Information Design aims to transform complex ideas into clear accessible information (Albers; Carliner). While the concept means well, it fails to delineate what, for example, counts for clarity. Indeed Barton and Barton have argued that the concept of clarity is rooted in a modernist stance, wherein all rational people can come to the same conclusion, owing to the (underlying) scientific principles underlying the process (Barton and Barton, "Trends" 110-14). Similarly, Kostelnick faults modernism and its obsession with unadulterated truth, the process that eschews rhetoric, while unwittingly engendering "a rhetoric of science" (119; cf. Kinross). As a counter, Kostelnick argues for 'a rhetoric of adaptation,' by which he means a rhetoric that "accepts— even celebrates— that different readers have different interpretive frameworks that profoundly influence what they find clear and credible in data displays" (Kostelnick

119). Having an instrumental outlook toward technology drives the need for maximum efficiency and absolute convenience, which we saw in Tufte's taxonomy. Through *techne*, we can resist the urge to master, and instead embrace indeterminacy out of which we can reveal novelties.

Visuals as components of Information Design do not serve the simple function of disciplinarity. Visuals project a sense of power (see Foucault; Brett). Through visuals, certain elements are elevated above and /or legitimated over others, as Barton and Barton have argued in "Ideology." Visuals are vested in the interests and ideology of designers, who decide what ideas they wish to project and how to represent them (see also De Voss). Through schemes such as figure/ground, the gestalt, etc., they set in motion attention structures for readers. In some ways, readers cede their interpretive powers to the images and, by, extension, to the designers. Barton and Barton argue therefore that rather than play along with the notion of ideological neutrality with regard information graphics, designers should create for the postmodern era that embraces complexity and allows for multiple points of view (Barton and Barton, "Postmodernism" 28, 208-210).

Postmodernity, while it allows for ideological bias, lets viewers *actively* retain their interpretive powers so they can see beyond the power differentials embodied in the visuals. You may recall that a *techne* (such as the one exhibited in bodily pedagogies) makes conditions for this kind of active engagement possible. Miles Kimball, whose discussion in "Rose-Colored Graphics" draws the conclusion that "[I]nformation graphics inherently privilege the viewpoints of the powerful;

they are used from a position of strength, representing corporations, agencies, classes, and institutions who are trying to forward agendas, prove points, and solve problems" (Kimball 379).

Information Designers claim to represent information in a manner transparent enough for users to access. However, representation is not such a simple notion. In representing, you exercise choices among which is exclusion and inclusion. You place objects in certain hierarchies to emphasize their differences with the positioning inevitably affecting the meaning. We saw in Chapter Two, for example, a *techne* is a process of knowing. It brings forth, rather than merely represent. A *techne* manages to unconceal through its predisposition to logos. And this latter quality is what obviates the mechanical tendency we see inherent in this model.

Rhetorical models reject the claim that users universally share similar interpretive and perceptive skills. Among them, Kostelnick suggests a Kantian approach to interpreting visuals (Kostelnick, "Text Design" 190-201). That approach embraces aesthetics, which he claims are more universally appealing. Aesthetic appreciation involves a synthesizing among concepts necessary for objective knowledge, and the aesthetics, making imaginative understanding possible. This latter model is subjective, but that does not render the knowledge gained any less. As we learn from Aristotle, something is epistemic if it is based on first principles (*Metaphysics* 993b30-31). Thus an interplay between logic of artistic and aesthetic

judgment, the kind of rhetorical approach that is socially and culturally sensitive is epistemic.

Clarity, valued by empiricists and modernists, may be a socially constructed notion. Clarity for whom? is the question that comes to mind. There are instances where not all readers find clarity to be so because some situations call for technical understanding of texts. So, for example, what makes sense to a meteorologist may be meaningless to an archeologist no matter how well trained they each are in their respective fields. Similarly, what is clear to a legal scholar may require interpretation for an engineer, etc. Clarity then lends itself to relativism best served by a 'rhetoric of adaptation,' as Kostlenick would say.

An interpretative model has left a procedural gap with regard to design because in itself interpretation is a model for accessing information that fits the sophistic tradition in which a successful rhetor is one who constructs participatory and therefore acceptable knowledge. Information Designers make choices on production, design, and delivery of texts. This does not mean that their *techne* cannot be made conscious and explicit. Through discursive means, this type of *techne* opens up possibilities for readers to determine the best way to appropriate information. They can bypass conventions and accepted ways of knowing, to deduce a meaning sometimes through a rapprochement between the literal and the figurative.

Modernistic /Instrumental Model

The disconnect between dominant Information Design models and rhetoric may have its roots in the separation of persuasion and information. While the specter of modernism invokes notions of simplicity (Kinross), ease of use and a desire for certainty, we could trace this rift back to the hegemony of Greek analytical thought that motivated Plato to, for example, scorn the poets. That rift has rendered persuasion suspect, and, like rhetoric, is derided as stylistic rather than substantive (cf. Enos). And yet there is an inherent logic in the craft of bringing together mind and body to bear on unique and uncertain situations, as we saw in Chapter Two. If to persuade is bodily and to inform is mind, depicting body and mind as working in sync to create and communicate knowledge is only sensible.

Similarly, you may recall from Chapter Two that Plato rejected print for replacing presence but denigrated poets who he accused of being steeped in orality. Walter Ong considers this rejection of the poets a rejection of formulaic representation, a conclusion he draws from Eric Havelock's *Preface to Plato*. As he writes: "Plato's exclusion of the poets was in fact Plato's rejection of the pristine aggregative, paratactic, oral-style thinking perpetuated in Homer in favor of the keen analysis or dissection of the world and of thought itself made possible by the interiorization of the alphabet in the Greek psyche" (*Orality and Literacy* 28). And so it is that practitioners who see this binary between information and persuasion

have adopted the modernist ideal that erases the boundaries between the practice of art and its theory (Margolin, *Design Discourse*).

For these designers, "[O]bjects were considered to be signs of value with uncontested referents such as clarity, beauty, integrity, simplicity, economy of means and function" so that "form follows function" (Margolin, "Politics"). For designers of this persuasion, the meaning of visual and textual objects is located in the value for which they are designed. Their point is to lay out the truth in a clear and plain manner that makes it accessible to all rational people. In this persuasion we find Richard Saul Wurman and Nathan Shedroff, whose position seems to be that perfect models (of Information Design) can be emulated, or, at the most, refined through technical means.

Information Architecture (IA), Saul Wurman's concept capitalizes on architectural principles aimed at opening up spaces so users can find their way around (unfamiliar) information, just like they do unfamiliar buildings. IA focuses on structuring the content and creating landscapes through technology, graphic design, and writing to best make meaning accessible (Wurman, *Architects* 12-14). At the heart of this approach is the idea that space governs access. As Wurman himself clarifies, "I mean architect as in the creating of systemic, structural, and orderly principles to make something work—the thoughtful making of either artifact, or idea, or policy that informs because it is clear" (Wurman 16).

IA then can be interpreted as "the building of information structures that allow others to understand" (17). I consider this approach overly instrumental

based its focus on "organizing the patterns in data, making the complex clear" (Wyllis). Organizing becomes a privileged apparatus that presides over all knowledge. Indeed Wurman, who sees Information Design not as a discipline but as a practice, may, in that sense, echo Plato and Aristotle. The perception of a rift between rational thinking and sophistic techniques (defined as primarily practical) because they are preoccupied with style renders IA subordinate to real disciplines that make knowledge.

And yet Information Design does make knowledge. Moreover, the practical, embodied ways that the sophist utilizes to creatively and imaginatively exercise judgment in contextual situations cannot be discounted. While grasping the fundamentals of a subject is important, that is by no means the end of knowing. A practical person builds an argument fitting to the occasion, albeit based on those foundations. Practice as action is the "art of creative performance" alluded to by Michael Leff in "Genre and Paradigm" (311) and is exhibited tactually and stylistically.

Based on Wurman's understanding of architecture as the science and art of creating an "instruction for organized space," (Wurman, *Architects* 3) he compares the tasks of gathering, organizing, and presenting (all tactile tasks) information to those of an architect tasked with designing a building that will serve the needs of its occupants. Just as the architect must determine those needs by gathering information, designing a coherent pattern of those needs by outlining them, and seeing their interactions before constructing a building that meets those needs, so

must the Information Designer (Wurman, *Architects* 3-7). This status provides additional impetus to the landscape of Information Design.

With Information Designed as an overload and with architectural solutions aimed at helping people develop a clear vision of where they are going, through gathering, classifying, and arranging, Wurman also perceives the value of graphics in making data accessible, as it can be searched and usable (Wurman, *Anxiety* 30-31). In the same vein, Romedi Passini revisited the term "wayfinding" closely tied to intellectual cognition to bring together sense and vision in a Platonic perspective. Wayfinding is among the earliest conceptions of Information Design. Not surprisingly, it draws from accepted forms of knowledge to designate Wayfinding as a way of situating humans in space and time through the epistemology of sight (cf. Pallasmas, 'The Eyes of the Skin").

From physical spaces, Peter Morville and Louise Rosenfeld turn their attention to digital landscapes so as to facilitate user perception of content on web pages in their book *Information Architecture*. This digital space is less limiting than the print, for it offers tools that utilize among others artificial intelligence (Morville and Rosenfeld 106-108). Morville and Rosenfeld point out that theirs is "the structural design of an information space to facilitate task description and intuitive access to content" (4). They operate under the auspices of modernity: the notion that you can collapse mounds of information into one screen and get people to interact with it and still feel in control (135-137). Gaston Bachelard and Walter Gropius, who have theorized about space and architecture, respectively, would

consider this approach consistent with architectural thinking (see *Poetics of Space: The New Architecture and the Bauhaus*).

The manner of framing accessibility reinforces the hegemonic role of cognition as a window into knowledge (Locke), even though it acknowledges the tactile realm of interacting with information in digital media (*IA* 105 ff.). It appears that information architects channel Gropius' notion that the designer "has to adapt knowledge of the scientific facts ....obtain a theoretical ground that will guide the hand giving shape, and create an objective basis" (Gropius 15-16). Of course hand and shape are essentially tactile elements, even though Gropius' expressed opinion is that said 'hand giving shape' are guided by the mind. In this mix, users are then able to foment new insights and develop new knowledge. Ultimately, this is an organizational and user-centered tool, driven by organization goals and maximum user-satisfaction—a very instrumental goal that privileges reason.

Another demonstration of Information Design as a poetic of space with knowledge appropriated through the senses is Brenda Dervin's Sense-making referring to that moment when we are caught between order and chaos (Dervin 37-39). Sense-making operates from the premise that when faced with chaos and order, our moment of understanding those surroundings is our moment of making sense out of an otherwise chaotic or highly ordered world. The result then is information that describes an ordered reality made sense of only by those with the proper observation skills and technologies. Dervin neglects to account for the ideological way those designs may be slanted (Kinross on neutrality). Her work perhaps

reflects the operational model practiced by both Tufte and Wurman. It is also a simplified view of imposing order to alleviate chaos and enforcing method as we saw in Ramism.

Designers consciously create experiences spanning the functional, and the informational, both primarily instrumental modes. For example, Jesse James Garrett acknowledges that user experiences are "personal, emotional, and ephemeral" even subjective to the moment every product creates experiences for users-intentionally or unintentionally (Garrett 16-19). There seems to be a trajectory then from print (Tufte; Wurman) to the complex system of website development (Morville and Rosenfeld; Garrett). In fact, it is possible to say that information architecture has moved from its original conception, at least as we see it reflected in Garrett's work, in ways considered wholly cognitive and concerned with the way users interpret information. It is once again the legacy of Method and Ramism which assumes that knowledge can, and should indeed, be presented efficiently in "shortcut" form (Ong, *Method* 3) so that it is concise, simplified, methodical.

As we can tell, these multifaceted approached to Information Design create the perception that the act of knowing can be substituted by methodization. And that rather than create knowledge, which is the act of *techne*, we can resort to the mimetic, imitate, replicate already existing designs. Never mind that those designs were created for a different rhetorical purpose and served a specific goal. As Information Design navigates how knowledge is constituted, it satisfies Thomas Kuhn's discussion of paradigms and how disciplines develop (see *Scientific*

Revolutions). What we need is a poesis of *techne* that is creative and resourceful rather than method that imitates and copies.

The Experiential Model

Nathan Shedroff who has capitalized on the domain of user experience leverages established and existing ways of organizing and presenting information to build new experiences that he outlines in "Information Design" and in *Experience Design*. The user-experiences he suggests unify Information Design, interaction design, and sensorial design into a unified theory, visualized in a Venn diagram (see figure 3.1).
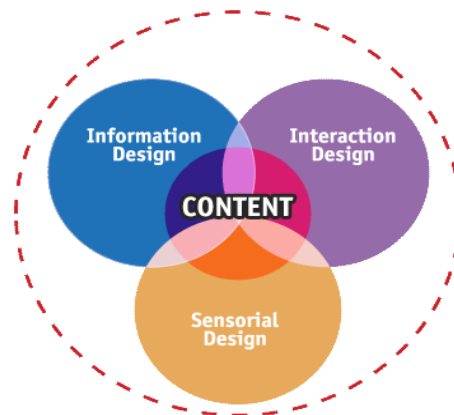
Figure 3.1: Shedroff's Unified Theory of Design
Source: Shedroff, Nathan. *Information Interaction Design: A Unified Field Theory of Design*, 1-2.

Like Wurman, Shedroff operates from the basic premise that we are bombarded with "data" (Shedroff 2) that can, based on his continuum, be transformed (through Information Design) into knowledge and, eventually, wisdom (2-5). Shedroff can be credited with designs that emerge from interactional

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practices. Building on his foundation, we are challenged to design in ways that explore the multiple pathways which connect and create the kind of knowledge that leads to wisdom. That would be *techne* in practice.

Shedroff's approach is built on three strands. The first strand is interaction design (fig 3.1), whose roots he traces to storytelling, considered pertinent owing to current affordances of interactive technology. The second strand, sensorial design, is aimed at engaging all human senses to enhance a user experience through graphics, sounds, and even kinetics to cater to visual and aural senses. The third strand is Information Design, whose function he sees as more of a structural pattern where information can be aesthetically placed and organized (Shedroff, *Experience Design* 42-43; 66-67; 108-109) as it transforms data into information and ultimately wisdom.

To operate by the Shedroff model, the designer has to work within the continuum to build patterns and relationships, based on user experiences that tap into the senses. For their part, users can then appropriate knowledge from the information and then personalize and translate into wisdom (fig 3.2). Shedroff's experience design makes possible the kinds of bodily pedagogies that engender experiences that are tactile, olfactory, and even kinesthetic.

Still, Shedroff's view that reality exists and that the work of Information Design is to accurately represent it reflects a positivist ideal and the notion that sensory data can be measured, systematized, and therefore make generalizations possible. It is telling for two reasons:

- Information Design does not need invention

- Form and style convey the logic or the sensorial observation
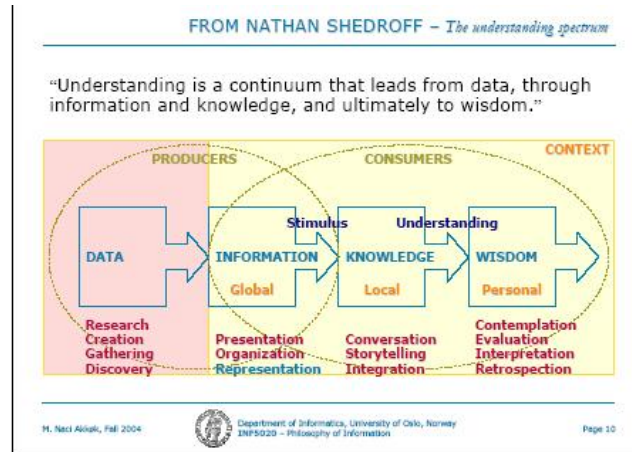
Figure 3.2: Shedroff's Continuum of Understanding
Source: http://www.nathan.com/thoughts/unified/3.html

This stance places emphasis on the object and Methodism. It negates the subject and

traverses into the territory of uncovering truth when in fact Information Designers

invent new social ideas that have no relation to truth (as espoused by scientists).

Shedroff can be credited with thinking through the challenges of Information

Design and offering some veritable solutions in the form of creating user

experiences. If Shedroff sanctions designing separate interfaces for different users,

he is drawing from classical and contemporary theories of audience analysis. From

what we learned in Chapter Two, orators took into account their contexts of use and

intended audiences. But we can fault him for suggesting that "almost all interactions

can be created… by one process" (Shedroff, "Unified" 1), which we can equate to

Ramus' *Method*. Take facebook, for example, as an evolution in user experience.

While its model works for social networking, I am not sure it can be translated to other information needs. Furthermore, Facebook is a work-in-progress, constantly affected and modified by technological advancement. So, I am looking for an Information Design that embodies the notion of *techne* discussed in Chapter Two. Unfortunately, other than a comprehension of outlines and limitations, these philosophies of Information Design do not embody the evolving notions of *techne* discussed in that chapter. While they try to grapple with sensory data from cognitive and other perspectives, they do not get at the tactile dimension of Information Design (never mind how the tactile is epistemic).

Other designers who have advanced novel models of Information Design include Patrick Jordan, and Don Norman. Norman's is a cognitive approach more akin to a mathematical skill. Cognitive skills are not necessarily epistemic, but rather lead to a formation of a set of skills that help determine how one forms relationships intellectually (see Gagné; Ely and Plomp). Such an approach may require identifying the tacit skills of knowing how (Polanyi) capable of appropriating a matching set of information, and may still leave out the expanded notion of *techne* I explored in Chapter Two.

Other notions of Information Design (ironically, outside the field of Information Design, strictly speaking) might seem to get us closer to an affective formulation of *techne.* From Karen Shriver, we get the sense that Information Design thrives on a fluid, evolving interface that makes it possible for designers to pick up on and render innovative designs that capture the audience's needs (Schriver 11,

152-154). For Schriver, though, experiences go beyond user-centeredness. She aims to reach cognitive and emotional/affect components of users because "[E]ffective design must first of all meet the needs of the audience" (59). Providing feedback for users to successfully complete a task is an element of interaction design that increases experientiality and participation. In that kind of interface, audiences interact with information, be it in a book or on screen knowledgeably. Experience design reflects the changing nature of our meaning making techniques, particularly as we grapple with emerging technologies and how they compel us to design instruction in ways different from print.

Concluding

My attempt in this chapter was to interrogate current perspectives of Information Design using the concept of *techne* I developed in Chapter Two. I found that while these models are laudable in their practicality and inventiveness, their solution for information overload by purely rational means is attenuated. Further, they indicate that designing information is mostly tailored to accessibility. However, generating accessible information requires *techne*, currently missing in the design process.

I have demonstrated that knowledge is not mechanical and routinized and should therefore not be designed as though it were. I note that in fact making knowledge requires discursive and critical interrogation of its materiality, issues of

exclusion and inclusion, the technologies of meaning making, along with the philosophical and ideological underpinnings of the designers.

Further, I also noticed that differences in the models and what they emphasize not arbitrary but calculated. For example, certain designs call for specialized skills in computing and user-interface and the knowledge to test those designs. Indeed Information Design may have parsed into numerous sub-sets for this particular reason. And as a result, we have specialists in user-experience, in interaction and Instructional Design, and even in document design. Specialization has been good for building literature on the discipline.

Information Design has pulled Information Design away from its graphic design roots by embracing a form of minimalism that reduces design to its essential elements, as Mullet and Sano observe. In its place, for example, Tufte has given us simplicity and boldness in design, albeit ensconced in rational and functional garb.

Moreover, focusing on gathering and ordering may suggest in some people's minds a mechanical, even mindless endeavor, which Information Design is not. Indeed the discipline has appropriated theories of art and aesthetics, among others to augment its possibilities. A measured approach to these dimensions is what I see emerge in this study. With that in mind, in the next chapter, I will draw from the tactile nature of sculpture, as a component of a redefined *techne*, and how it makes meaning through material and tactile modes.

I will highlight the role of artistry in discovery and invention because I deem these dimensions essential to design challenges. This artistry recognizes the

phenomenological work championed by Merleau-Ponty and the affective realm written about by Susanne Langer, Ernst Cassirer and Michael Polanyi, who echo the view that we know more than we think. It is important to see that knowledge development draws from early insight gained through craft.

The remediated *techne* I espoused in Chapter Two bucks the conventional view we've seen enacted in the Tufte and Wurman models of linear, methodical process. It embraces the strategy of both conceptualism and tactile craft as crucial in designing of texts in situated settings, as I will discuss in Chapter 5. For example, because design is at the heart of instructional material, it ought to be examined for its ability to create learning experiences, foster engagement, meet functional and usable needs. In this regard, understanding the functional component in design is ideal. And so in the next chapter, we turn to the materiality of design.

CHAPTER FOUR

Materiality of Information Design

Overview

Materiality is defined on the one hand as "any constituent elements" of a thing and on the other as "a substance of which a thing is made" (*Oxford English Dictionary*). This latter definition references the physical properties while the former encompasses non-physical elements. Johanna Drucker, with these definitions in mind, distinguishes between a probabilistic and a mechanistic approach to materiality with probabilistic "conceive[ing] of the text as an event rather than an entity" while for the mechanistic the focus is on the things that render the text such as paragraphs, white space, header (Drucker "Entity to Event" 8). Recalling that in Aristotle's world, the nature of matter was quite significant, combining the two meanings of materiality— as they do in media studies—seems only logical. And in sculpture, sculptural thinking and materiality seem to work in concert. Materiality has evolved to refer to notions of form and content.

In this chapter, I attempt to probe the tactile and material processes common to sculpture. I examine the modality of sculpture to determine its approach to creating meaning and experiences for viewers given that sculptural encounters with specific materials are often touch encounters that yield surface impressions, reflecting the sculptural thinking that informs the work. I will base my approach on

a critical method known as Media-Specific Analysis, a method articulated by N.

Katherine Hayles. Hayles describes Media Specific Analysis (MSA) as "a mode of

critical interrogation alert to the ways in which the medium constructs the work,

and the work constructs the medium" (Hayles, *Writing Machines* 11). MSA "pays

attention to the material apparatus producing the literary work as physical artifact"

(12). My focus is on the materiality component of the artifact so I can determine

how an artifacts' materiality and its construction affects and sheds light on the

making process and how the artifact might engage users in a performative and

participatory stance. I propose that the specific aspects of the material are a factor

in defining the framework of the product emerging from its properties. Thus the

material becomes an apparatus that produces artifacts— a material apparatus that

makes the sculpture, the text cohere in a given form. In information design language,

I am interested in determining whether or not the discourse can shape its own form.

Introduction

Artists such as sculptors whose work pitches them against the mind/body

binary and how it relates to knowledge (Beuys; Viola; Kapoor) embrace materiality

to demonstrate its importance to knowledge as they engage in a physical

manifestation of artistic concepts. As we have seen in the preceding chapter, I am

operating from the understanding that Information design can be a contemplative

and tactile way of knowing. I have noted that the material has, however, been

marginalized and nearly effaced, a condition that has something to do with

disciplinarity. Here is how. Traditionally, designers in the design arts pay as much

attention to materiality as they do the conceptual process (Potts; Krauss). To artists

like sculptors, materiality is the potential value of the finished artifact and is part of

the artifact's cumulative effect (Morris, "Anti Form"; Read). To that extent, materials

are crucial to the maker in that they provide a medium to constitute knowledge. In

Information design, we are content to contain our knowledge to the words, ideas,

and concepts we generate, without regard to the inscription process that is itself a

material presence. We eschew material thinking and undertaking tactile work as

somehow not equal to the genius of alphabetic literacy. And so it is that information

designers perceive of their discipline as translating data (Wurman; Shedroff),

bringing together words, ideas (Schriver; Alber), and combining visuals with

concepts (Tufte) into a language of form by focusing on clear and evident ideas, a

wholly objective enterprise. This need to analyze things intellectually locates

knowledge in concepts, when in fact, as Richard Lanham has remarked on the

relationship between electronic texts and the screen, the screen serves as a canvas

and another source for meaning, a tactile interface where knowledge is inscribed

and which inscribes knowledge.

Theorizing Materiality

Sculptors have a palpable awareness of the material world in which they

operate. Not only are they aware of it, they conceptually operate from a materialist

perspective (Margolin; Potts; Krauss). Hence, various theorists and artists have

argued for a refiguring of the nature of knowledge in the design arts, with Bruno Latour ("Cautious Prometheus") pointing out that architects are guided by the inner logic of the material' and Bill Viola (*Sightlines*) demonstrating in his work that perception is a material physical component and a building block necessary in one's relation to reality. Additionally, Joseph Beuys (*The Essential*) and Anish Kapoor (*Past, Present, Future*) have appropriated and repurposed the material as a counter to abstractionist art. They both see the tension between the material and conceptual as capable of transformative power (below, the logos of *techne* in Grön eld (Green Fire / Green):

Flames consists of a large pile of glass plates cut into the forms of flames and glued together without obliterating the construction process even as it makes the material glass visible. These two aspects are what instantiate the artifact as form, content and meaning.

Fig 4.1: Vicke Lindstrand, Grön eld (Green Fire), Umeå 1970.
Source: Wikimedia Commons

Art and Design

Before we continue, a distinction between what role the designer plays versus that of the sculptor is necessary. James Elkins, who has explored these distinctions, offers us some insights, such as the idea that art lacks a specificity of form in relation to a specific utilitarian function. Based in this understanding, the sculptor as artist renders 'intangibles' by capitalizing on properties inherent to the physical attributes of materials and contexts as represented in physical locations, or cultural and ethnographic contexts. In art, the medium itself contains meaning (Elkins 9-10). The designer, on the other hand, has a specific utilitarian goal driven by 'tangible' tasks specific to given functions. Still, it is safe to conjecture that information designers have a subjectivity they may suppress in rational reconstruction (cf. Kuhn; Feyerabend).

It is my contention that because preoccupation with artistic intent can disregard functionality, making some works unintentionally incomprehensible, Information design has adopted design, while retaining artistic attributes such as "'measured judgment and a 'conceptual foundation [along with] manual dexterity" (Elkins 10), i.e. theory and practice. It is with those benefits in mind, perhaps, that Kevin Mullet and Darrell Sano offer that design reflects some "higher truth" in form, method, and materials (Mullet and Sano 14).

We further learn that modern design, with its roots in European revolution and the Bauhaus movement, is "predicated on the rationalist belief that all design

should in principle be justifiable on objective grounds" (14) to suit the varied tastes

of modern consumers. The legacy of the Bauhaus movement regarding art and

design compels us to explore design as a concept of art, and is how we in the liberal

arts have appropriated this metaphor of design. For purposes of this project then, I

will cast design as an art concept to mean applied art because I seek both the artistic

and the designer benefits in Information Design.

Art Sculpture

Sculptors work in the material realm where they perceive and express things

tactually. That's not to downplay their intellectual acuity. Rather, the creative act

manifests what Richard McKeon in defining an "architectonic art" called knowing,

doing, and making in ways that define their tactility as means of rendering

knowledge (see "Rhetoric in a Technological Age").

In the work of Joseph Beuys, a sculptor, for example, we see an assortment of

objects whose meaning is not as overt as it is obscure, given that the objects of his

trade namely, sculpture, painting, drawing, installation and performance, are at once

metaphor and material (Borer and Schirmer, *Joseph Beuys*). Beuys' work speaks to

Margolin's assertion of inventiveness. Because his materials are immersed in nature,

in transforming those natural materials into art, Beuys demonstrates that art is both

intellectual and practical.

To understand Beuys' work (as viewer), one needs a multiplicity of ways that

engage with all the senses. The material properties of the work force the viewer to

reflect on and to make meaning through reflection, given that the meaning in his work is not stabilized. This reflective aspect of his work perhaps encourages the bifurcation between self-reflective memory and the consumption of products, information, and art (cf. Buchloch, *Neo-Avantguarde* 53). The dominant metaphors out of which Beuys develops his art are social sculpture and social architecture. So, for example, from the illness and healing pertaining to his life, Beuys presents the idea that an ill, impure, formless society (Germany), just like his body was during the war, can be healed, purified and formed (given form) by the work of art (just like he was healed by felt and fat works of art).

We see in Beuys' taxonomy of design, attention to texture, space, rhythm, perception, and embodiment. Beuys demonstrates that powerful ideas can be embodied in provocative material artifacts that embody meaning that has a larger impact than do words. To exact meaning, the viewer needs to go beyond the symbolism of metaphor the artifacts evoke. The way Lothar Schirmer sees it in *Joseph Beuys*, viewers are forced to "grapple with this strangely disquieting aesthetic phenomenon" (Schirmer 9). Like all artists, Beuys aims to sculpt artifacts whose appeal is in its tactile quality. The result is a mutual and reciprocal relationship between viewers and installations. By staging his productions in this manner, Beuys challenges the western ideal's privileging of rationality as the way of knowing (Gandy 641) and focuses viewers onto the textures, the space, and the rhythms of his installations.

Artists resist reasoning about ideas and focus on instantiating those ideas. Art critic and theorist Rosalind Krauss in *Modern Sculpture* finds that "the point of all sculptures is not its mimetic quality...,but its power to embody ideas and attitudes" (Krauss 9). However, Krauss decries a kind of art and sculpture that organizes knowing around a single visual register such as the plane observed from one vantage point where all information coheres (209). She argues instead for an understanding and experience of sculpture that is phenomenological. She supports the kind of sculpture that draws on knowing from moving around a work as its different perspectives yield knowledge that is then processed through coordinating the body in space (212). This view of sculpture by Krauss calls to mind the kinds of bodily pedagogies we observed in Chapter Two. It projects a sense of bodily and spatial awareness in the exchanging of ideas as they intersect with the visual and is applicable to Information design.

What sculpture does is define a relationship between viewer and artist as distinctly active. As Alex Potts notes in his book *Sculptural Imagination*, "free-standing sculpture tends to activate a more directly physical and bodily engaged response from the viewer" (Potts ix), demonstrating that the making process is more than mechanics. This demand for an active relationship with the viewer suggests to us that artifacts are not simply objects that we somehow bring into being. Rather, they are embodied artifacts that demand active interaction with viewers.

Sculpture demonstrates that knowing is always already material in that it contains symmetries of meaning through a metaphorical interplay of themes. These themes range from sound, suffering, warmth and plasticity and are deemed essential to creativity (as Viola and Kapoor's work shows). Still, critics such as Potts caution that understanding a sculpture entails more than the artifact itself. Comprehension entails engaging "with the verbal paradigms and cultural praxes" (Potts xiii) from which the art emerged and the audience for which it was originally intended. We saw that aspect marginalized in Chapter Two.

Embodied knowledge in sculpture in which the artist's interaction with materials is often made visible and further made to encourage bodily sensation within the viewer can be instructive. Consider below what I categorize as a thick description of one such experience:

As they worked, students engaged in cognitive, physical, and affective interactions involving aesthetic concepts, self-knowledge, memory, imagination, and feedback from tools and materials. Students interacted with materials by playing with them, "talking" with them, emotionally responding to them, exploring their innate physical and formal characteristics, matching them to mental models, and endowing them with meaning. Making art may be thought of as a kind of "conversational learning" (Bamberger & Sch6n, 1983) in which students match what they see evolving in their materials against mental images shaped by such factors as personal experience or slides shown during foundational stages. These personally and culturally constructed images allow students to recognize, act on, make sense, and find meaning in their materials and sculptural forms. By focusing purposively on the intrinsic qualities of the materials and the emergent sculptural forms, students practice perceiving, analyzing, interpreting, and evaluating sculpture.

Fig 4.2: Patricia James on sculpture in making
Source: Patricia James "Sculpture Studio"150

What we see here is instructive of material, technical, conceptual, and spatial aspects of the artistic process. We learn a little something too about the work flow that unfolds in a process that is purposive, experimental, and yet uninhibited.

Material objects in sculpture become the primary data for generating theories and building meaning. They offer interpretive clues for construing meaning both at a conceptual and sensorial level with the latter signified by Nathan Shedroff's sensorial design. When sculptors demonstrate control of the making process, they develop and project an ethos that aligns with the conventional values and beliefs of that discipline. Such sculptors do not turn over their agency to the materials (as Latour intimates in "Cautious Prometheus") as practiced by some information designers as we discussed in the previous chapter.

What we have then is that materiality (the material and the tactual processes of making) actualize the artifact. Alex Potts has observed that sculpture was "designated as the art centrally concerned with form" (Potts 2). This is not the case in the liberal arts, where we have a sharp distinction between representation and the technologies of representation (Hayles, *Writing Machines*). While the design arts consider the material production of sculpture, paintings, installations, and displays a focus of study, the liberal arts operate in the realm of abstraction, a scientific way of thinking (cf. Merleau-Ponty, "Eye and Mind"). This immaterial world is seen as the default in making and representing knowledge and has permeated the practice of

Information Design. But, as we are beginning to see in this chapter, that status quo can be mediated to include a materialist dimension of meaning making.

Embodiment certainly plays a role in human interaction with information, meaning, and technology. Beuys and Viola demonstrate through their materials that they are happy without form. For them, the mediating factor between the materials and their emergence (coming to be) that the content comes through is their demonstrated *techne*. And so the performative aspect we encountered in Isocrates' *techne* and that of the pre-Socratics (discussed in Chapter Two) becomes articulated through enactment to realize an experience that cannot ordinarily be created. This aspect is mostly demonstrated in the viewer experience where the viewer gets into a dialogic exchange with the self, the installation, and others in a heightened sense of awareness. *Techne*, we will recall, does not only refer to the activities and skills of the craftsman; it also refers to the skills of the mind comparable to those manifested through the fine arts.

Discursive Analysis

We stand to learn a lot from the design arts' attentiveness to the material basis of design (Lewis 20-25). Hayles offers that sculpture, paintings, and, may I add, information design artifacts, are, in fact "metaphor materials," the result of a coming together of words (ideas) in tangible ways (Hayles, "Informatics" 148-153). However, these artifacts have become opaque to us as material objects, perhaps because they are relatively static in nature and spatially restricted. Still, just like the

creative sculptor can render materiality dynamic and even temporal (as Bill Viola's installations demonstrate), so can the information designer. Today, for example, installation display and performance are very much a part of sculpture (see McKee, "Pulsa"; Potts). More to the point, current models of Information design focus on rendering fixed shapes and forms of text into movable text (Lanham, "What's next for Text").

We have seen that in thinking with materials to design, applied art can yield artifacts that are consciously experienced. Artists achieve this feat by repurposing materials and existing images in ways that counter abstractionist art to instead render embodied texts in a mode represented in the image below[iii]: There is a demonstrated *techne* here, embodied in the knowledge and ideas.
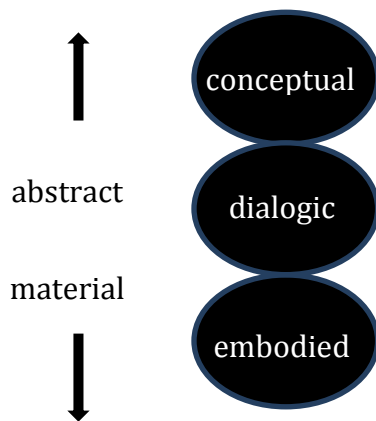
Fig 4.3: conceptual to embodied texts

Techne underlies the design as conceptual and therefore abstract, even as it allows for a dialogic connection of those concepts and ideas to form an embodied or material instantiation as text, artifact, and /or as sculpture. The result is experienced rather than used as meeting places of meaning between artist, user, and object. This pattern is

certainly the case in the sculpture of Thaddeus Mosley, who emulates the possibilities of Jazz, for it "perpetually reinvents language to carry particular messages" (Lewis 2-3) by repurposing materials to render new meaning. In an interview with David Lewis, Mosley offers how looking to jazz as a "mental structure on which improvisation" is built influences him:

> I listen to jazz a lot; What [sic] I'm thinking about most of the time is sculpture. Even beneath turmoil and chaos there is a pattern. I try to channel my mental energies into a narrow sculptural focus: materials, form, rhythm, surface, relation to earth, capacity to soar. (qtd. in Lewis 76)

We can learn from Mosley's *techne* to move beyond interpretation to invention (see also Jarrett on how jazz as a series of aesthetic choices allows for new inventions).

Invention distinguishes a type of design from other productive arts. Like writing argument, it is a process that may be motivated by the need to meet functional purposes, a desire to fulfill a stylistic or aesthetic sense, or to affect a complete turnaround in the way an artifact has been configured before (cf. Cross; Krippendorff). Invention is what makes discovery of persuasive resources in any given situation possible (McKeon; Buchanan). As an element of *techne*, invention embodies thinking, knowing, and making, to usher in novelties attuned to the situation.

Such an art process is also present in Bill Viola's video installations that move first from feeling then to form, taxing the viewer's aural awareness if she is to *get* the differences between the real world where the sounds came from and the

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phenomenological one he wishes to unconceal (Allen and Turvey 237-238). Viola's recreated sound loses the aura of its originality through technological determinism that becomes the dominant agent in meaning making. But Viola does it to critique the same thing he projects by challenging the ways in which conventional mass media form our perception. Thus, he differentiates his video installation from motion picture by appropriating video as an extension of the human body (static) that records as it goes (see also Perfloff, "Morphology"). Video in this case serves as an information art, necessary not to create more, nor to monumentalize, but to manage information—the domain of Information design. As Viola puts it, "the major task of today is not information production but information management" (Viola, "Porcupine" 60).

Sculptors' work consists of carving, casting and welding as tools of their trade in the process of making (Lewis). Subsequently, the resulting artifacts embody the essence of the intended meaning. These may be mechanical acts that nevertheless transcend the banality associated with mechanics and mere technique to yield meaningful artifacts. For example, Julie Luckenbach observes in her hyper-essay "Beuys/Logos" that "[M]aterials and objects were 'effectual tools' employed by Beuys to clarify his theory of social sculpture" (Lackenbach). The process, both physical and procedural, and how it shapes into tangible and embodied interfaces, connects to thought, and is epistemic. And when applied to Information design, whose process often begins with chaotic, even indeterminate ideas, words, images, to be molded into artifacts of meaning, it utilizes thought and material tactile means.

Sculpture is firmly grounded in material construction and in touch, as Johann

Herder puts it (qtd. in Potts 27-29). It is a tactile phenomenon that conveys the

"physiognomy the artist gives to the object" (Krauss 71). This is the case even where

this art may rely on mathematical precision (Calder), the level at which sculptors

shape and form things with accuracy (see *Brancusi: The Essence of Things*). The

technologies of sculpture then generate a relationality between the cognitive and

tactile affordances of individual artists as Robert Morris notes in "Sculpture 2." In so

doing, sculptors open up new avenues of knowing through actively intervening by

way of skill and causal efficacy, a *techne*.

The answer to the question regarding materiality in design is that it

legitimizes the tactile dimension as being equal to the more privileged forms of

intellectual deliberation. Materiality is also related to the intentionality of the

artist's *techne*. It reveals itself in the artist's knowing-what the intent is and

knowing-how best to instantiate that intent. For example, Robert Morris uses MSA

to perform a formal analysis of Constantine Brancusi's art, concluding that sculpture

is more tactile than it is optical (Morris, "Painting" 51-71). For Brancusi then, form

becomes a "manifestation of the surface" (Krauss 103) as sculpture draws out the

principle at the center of the artifact. This ability to manifest through form is an

aspect that Information Design can emulate and instantiate.

Sculpture utilizes the temporal dimension in meaning making differently

from the more overtly rational disciplines. Where most disciplines base their

reasoning on causality, sculpture, even though it began by following that norm in

representing historical events, has been known to "fashion the composition into a kind of temporal cut that would knife through the disarray of historical incident and uncover its meaning" (Krauss 10). It utilizes the opportune, kairotic moment (as we saw in the chapter II on *techne*) to seize on what Krauss calls the most "pregnant" moment of action (10) that connects history past and present in each instance. To achieve kairos, the sculptor devises ways to form multiple vantage points for the viewer to identify a perspective. Kairos, for Krauss "contain[s] the totality of the information necessary for the conceptual grasp" of the artifact (Krauss 18). Such multiple perspectives allow viewers to engage with the work phenomenologically.

The absence of materiality in the domain of Information Design has been helped along by the quest for transparency as we learned in Chapters Two and Three about Greek philosophy and the subsequent adaptations in Information design. This sense of "greater intellectualism," as John Dewey observes in *Democracy and Education,* can be attributed to the Greek philosophy of dichotomizing the material world of practical experience from the cognitive intellectual mind (Dewey 267).

The legacy of Plato and Aristotle, Cartesian thinking, the advancement of scientific knowledge, and the advent of modernity, all contributed to a dearth of materiality and gave us crops of scholars, who have all but effaced the physical and material attributes of knowledge.

As we saw in Chapter Three, Information Design is an evolving discipline that could accommodate additional approaches leading to an expanded view capable of

serving various informational and instructional needs. It is a 'paradox of substance,' as Kenneth Burke would say, that makes us wonder if we can ignore the ties that physicality has to knowledge making. Herbert Read explores the notion thusly:

> Since the introduction of machine methods into industry a problem has existed which has never been adequately solved. By the machine we mean an instrument of mass production. And every machine is a tool. The real distinction is between one man using a tool with his hands and producing an object that shows at every stage the direction of his will and impression of his personality; and a machine which is producing…objects of a uniformity and precision that show no individual variation and have no personal charm. (Read 3)

The sentiment explored in this paragraph underscores the argument I have been making in the preceding chapters to the effect that privileging knowledge to rational intellectual forms denies us a skill that's prevalent in information and Instructional Design; a field now dominated by mass production based on replication. And its limits are shown in Chapter Five where I analyze an Instructional Design instrument and how it (dis)serves its instructional purpose.

Deciphering meaning in sculpture further entails recognizing the forms of arrangement, contours, and the gestalt in the sculptural artifact and then returning to the material background underlying the object. Through touch, sculptors are able to take in the shape, surface, and texture of the artifact, and, in the process, represent it in a material form. This cyclical form of interpretation (Krauss 25-28)

flies in the face of the teleological conception of Jean Baudrilliard's notion of the relationship between simulation and representation, as Katherine Hayles has opined in *Writing Machines* (Hayles 5-6). That paradigm of the hyperreal (Baudrillard, *Simulacra and Simulation*) and 'automaton' does not prevail in a materialist discipline like sculpture and is something we in information design ought to adopt by exercising creative control at every stage in the direction of the design.

The tradition of craftsmanship is rife with tools and materials. These are, for the most part, passive entities fashioned according to the goals, desires, and objectives of the designer as appropriate. For example, while sculpture is considered static, it is capable of representing motion and time (see also Viola's installations). Sculpture manages to achieve this feat by combining parts of an image to imply a sense of motion and of action (cf. De Long et al.) through manipulating lines, shapes, color, and textures in ways that cause the eye to move over the image. However, there is also the element of "kinetic sculpture" (De Long 79) experimented with by sculptors to animate static forms. This notion, written about by Alex Potts, makes possible, compelling viewing of sculpture in which "our attention is sustained by an intensified visual and kinaesthetic engagement" (Potts 1) where in the sculpture, though static appears to "come alive," making the viewer oscillate between transient and enduring. In this regard, sculpture integrates materials as an artistic medium.

Sculpture as an exemplar of embodied interaction with materials and the contexts of their making is as much a tactile as it is a cognitive practice. Sculpture and Information Design are cognate in that both point to technological practices through which we realize our conceptual framework like we saw in Chapter Two. Sculpture epitomizes Bruno Latour's claim that *We Have Never Been Modern*, given the anatomical and materialist tools employed in meaning making.[iv] Sculpture eschews one of modernity's ideals:the subject/object divide. And modernity, problematic a term as it is, has been conceptualized by Jürgen Harbamas and Seyla Ben-Habib in their article "Modernity," as a term that "expresses-the-consciousness of an epoch that relates itself to the past of antiquity, in order to view itself as the result of a transition from the old to the new" (Herbamas and Ben-Habib 3). Thus, in our quest to differentiate ourselves from eras we deem passé, we are always already attempting to be modern. When we distance ourselves from what we consider rudimentary ways of doing things, we claim to replace that era with new novelties because "[M]odernity revolts against the normalizing functions of tradition; ... against all that is normative" (Herbamas and Ben-Habib 5).

Sculpture still retains those practices that modernity would deem passé. For example, sculptors engage in a mélange of epistemological goals that Latour calls "hybrids" (Latour, *Modern*1) as they are neither decidedly subjective nor are they objective. Keeping with the understanding that modernity is grounded in the Enlightenment era, scholars sought to advance objective science, universalize and reorganize society in rational ways (see also Margolin, *Design Discourse* 7),

sculpture may be steeped in the kind of tradition that modernity seeks to upend. Yet its knowledge construction process impedes a routinized way of doing and making.

For sculptors, the machines of the art-making process are physically and biologically harnessed, so that "automating the production of art" disconnects the artifact from the "psychological and emotional structure" of the artist (Krauss 70). That sculptural process signifies a level of control over the making process. Unfortunately, this is the impersonal process that now dominates most information design processes. Focusing on the finished product then deprives us of engaging with the ideas and meaning that infuse the creation of the artifact. Moreover, this impersonal process of design may propagate a solution that can hardly be generalizable to dissimilar problems.

The importance of understanding the material practices that underlie meaning making in Information design point to the technologies that bring the text/artifact into being. Indeed a great deal of scholarship has argued for the reconceptualized concept between the mind and body construct (Reiss; O'Doherty; Morris) reviving the ancient art of delivery (cf. Porter, "Digital Delivery") now deployed to convey information and its aesthetics. Yet preferred competencies for interpreting reality are rationalistic. As we observed in Chapter Two on *techne*, knowledge is a product of not just the intellect, but of other material and sensual means. So, for example, the conceptual phase leads to the material expression of the design, a process that is as physical and tactile as it is conceptual. Within this material representation is where knowledge and its delivery (as per the canons) is

habituated. Information design, in fact, blurs the conceptual and the material, given that both are essential for meaning making.

Because art and sculpture are visual arts, their medium is physical, and is why the response elicited from audiences is physical too (de Duve, Holmes and Greenberg). There is however, a complex relationship between hand and mind; the physical and intellectual; invention and imagination (as Heidegger shows). Clement Greenberg and John O'Brian in *Collected Essays* attribute the increasing quest for transparency in the design arts to this attrition of materiality (Greenberg and O'Brian 34). We need to see art as conceptual and technological development, arising out of tactual application and not that of a hidden complicated apparatus (as Bruno Latour might say in *Science in Action*). There shouldn't be a time when the inner workings of a work of art, or, in this case, Information design, are closed from scrutiny simply because those processes have been accepted as such and rendered invisible.

In the context of materiality as a technology of production, Ellen Lupton recognizes this dynamic by acknowledging and documenting the active role that representation does in shaping content. She writes:

> The proletarianization of design offers designers a new crack at materialism, a chance to re-engage the physical aspects of our work. ...production privileges the activity of the body. (Lupton 3)

Lupton allows us to see that the making of a work of art can be systematic and coherent in ways that account for the dynamics that propel it toward a desired goal.

Techne manifests itself in knowing, in engaging the work (practice) and not merely reflecting (theory) on it. Johanna Drucker, theorist and practitioner in digital humanities, suggests that design problems are about utilizing materials. In her article "Theory as Praxis," Drucker engages the term "poiesis-as-theory" considered the practical way of doing theory to account for the tactual in design (Drucker 684). The emphasis in this theory is on materiality as a focus on tactility and invention. It is also essential to theoretical work as a basis for scholarship. And in this interloping relationship, the rhetorical act of "finding the available mans of persuasion" is perhaps fully realized. I offer that in contrast with Latour's "Cautious Prometheus," (cf. Stiegler) Information design can project a '*bold Prometheus*'[5] into the future of text as tactile interface with an epistemic *techne* as the creator of that bold new textual world that continually defies conventions.

Sculptors, theorists, artists, and designers exhibit and demonstrate their *techne* as a creative human act that is interventional in nature, satisfying Aristotle's dictum that what nature cannot achieve, *techne*, makes possible (*NE*). Their work collectively lends itself to multiple associations and connections between material technologies—a tactile epistemic *techne.* We are afforded a material approach to information given the physicality inherent in its management, containment, and dissemination. We can practically demonstrate the physical manner in which type

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5 In claiming a 'bold Prometheus' I am playing off Bruno Latour's "A Cautious Prometheus" in which he posits a philosophy of design based on caution and is antithetical to novelty. Based on Stiegler's Prometheus, I propose a bold, even audacious approach to design founded on epistemic *techne*. I base my claim on the understanding that to design is to devise a new, even preferred course of action. The act of design yields material artifacts and is a result of intellectual and tactile acts. Realizing a design act is both bold and audacious, hence a bold Prometheus.

behaves and why, as we see with kinetic typography. These aspects of typography

entail a world of artistic technique of enacting content and documenting it using

conceptual and structural principles paired with communicative possibilities of

material and tactual forms. Materiality of design further instructs us that

information can be designed in such a manner as to make the user aware of the

information's own material dimensions. Moreover, the interface (page, screen and

mouse, touchpad) can call attention to its own materiality to optimize the learning

experience. These concerns that help us interrogate how successful artists are at

making their embodied, materialized concepts-as-affects communicate with

viewers/participants can inform the practice of Information design.

It is safe to say that the medium of text instantiation shapes its meaning

making the medium crucial in affecting the manner in which the text is consumed.

The physical and visual aspects of texts are indeed drivers of designing information

where page layout, typefaces and fonts as well as colors and shapes serve as

Wayfinding mechanisms for end-users.

Concluding

Following the Media Specific Analysis in this chapter, we can extract the

following points relating to sculpture's affordances and constraints applicable to the

practice of information design. Sculpture operates from a logical framework that

instantiates meaning as form. However, the logic of sculpture is that it cannot simply

be universalized as it is particular to given [rhetorical] situations, and illuminates

specific communicative, even commemorative occasions. Once sculpture moves

from the figurative into the arena of abstraction, where it is self-referential, it begins

to operate under the aura of modernity, of enlightenment, and rationalization, is

where it may task viewers' understanding. By abstraction, I refer to a particular

sense of sculpting the artifact with no association to reality, yet relying on imagery

and the visual language of form, color, and line. Such work often defies logic, and is

better experienced than cognitively interpreted. However, it also fits neatly within

the expectations of modernity and of reproducibility, noted by Walter Benjamin's

notion of multiplication for its loss of authenticity. We want to guard against that.

More importantly, for information designers who consider it their duty to make the

obscure comprehensible, this is not a tactic they might adopt.

Form, as we saw in Chapter Two signifies the visual features of an artifact.

This understanding of form may have roots in Plato's concept of form as *eidos* as it

describes the tangible shape of things. Form further lends credence to the notion of

representation. On the other hand, form or *eidos* for Aristotle was linked to causes

and essences. Further still, in modernism, form is internal and external, and is how

the value of a work is determined (as we see in poetry). Form then is broader than

the way the Greeks or modernity conceived of it. Form in sculpture like in

Information design has depth and operates in three dimensions: not only is it

performative and embodied; it also initiates and demands active reading practices.

What I call a tactile interface then is this artifact that results from the act of

the artist or information designer in creating form. The work of art affirms the

artist's tactility, both conceptual and revelatory, so that the interface communicates

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a message, be it informational, instructional, or even edifying through its visual immediacy and its material presence. The viewer interprets and appropriates this work in the manner it is availed to her, be it digitally (by clicking, scrolling, resizing), or in print (by the very act of reading—highlighting, turning pages, etc.), and even audibly.

Beyond form and content, we have the medium as material, tactile, and epistemic, hence the need for a materialist perspective in Information Design. In this regard, materiality is a result of "the dynamic interplay between the richness of a physically robust world and human intelligence as it crafts this physicality to create meaning" (Hayles 12). Information Design plays on the materialist to reveal the (tactile) interfaces that embody the orthography that signals points of entry for the reader in navigating the text and appropriating its meaning (Passini; Baer and Vacarra). Instructional Design, the subject of the next chapter, strives to afford this option for their learners from recognizing materialist role in meaning making, making design an act of persuasion.

Designing for Instruction

Overview

As we saw in Chapter Three, the ability for Information Design to effectively present information through utilizing design principles, both universal and particular, to transform chaotic data into ordered and meaningful information, has helped solidify the field's importance and service to end users. We noted its emphasis on efficiency and effectiveness rooted in scientific models of objectivity to effectively corral massive information into manageable yet accessible knowledge for specific needs. That expedient, even instrumental role played by Information design will always be with us. Fortunately, subsequent forays into the field have ventured into user-experience (Schriver), experience design (Shedroff), and pleasurable design (Jordan; Norman) that suggest to us that audience needs are practical, emotional, and aesthetic, and that audiences can be pleasured by the products we design in physical, social, ideological, and psychological ways (see Williams).

Even within these expanded approaches, a key emphasis on thinking as an active transaction between an individual and the data she is exposed to permeates not just information, but also Instructional Design. As a consequence, practitioners see their role cut out for them as "how to carry out the reflective and analytic thought that leads to more learning" (Gagne 167). Formalized within that role is a system of reasoning used to generate solutions to problems and in fostering skills in

acquiring concepts. To ably demonstrate this paradigm, I will focus on Instructional Design in this chapter. This is because among all Information design categories (user-experience, interaction design, and document design) Instructional Design is more inclined to capture and express tacit knowledge.

We learn from Philip Duchastel that:

"[I]nstructional design is involved with the creation of information environments that engage learners in certain ways. The collection of instructional strategies at the core of any Instructional Design are in fact embodied in an information environment that channels information interactions. (Philip Duchastel "Instructional Design in the Information Age")

It is in that respect that I present and critique a prototypical model of Instructional Design.

Introduction

In this chapter I examine Instructional Design in the context of educational technology and its effectiveness in providing solutions in distance education. Bringing together education and technology to serve one purpose is problematic enough in itself. There is a possibility, for example, of tipping the scales to education, or to technology, without necessarily striking a balance between the two. In the language of chapter II, this pairing becomes a pitch between craft technology on the one hand and epistemic *techne*, on the other to meet educational needs.

A Primer on Instructional Design

Instructional Design is widely understood as the practice of translating "principles of learning and instruction" (Smith and Ragan 363) into material means for instruction. Such materials are infused with activities, evaluative exercises, and feedback. As such, it is seen by many as a problem solving discipline based on systematic and careful application of design solutions (Carey and Carey).

Instructional Design is informed by an amalgamation of theories ranging from systems theory and human factors (Reiser; Richey et al.), cognition and learning (Dijikstra; Morrison et al.) to design (Rowland), making for a rather broad and diverse discipline. There is a history to this diversity.

John Amos Comenius has been widely credited with introducing visuals in teaching (Brown and Green; Heihich; Molenda). Comenius' vilification of the educational practices of his day in favor of the position that acquiring new material began through the senses was encapsulated in the word "pansopy.[6]" That view, of course, drew criticism from René Descartes, who sought to free science (reason) from theology (senses/emotions) in a quest to gain knowledge objectively. In time, Comenius's desire to make learning enjoyable and more meaningful through the use of dramatic productions and other innovative methods waned in favor of Descartes' rational objectivity. And yet his visual foundation is what John Dewey later built upon to create a link between educational psychology, and later evaluation and

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[6] Pansophy propoundeth to itself so to expand and lay open to the eyes of all the wholeness of things that everything might be pleasurable in itself and necessary for the expanding of the appetite. John Edward Sadler, *J.A. Comenius and the Concept of Universal Education*, 1966.

assessment (Persky and Golubchick). Today, Instructional Design capitalizes on visual forms of communication (icons, scannable text, levels of heading) to appeal to learners' proclivity to process visual information. Instructional Design perceives visual forms as points of emphasis for main ideas, even as those forms draw attention away from less relevant details because it recognizes that design choices affect the perception and even cognition of would-be learners. Therefore Materiality is not merely an analogy. There is materiality in the Interface and the effect on the audience is visceral.

Instructional Designers, particularly, associate design with efficiency in teaching and learning, seen as dependent on carefully designed instruction. That process, according to Robert Mager in his book *Preparing Instructional Objectives*, includes:

☐ The goals of instruction
☐ The strategy and the medium through which to attain that goal
☐ Evaluation (Mager 11).

These processes have to work together. And from them, the generic ADDIE[7] model, whose five phases—Analysis, Design, Development, Implementation, and Evaluation—designed to offer dynamic yet flexible guidelines for the designer, have emerged. The ADDIE model illustrates the process of materials development in a systematic manner and has been utilized by practitioners in the field for this reason.

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[7] Research indicates that ADDIE is an inclusive term coopted to visualize a systematic approach to instructional design. The term is not attributed to any one author. For more, see Michael Molenda in Performance Improvement, May/June 2003.

ADDIE shows the level of instructional planning and precision that goes into the

development of designing instruction. It is visualized below:
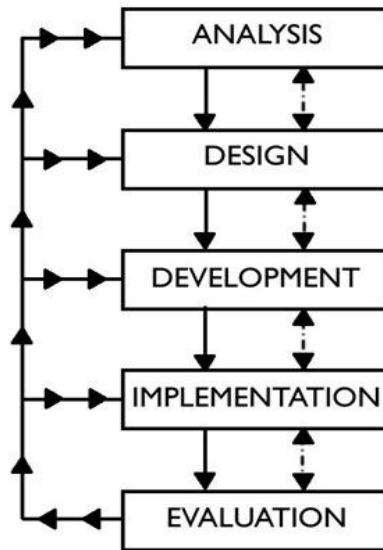
Figure 5.1: ADDIE Model
Source: Graffinger, Deborah. *Basics of Instructional systems Development.*
INFO-LINE Issue 8803. Alexandria, VA: American Society for Training and Development.

Notice the linearity that produces the formalized type of design (alluded to in

Chapter Two), suggesting that design solutions are decided upon beforehand. A

simplified and generic systems design model, ADDIE operates in a series of stages

that are formatively evaluated at each juncture with a summative evaluation, built in

tests, and assessment as shown below:

Diagram by: Steven J. McGriff, Instructional Systems, College of Education, Penn State University

Figure 5.2: ADDIE and its Parts
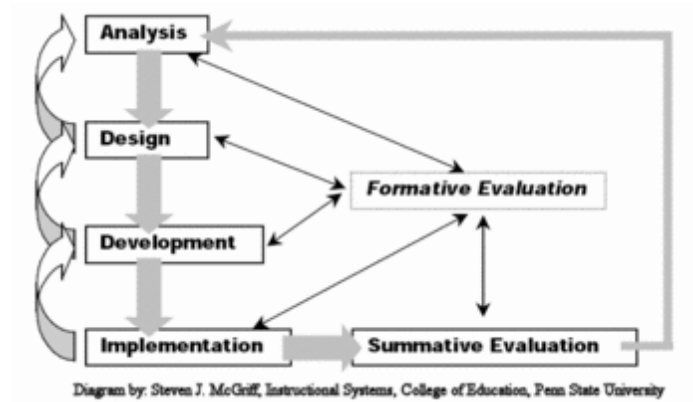**Source:http://www.wikieducator.org/Evaluation_of_eLearning_for_Best_Practice**

One of the goals of Instructional Design is to improve quality and timeliness in the design and delivery of instructional material. This goal is often attained through Instructional Design elements that include course structure, learning objectives, and content. The challenge for designers involves selecting the most effective instructional strategies to facilitate learning, a matter of creativity and sound judgment. It is believed, even in Instructional Design, that choosing a strategy is a decision designers make that will allow students the maximum opportunity to meet the learning outcomes and achieve overall success in the course.

Over the years, design strategies have been dominated by traditional forms of Instructional Design that involve passive media in the form of text, audio, and video broadcasts. These forms involve the learner communicating with the instructor at distance level or with the occasional face-to-face meetings. Unfortunately, the key characteristic of these forms is the lack of user satisfaction with the instructional content given its drab and content-driven approach.

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As we can see, in the ADDIE model and others modeled after it (Dick and Carey; Kemo et al.) there is a built-in linearity that offers a step-by-step process toward attaining effective instructional material. Unfortunately, this process model is what has resulted in established ways of knowing embedded in the template, as we'll see in this chapter. That model, in many ways, cedes the agency of designing to the template. Abbie Brown and Timothy Green have attributed this disparity to the separation of the design process from the developmental process with the result that the processes do not inform each other (Brown and Green 20). For example, the developmental process focuses on effectiveness without knowing how efficient those strategies will be, while the design process simply implements the decisions made by the developmental process. This disparity, they say, can be traced back to the scientific and objective paradigm that Instructional Design draws from (Brown and Green 20-23). It is certainly consistent with the weaknesses we identified in the Tufte model, in the earlier part of Chapter Three. And as we know from the body of work on designing instruction, learners and their needs are often ill-defined (Smith and Ragan). Hence the notion of replicating existing models (Thiagarajan) is fraught with uncertainty, making the case for design being amenable to shifting needs of learners, their diversity, and their contexts. Long dependent on a systems approach to Instructional Design, the discipline is beginning to recognize the need for active agents in designing and controlling instructional content.

As noted earlier, Instructional Design exists to tailor instructional materials to particular learners for prescribed objectives. But while historical accounts hold

that Instructional Design emanates from research in the psychology of learning and system theory (Seel and Dijkstra) which the learning models are constructed from, Instructional Design also relies on "information and communication technologies" (Seel and Dijkstra 3-5). Even more importantly, designing instruction is didactic. It strives to make content transparent, through structuring, ordering, and presenting it in ways that learners find cognitively accessible (Gagné; Brune; Richey). Thus Instructional Design is theoretically grounded, detail-oriented, practice and yet production based in its bid to foster instruction, presenting an epistemological challenge to practitioners.

As we saw in some models of Information Design in Chapter Three, our faith in technology, particularly in its electronic forms (see Clark, "Learning from Media") has given us the Instructional Design template as a solution to materials development in educational contexts. These templates, often more experienced based and effective for what they were *specifically* designed are often transferred as universal solutions without due regard to their reliability or effectiveness in *any given* situation. A major contributor to this eagerness to transfer template technology is the *ethos of expertise* the template takes on owing to, among other things, strong association with its designer, and testament of its initial success. As a result, the concern for those on the receiving end is the ease of template technology adaptation for pragmatic reasons.

I wish to draw attention to some shortcomings of the universal approach to Instructional Design inherent in the resources from the Commonwealth of Learning

(COL). Before I discuss these concerns, I need to offer a brief overview of The Commonwealth of Learning, an organization whose vision for designing quality educational materials is enshrined in the Learning Instructional Design template, a basis for discussion in this chapter.

The Commonwealth of Learning (COL)

In 1931, an organization calling itself The Commonwealth of Nations was established to bring together, on a voluntary basis, an association of independent sovereign states historically under British rule. The emphasis by the Commonwealth for member nations' sovereignty was meant to help them "retain the sense of equal partnership" that would promote a spirit of equal participation in the deliberations aimed at strengthening partnerships and making progress on issues of common interest such as public health, infrastructure, and education (for the common wealth). The Commonwealth's goal was to foster an educated citizenry, to assure the self-determination, stability, and economic vitality among the member states. Out of these consultations and deliberations emerged the organization that directly concerns this study: The Commonwealth of Learning.

According to the organization's "facts and figures," The Commonwealth of Learning (COL) is one of several intergovernmental organizations established in September 1988 by the Commonwealth Heads of Governments (CHOGM), a governing body, following its meeting held in Vancouver in 1987. One of COL's core

missions was "to encourage the development and sharing of open learning and distance education knowledge, resources and technologies" (Commonwealth).

In pursuance of this mission, COL devised a number of resources including course materials to promote open and distance learning (ODL) throughout its member states. Among these course materials is what COL calls a Learning Instructional Design Template. This template, widely distributed and freely available to member states, was designed to ease the burden of designing materials, and to "aid the sustainable adoption of ODL methodologies" to help promote what COL considered quality education. The template, a 26-page document located on its website http://www.col.org/resources/, is licensed under a Creative Commons Attribution-ShareAlike 2.5 License and is accompanied by a comprehensive 70 page user guide. This user guide sets out the parameters and the goals the template is intended to satisfy. The goals are encapsulated in its copyright statement, cited below in its entirety:

> The purpose of the Commonwealth of Learning, as reflected in the Memorandum of Understanding, is to create and widen access to education and to improve its quality, utilising distance education techniques and associated communications technologies to meet the particular requirements of member countries. The agency's programmes and activities aim to strengthen member countries' capacities to develop the human resources required for their economic and social advancement. They are carried out in

collaboration with Governments, relevant agencies, universities,

colleges and other educational and training establishments, amongst

whom it also seeks to promote cooperative endeavours. (COL,

Template User Guide 3)

Because it is distributed in a Word format, the template is meant to be customizable

by end users. Accordingly, the user guide offers suggestions on, among other things,

how/where to save the template, how to add content, icons, and watermark, how to

delete unused fields, etc., your standard user manual-genre.

Practical Challenges

Quality learning materials are crucial to enhancing learning programs to

produce students with adequate knowledge of various disciplines. Institutions of

learning in developing and developed countries alike devote vast amounts of energy

and funds to develop instructional materials. Developing countries, in particular,

have enormous difficulty dealing both with the marginal suitability of materials

developed from their scarce and often stretched resources in meeting their learners'

goals. This limitation in resources further constrains those countries' ability to pay

highly trained design personnel or to purchase costly learning materials, further

perpetuating a paucity of high quality instructional materials. Compounding this

situation is the desire to improve the capacity for delivery of higher education in

countries where the demand is high, but access is limited, hence the turn to distance

education. For their part, providers of distance education wish to assure that there is no distance in education and that standards are not being compromised because of this model.

To remedy the problem of both quality personnel and learning materials, COL's freely downloadable template is meant to ease the burdens, costs, and obstacles associated with instructional materials development.

Method

To better investigate the merits of the COL template, I will base my analysis on what I identified in Chapter Two as epistemic *techne*. As a reminder, epistemic *techne* demonstrates situated knowledge (also "adaptive expertise" see Hatano and Inagaka), in tactually constructing material interfaces through technological dexterity and sophistry. The other body of literature underlying my analysis focuses on the nature and process of Instructional Design, outlined at the start of this chapter.

I will limit my critique to the design process, as this is the goal of my dissertation.

The COL Template

COL launched its electronic template in Ochos Rios, Jamaica at the Fourth Pan-Commonwealth Forum on Open Learning (PCF4) Conference Proceedings in 2006. The template was undergirded with the understanding that the conceptual

structures underlying good education, teaching, and instruction are universal and

that their language is shared world-wide. Just a reminder, Commonwealth member

countries are located in the Americas, Europe, Africa, Asia, and the Pacific with

individual countries ranging from New Zealand to Namibia to Belize. This diversity

presents a tall order to COL's claim to offer high quality pedagogical content for such

a diverse group of learners. One country that has adapted the COL template for its

use is Namibia's Polytechnic of Namibia (PoN) offering courses in distance

education. Georgina L Fröhlich of PoN has documented the experiences of working

with the COL template in an article "Experiences of Working with the COL Electronic

Template." I draw closely from that report in the course of this critique as I replicate

the template sections below:

Template Units and Analysis

Contents

Figure 5.3: COL Template, TOC

Note: the content sections are expected to appear in every one of the (suggested) four units.

Course overview

Welcome to Error! Use the Home tab to apply Guide Sub-title to the text that you want to appear here.
[Add a general description of the course here]

Figure 5.4 a: Course Overview

The **Course Overview** is where the designer is expected to offer a general introduction to the course. This introduction involves framing learner expectations, in terms of content, outcomes, assignments, assessment, and estimated time for completion of the unit, a unit summary, and feedback. Below are additional sections:

Error! Use the Home tab to apply Guide Title to the text that you want to appear here.——**is this course for you?**
This course is intended for people who [Add a set of course aims here].
[Add any prerequisites or skills required here]

Figure 5.4 b: Course Title

Course objectives
The objectives of this course are:

Objectives

- [add course objective]
- [add course objective]
- [add course objective]
- [add course objective]
- [add course objective]

Figure 5.4 c Course Objectives

These sections are for generating content. They are obviously big time savers for

instructional developers, but what are they sacrificing in the process?

The figure above is additional content space meant for assignments, assessment,

feedback, and the unit summary. As with the other sections, the template space is

directive and prescriptive. Fröhlich documents that "fonts were changed to more

appealing ones, the color to black and white icons, and a watermark was changed to

greyscale (Fröhlich). These changes, as Fröhlich attests, amount to "fixing the

technical style and formatting"(3) with the unforeseen result of added pages,

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resulting in lengthening the study material, adding to production costs. It is, however, curious that the overseers reduced the work of the materials developer to simply entering content tailored to fit the COL template. In this act, the essential value of epistemic *techne* has been lost.

Additional sections include the **Resources Introduction, and Header** sections excerpted and discussed below:

Figure 5.6: Introductory text

Notice the imperative expectation built into the words: 'add,' and 'complete' which demands specific mechanical action of the instructional designer. We see little regard to conceptual understanding and decision making attributes that define designing instruction, to say nothing about the tactile dimension of *techne* as a material epistemic.

Below, we move on to the **content area** section:
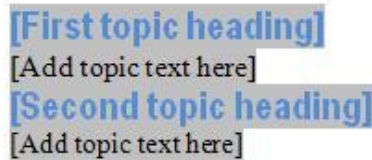
Figure 5.7: Content

There are several interpretations to be made from this frame. First, is the technological determinism inherent in the design-directive "add topic text here." For perspective, templates define the background, font styles, colors and sizes.

This brings us to an important consideration. What if we saw ADDIE and related models, not as templates, but rather as staring places for composing instructional texts? We might be able to see the numerous manifestations emanating from ADDIE and that are positioned to operate within the digital participatory space effectively and responsively. That way we might take our eyes away from the process and focus on the Design Team as it instantiates an epistemic *techne* which would manifests itself in being adaptive to situated design processes uniquely matched to meeting the needs of learners in defined contexts.

So using a template shows lack of individuality, and stereotypical formulaic designs. To design instructional materials that are epistemic requires a re-envisioned *techne* that makes for novelty and creativity necessary in bringing together components that constitute a whole art. This model can help make learning more experiential and tangible for distance learners, who thrive in this

kind of environment. It can certainly make the work of the instructional designer more engaging in instantiating knowledge.

What unfolds in the template imperative affirms the results of a study by Ray Perez and Cathy Emery in which they monitor the design practices of those considered experts at design and those who are merely following instructions. That study finds that experts perform conceptually and practically, while novices pay more attention to the outward form of design, namely fonts, format and organization (Perez and Emery 87-90). Further, those who had expertise were more reflective about their design strategies. Such conclusions are comparable to the findings by V. Goel and Peter Pirolli of architects and mechanical engineers (Goel and Pirolli 400). These findings suggest "strategies of incremental refinement" (Kaufer and Butler 44) as the designer progresses. What is lacking though is epistemic *techne*. As we now know from our discussion of *techne* and materiality of design, *knowing why* a course of action is necessary, translates into strategizing *how to* attain that goal.

The perception of the COL template is that when beautifully executed (specter of Tufte) it yields quality instructional content that's purely objective and free from human error. The template aims to improve the current state of materials design pedagogy by assuring a standardized format of delivering instruction. Specifically, the COL template is touted as having built-in tenets and applications of accepted methods of ODL designed to teach learners to function across a variety of disciplines.

Unfortunately, the sentiment associated with Instructional Design as replicating existing designs has been understood the way it was intended as evidenced in the COL template's instantiation of mechanistic design. Consider the empirical evidence emanating from Namibia's adoption of COL templates in which it sees the immediate benefits of COL templates for their clarity, utility, and the supposed intelligence that is fixed in those formalized structures. For example, Fröhlich touts one benefit of the COL template for Namibia as precluding writers from having to "think for themselves" (Fröhlich 2-3). Thus for Namibia's Instructional Designers, templates are a no-brainer. Literally. As they have to do is to adhere to the format by simply inserting the text as instructed.

The Namibian experience touts COL templates for offering a tidy model for mechanical production. As Fröhlich's account shows, the templates are themselves good for assuring standardized material. And because "writers do not have to think for themselves" (2), the template becomes a mechanism of standardization by substituting human thinking for thinking through technology. The Namibian experience shows a lack of depth, of elaboration in executing the design, and even less tactual handling of the process as an epistemic *techne*. The emphasis here is on the product. It may explain why the COL template lends itself to being focused on meeting formal structures rather than interrogating the process. Attending to Instructional Design as process is important because, as Patricia Hardrè, Xun Ge, and Michael Thomas observe, it helps designers emphasize "the systematic, circular,

iterative, and holistic nature" (Hardrè, Ge, and Thomas 83) that characterizes Instructional Design.

Discursive Analysis of the Template

When we write about technological determinism as we did in chapter II (see Ellul *Technological Society* xvii), we often focus on technology as tool, and or as a means to an end, even an end in itself. However, as Steven Katz and Vicki Rhodes have found in their article "Beyond Ethical Frames," there are several assumptions inherent in the notion of reliance on technology (Katz and Rhodes 231-237). Crucial to this discussion are social interactions that govern the "specific technological and managerial procedures" (231) necessary for the smooth running of a materials production team. What we see in COL is a design process that is determined by the technology of the template. We are perturbed that a complex design process is reduced to the effects of one part (mechanistic act) for the whole (design conceptual process).

The primacy of technology in the template is driving the design and shaping the interaction between designer, artifact, and eventually learner (cf. Winner, Agamben). The philosophical stance underlying this operation is steeped in the scientific model of cause and effect as demonstrated by Tufte's desire for data graphics whose visual presentation is the product of a content-based approach to color and form (Tufte *Envisioning* 9). In this paradigm, goals and objectives once predetermined are made to operate seamlessly without human intervention. The

question, as Donna Harraway has noted, is "What kind of relationality is going on here and for whom? What sort of humanity is being made here in this relationship with artifacts, with each other…with institutions?" (Nakamura, "Interview with Donna Haraway"). As we learned at the start of this chapter, the central tenet in Instructional Design comprises material relationships among the designer, technology, the conceptual framework, and learner needs. It takes into account the learning goals and how to achieve them artistically. That relationship is now compromised in the template.

Adapting form to content strives toward *techne*. Instructional designers might want to question the power structures (Foucault) inherent in pre-established forms and the messaging of universalization. Further, standardization has its limits, and instructional designers especially need to recognize these limitations if they are to pay attention to the tactile predilection of this discipline. Taking this approach is more participatory than the need to conform. It is emblematic of a desire to create knowledge that's befitting of the time, the audience, and the purpose. It is *techne*.

One of the motivating factors for relying on templates is the supposed formal logic inherent in the reasoning embedded in them. Templates purport a logical structure, calling to mind what the Sophists were criticized for as lacking in method. However, the Sophists wanted to reach beyond the confines of human logic in order to apprehend knowledge in all its dimensions (cf. Scott Consigny) and so went beyond method. Frank Walters in "Gorgias as Philosopher" is both supportive of this view and offers a counterstatement to the preeminence of logic (Walters 144).

Singling out the "Antilogic" that Plato takes Gorgias to task about (with regard to method), Walters offers that it is better than dialectic (dialectic posits that once knowledge has been found, the case is closed) because antilogic, "is a continuous and recursive process. Though dialectic yields knowledge, the knowledge gained is yet a new logos for the continuation of the antilogic process" (Walters 145). This antilogical process is thus a system of knowing and making known and is consistent with our understanding of techne specific to the Gorgias model. That model offers a workable method comprising analytical skills that engage situations, confront problems, and offer workable epistemic solutions.

An Instructional Designer like a sculptor must have a reasoned sense of ownership to execute her tasks. Notice that information and instructional production are similar to the artistic tradition whose content in practical ways is inseparable from how the tactile activity expresses the specific form and content pertinent to the situation.

For perspective, consider that The US Geological Survey lists an Instructional Design team (IDT) as comprising five–to–ten people, whose roles are defined as shown in the table that below:

Instructional Design Team

- Lead Instructional designer (primary instructor)
- Other Instructional Designers (other instructors)
- Subject-Matter Expert(s) (SME)
- Illustrator(s)
- Testers:
    - Student Testers
        - At least 2 student testers; no more than 5
    - A SME Tester, other than the one that is on the Design Team
    - OED Tester
        - Tj Lane
- Editor (I suggest using an editor that is familiar with editing on-line documents as they will have some good input on usability from the user's perspective.)
- Final Course Q/A Check
    - OED (Tj) and two OED Regional Employee Development Liaisons
    - SME. Find another SME that hasn't been involved with the design or testing of this course. It helps to have fresh eyes look at the course.

Please note: A Lead Instructional Designer and OED are required.

Table 5.1: Instructional Design team (IDT)
 Source: http://www.usgs.gov/laws/privacy.html

The wide ranging skills of individual teams members on the team involves

making decisions both initially and during crucial moments of the design process.

The Instructional Designer operates much like a sculptor, who has to independently

interpret a sculpture's functional role and transform it into an artistic yet epistemic

instructive tool. That quality is missing from these pre-conceived notions of design.

We know from the discussion in Chapter Two that a work of art is always a

condensation of the complex reality of and art is the means through which one

learns to perceive an intricate solution through simplified images (cf. Jacobson). Being invited to simply customize solidifies this low investment expectation resulting in a simplistic interface that conforms to the standards of mass production. And so the template as a technology for producing instructional discourse can be deemed overly simplified. It calls to mind Donald Norman's description of easy technologies and how they undermine users' sense of accomplishment, and ownership (see *Emotional Design* on the Betty Crocker simple, easy-to-use recipes). Similarly, technologies of meaning making that simply require users to add, mix, and publish undermine human agency, discount the material element, and to an extent, intentionality, in ways that render humans' cognitive and tactile affordances redundant. This redundancy is in part because the technology occludes the need to engage with the materialist and anatomical in working with the technology. We call to mind N. Katherine Hayles' *Posthuman* in which the body is what is lost in cybernetics, in which humans become information patterns, data that can be analyzed and incorporated into the apparatus.

Information designers think in artistic, perhaps subjective-based ways, to address the subject matter and its delivery. They consider learner needs in the triumvirate of designer, materials, and learner. They need not limit themselves to rational means alone. As Alan Hill has shown in "Meaning of Education," rationalists can draw from Comenius' vision of a world of instruction, whose situated understanding of the learners and their conditions, recognized on the basis of experience and the subject matter is not subsumed by universal learning

instructional maxims (Hill 305-307). Similarly, Hurbert Dreyfus in "How Far is Distance Learning From Education?" makes the case for embodied learning, the kind that produces experts out of novices, but is somewhat diminished by disembodied ways of delivering instruction (Dreyfus 168-170). Accordingly, Dreyfus calls for the kind of learning environment that is informed by a designer's "immediate intuitive situational response" (170). That immediacy and situatedness is no doubt lost in ceding deliberative design choices to a preconceived template such as COL's. Moreover, Dreyfus' analysis distinguishes the defining role of Instructional Design as not simply making information available to learners, whose role it is to learn it. That belief is what fosters the notion of universal, replicable designs that are system-centered and that ought to be framed in a reflective (tactile) and epistemic *techne*.

Granted, COL's overarching goal was to improve the educational content of the study materials and the educational quality as a whole. The vision for achieving this goal rested in standardized material designed through "relative ease of use" as Fröhlich attests in her piece. The unforeseen consequence of this quest for normalization is that it reveals the limits of standardization. The apparent simplicity of the ease in design that comes with templates makes them very attractive. However, a number of problems are associated with such simplicity and ease. For perspective, Information design in general, and Instructional Design in particular, demand a wider understanding of detailed information pertaining to the subject at hand. All possible information cannot be represented through simple forms. Thus

the constraints imposed by the template and the user interface mean that the quantity of content in a controlled form of delivery must be limited.

It is borne out in practice that standardized ways of doing things tend to be tuned to attaining singular objectives, in this case, avoiding human error. Their preference for method is based on technologicalization. Consider the manner the military recruits and trains new recruits or how assembly lines operate in already thought out ways that amount to a technologicalization of instruction that fits within a template frame. But how can we expect a single controlled technology to capture the processes of Instructional Design and delivery for subjects ranging from history to mathematics, to art, and business? Notice that specific mention of the template's shortcomings at PoN had to do with the shortcomings that showed up in "working with specific mathematical programmes that insert special characters as it threw out the formatting of the document" (Fröhlich 3). Once more, emphasis on the template dictating its form, without due regard to the genesis of knowledge gives the appearance of a "black box" effect in that the designer has little or no knowledge of the rules that govern the operation (cf. Latour, *Science in Action*).

As discussed in chapter II, an epistemic *techne* offers ways in which craft activity amalgamates the instrumental, the artistic, technology, ethics, expertise, techniques, and material into a tactile interface. This epistemic *techne* affirms "the profoundest rationality" as Hegel would say (Hegel, *Aesthetics Lectures* 53). Therefore *techne*/craft as we saw in the corpus of the sophists, "cannot simply re-present given content, but must *transfigure* whatever it presents so that the form of

its appearance is uniquely tied to its content"(Winfield 98, my emphasis). This articulation fulfills the theory of form as epistemic, of art as *techne*.

And it is certainly a departure from viewing knowledge principally through the prism of reason based on Cartesian and mechanistic forms aided by an external norming body (in this case COL) as opposed to the situated context of particular learners.

Concluding

I have challenged current models of Information Design and called up their shortcomings in, for example, designing a fitting response to design tasks in Instructional Design.

The goal of Instructional Design, despite the ease of mass-production, is to design for learners placed in their immediate environment. Individual designers need to become active participants in the design process as they search for locally significant ways of meaning making and connection for those learners. For, to design means to think out a plan that oversees the production of artifacts, and is epistemic. We cannot conceive Instructional Design independently of the society the materials are meant to serve (cf. Margolin), making a single model of design for all, all but a farce (Buchanan, "Design Research" 7).

The technology of the template should be perceived as a material element, a choice format for presenting learning content rather than as the one in all determinant COL has (inadvertently) made it out to be. For it can be argued that the value-added formulas that drive the template are only as accurate as its inputs.

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Tenets of visual organization satisfy in the minds of instructional designers, scientific support of tried and true principles of composition and page layout. It may be true that COL's broader vision of a commonwealth of nations, bound by a shared colonial history, is altruistic enough to suggest its intentions for unity and a shared sense of belonging. And yet COL's mission promotes individual literacy while universalizing it. COL templates then act as techniques for enabling learners discover knowledge.

It is clear that new emerging social and technological conditions that define the working space for Information designers call for an engaged material and tactile response that entails an epistemic *techne*. In order to have an epistemic *techne* of Information design, designers should account for the material conditions, the conceptual, and the tactual elements— elements that influence the genesis of discourse and knowledge rather than seek to conform to the *right method* with no epistemic grounding.

We acknowledge that for a teaching module to be deemed successful, the instructional designer has to demonstrate technical correctness, derived from theories of learning and instruction (Glaser; Reigeluth and Stein; Scandura; Gagné and Briggs). Indeed, Instructional Design demands that the designer find a rapprochement between two general principles, namely: learning and instruction, to develop "specific tasks or domains" (Perez and Emery 81) that are instructional. But that's not all. There has to be a manifested artistry in a dynamic interplay between *techne* and the systematic method in the process of making instructional knowledge.

Perez and Emery attribute this burden to the fact that "Instructional Design theories are prescriptive in nature" (Perez and Emery 81) and therefore do not address what "designers actually think and do" (81). Thus Instructional Design is not simply a technical, mechanical matter as COL's approach seems to reinforce. It has a tactile dimension, whose tactility is lost in universalizing the design of knowledge, and, along with it, materials that are immediate, engaging, and focused.

There is no question that instructional materials must have local appeal. To do so, they must be engaging. The conflict inherent in the contrast between these realities can be resolved, and it should be, by recognizing the simple facts of the knowledge construction characteristics of design—their tactile epistemicity. It is not enough to impose the fixed conventions of a template on a given set of learners. However, grounding those epistemic qualities in *techne* and how it discovers and communicates knowledge accommodates the interplay among the instructional designer, content, and learner demands, in a non-mechanical approach.

Unfortunately, evidence from Namibia's PoN indicates that the appropriation of the COL template shows Instructional Design as a mechanical skill. All instructional designers need is to acquire the skill long enough to get them through each materials development process. As I argued in Chapter Two on *techne*, a new remediated *techne* would efface these tendencies.

Adhering to COL templates has a corresponding value of loss. This loss of vivacity renders moot the ability for instructional designers to generate a narrative that engages learners. Instructional designers who might have applied their

material and situated knowledge, their epistemic *techne*, to the Instructional Design process are deprived of the process of invention and discovery.

By emphasizing the content format and discounting the narrative and poetic aspects of learning materials, COL templates have altered the content of the material itself. The templates present some truths as being self-evident and accessible to all learners if designed the COL way. As a result, the *new* formulation becomes decidedly illustrative rather than knowledge constructing. And it is *non*-epistemic.

We know from research in Information Design that the media and its role in delivery is of great importance (Allen, Levie and Dickie). This research shows that advances in technology propel designers of information and instruction to experiment with newer technologies in attempt to determine the medium that can positively help with cognitive and problem solving skills. With that in mind, we'll explore takeaways, discuss the limitations of this study, draw conclusions and implications for the field and future research on the merits of epistemic *techne* in Information Design.

CHAPTER SIX

A 'Bold Prometheus': Tactile *Techne* in Information Design

Conclusion

Information designers have embraced the term *design* to define a systematic process of problem-solving through precision and expertise in planning. They also attempt to design for participatory activities to engender active engagement in the learning process. All of these dimensions of Information Design can lead us toward a *bold Prometheus* in design (I use the adjective bold to counter Bruno Latour's vision of design as "A Cautious Prometheus"; cf. Stiegler). I have suggested that one way to engage this 'bold Prometheus' is by embracing epistemic *techne* in a participatory and meta-design fashion, based on first principles, as Aristotle opines in *Metaphysics*. This embrace of an epistemic techne in Information Design begins with the recognition of the limitations posed by rationalistic and modernistic models alone as the answer to information overload.

I conclude with these thoughts in this chapter.

The study set out to explore the possibility of epistemic *techne* in Information Design. I have shown both the necessity and the means to engage *techne*. While I am aware that it often takes a while for a paradigm to be rejected (Kuhn), Information Design as a practice need not merely reflect the history of its founding models, but should also allow for thinking through design in rhetorical situations. Through

epistemic *techne*, designers of information can continue to focus and reinvent their discipline in ways that meet rising challenges, opportunities, and circumstances.

As we noted in Chapters One through Three, much of human inquiry has favored the logical/rational approach in mostly abstract terms. Information design, while it benefits from this paradigm, is a practical discipline that calls more for application than discursive modalities. To the extent that it brings together theoretical and practical application, it defies technological determinism. So emerging out of the logico-rational binary is an epistemic *techne* that does not conform to Aristotle's essence of craft as universal, nor reduces design to a mechanical operation but rather utilizes the particular along with the universal in participatory interpretive acts. This is important because individualized productivity is essential to counter mechanical reproduction. More importantly, meaning emerges as designers foreground the material aspects of texts, thereby inviting learners to interact with the material.

The value of emphasizing an epistemic *techne* in design as theory and as practice, as deliberation and production is essential to the practical application of Information design. It can help underscore the notion that the form of tactile interfaces affects meaning and that a tactile interface as a language of design can be tactually manipulated both physically and imaginatively to yield a true *ethos of expertise* essential to achieving a conceptually and functionally appropriate goal for end-users. The corpus of that ethos comprises diagrams, colors, shapes coded with spatial, numerical, temporal, and other meanings simple and complex.

Epistemic *techne* is exercised in rhetorical choices governing invention, style, arrangement, and is demonstrated in instances like what Gorgias did in his "Helen," wherein he made a conscious choice of particular tropes to help weave his narrative so that his audience's "basic acculturation" (Lanham *Handlist* 46) allowed them to consider a new reality. It is also rhetorical power, as Steven Mailloux argues. For Mailloux, rhetorical power is made possible because "theory and rhetorical histories" (Mailloux 18) allow us room for interpretive debate. Epistemic *techne* is rhetorical power (cf. Scott; Golden and Rieke).

I have made direct and in some instances, indirect references to rhetorical, modern, and postmodernist theories and the environment they have created for design. In the context of that discussion, I have noted that design is not value-free, and neither is technology nor theory (Feyerabend; Dickson) both attributes of design.

Far from reverting to design as intuitive and particular to creative geniuses (cf. Schriver), I have observed the need to see Information design as epistemic *techne*. We may identify some of this *techne* as invention, judgment, decision making, and evaluation in a situated place of knowing. These strategies recognize designers' (human) agency to engage their intellect and ethical character informed by production frameworks that are conceptual, tactual. Such tactile elements may be physical, or even abstract in which case they appeal to us in visceral forms ranging from our sense of sight to affect, to mood.

Viewing Information design as *techne* makes room for a model with which we can measure and investigate the ever changing design environment in light of an ever shifting media. As an epistemic *techne*, Information design could operate in a wider arena of dialectic, or deliberative rhetoric, placing human agency front and center in the design process, rather than ceding that position to algorithms and statistical computation (cf. McKeon "Political Thought"; Buchanan "Humanism, and Design"). Dialectic in epistemic *techne* serves as a creative force for exploring opinions and knowledge pertaining to the design challenge.

Our understanding of *techne* is made possible through merging thought with materiality as well as the mechanical and the artistic in ways that extract the particular from the universal (an Aristotelian principle; see also Nakamura, "Materialist Informatics"). These are foundational to meeting conventions normally associated with documents such as annual reports, memos, and instructional materials to conform to user expectations. It is important that conventions as organized systems of meaning bear strongly on making meaning without usurping the purposeful endeavor essential to design and materiality. Perhaps if we understood the design text as a material structure that allows designers and learners to think, and that in essence influences our thinking and writing, we might rethink the relationship among form, content and interface.

We might even go anti-foundational.

Because the idea that "the physical form of the literary artifact always affects what the words mean" (Hayles, *Writing Machines* 25), the interface should not

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simply be a channel, or even a transparent window into knowledge. If it is, it risks

being read as an artifact (Winner), an apparatus (Agamben), a disciplined way of

doing (Foucault), where the hidden process runs without a reasoned account, or

intentionality. We prefer that at all times designers be conceptually and materially

aware of their actions in the Information design process.

When information designers also accept materiality as a necessary premise

on which their craft is based, they cease to look at the template, the page, or the

screen as a transparent window into content. It becomes an active component in the

meaning making process (see also Drucker, "Literal Materiality"). This recognition

would enable us to move away from our assimilation of Kantian assignation of

meaning to judgment and pure reason. We might look to physical properties of texts

for meaning along with judgment and reason as epistemic.

Technique, as we saw in Chapter Two on *techne*, morphs into technology and

mechanical science as a form of production. Operational aspects of *techne* in

Information design involve planning, managing, and publication—all technological

applications necessary in instantiating instructional materials. And while these

practices have been fraught with rules, procedures, and techniques, all consistent

with the rational principles articulated in Plato and Aristotle's definition of *techne*,

this new epistemic *techne* addresses the physical properties as aspects of meaning

making.

It is well and good to have technical exactness, given that certitude serves the

means ends trajectory and that there is a measure of instrumentalism in designing

information. However, Information design can be more than the art of the usable. It can be the art of the epistemic. And that ability is made up of several elements that have variations of art, expertise, systematic rationale, and invention as they operate within given rhetorical situations to yield a tactile interface.

Information designers operate in specifics—in areas and subjects, common to all artistic and creative forms of production. Designers may choreograph their routine so systematically, and with exact precision, but that does not take away the element epistemic *techne*. In the epistemic realm are multiple elements ranging from virtue/ethics to technology, and even ritualistically enacted acts that echo lessons from the sophists and from bodily pedagogies.

Information Design has been characterized by terms such as ease-of-use, ends and means, all mechanical elements. On the other hand, *techne* has been understood as a rational principle that presides over the art of making. That definition is reductive. What I have proposed is the merging of the mechanistic, the rational, and the tactile in virtuous and aesthetic ways to productive moments in Information design. This remediated view, while it operates within the universal, does not marginalize the particular. In fact, there are moments where the particular takes preeminence in addressing an issue.

Moving Forward

Information design can take advantage of existing platforms in Web 2.0 to meet the discipline's need for evolution and innovation. Operating in a "meta

design,[8]" platform that makes collaborative design possible, Information Design can meet the emergent problems that challenge designers at every turn during the design process.

In this environment, the design process can be broadened from the usual two phases, namely problem definition, and problem solution to include a contingent phase for the unforeseen, yet potentially disruptive problems. In engaging the issue as a team, information designers can devise adequate solutions to emerging problems. They can operate in a sculptural essence where sculpture's concerns for space and materiality can be actualized. Further, the potential for situated knowledge, for taking advantage of opportune moments through dialectic and deliberation, inventing new ways of rendering knowledge (epistemic *techne*) is made possible. It is already the case that Information design by design calls for distributed knowledge emanating from developers, designers, instructors, and illustrators working in concert. In participatory scenarios, room for experimenting is abundant, allowing the design team to operate within the possibilities of invention, evaluation, and production.

You may recall that in Chapter Two we referenced the bodily arts of rhythm, rhyme, and response. The design team can acquire mastery, even expertise through iterative acts that, as Hawhee opines, "heighten[s] the embodied nature of learning" (Hawhee, *Bodily Arts*128). The interface in the participatory design model would

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[8] For more on meta-design, see Fischer and Giaccardi

allow for ideas to be worked upon during the design process rather than beforehand. Levels of design are essential to such a design team.

We have seen how current models that emphasize the hegemony of theoretical science, act like gatekeepers of knowledge in that they have the ability to determine what counts for knowledge and what doesn't. This is not to say that those who play a validating role in designing tactile interfaces cease to matter. Rather, design as a joint effort among designers, researchers, and users challenges the traditional models upheld to create a sense of order. In its place, we can have a fresh opportunity for conceptualizing the teaching/learning space in a connected sense. As a *techne*, it has the potential to lead to emergent and connected learning experiences.

Such an approach would also make possible the realization of Polanyi's tacit knowledge in that different participants would bring experiential knowledge to bear on the design experience. In the process, such tacit understanding of the design process might become more explicit and therefore shared to broaden the epistemic process.

Tools, techniques, and technology that make the work flow easier will be demonstrably viewed and may be documented for future use. Moreover, procedures enacted and evaluated as the design process unfolds, can be reviewed for their efficacy within the theoretical framework. And as participants document the processes and steps they took to enact a given phase, those steps can be shared and distributed as ways of epistemic *techne*.

Within this space are possibilities of formative ways of evaluating the design process by examining concrete experiences that can build the alacrity required to cope with an ever growing abundance of resources. As mentioned before, Web 2.0 has made possible novel approaches to creating content, revising, and refining in an epistemic manner.

Further, an organizing mechanism can emerge from this platform in planned, artistic ways, that eschew universally acclaimed forms to yield a rigorous intent such as is seen in Wikipedia's disambiguation pages. [v]Designing in the participatory model becomes the basis for episteme, a *techne*, rather than the pre-determined forms.

The design team would engage in the kind of work space that facilitates flow (Csikszentmihalyi), allowing the team to exhibit *techne* with its nuances in sculptural forms and meanings by utilizing subtle qualities that are not easily verbalized, but must be understood in context. We know that the work of *techne* reveals the stance of things, which is why it militates against stratification. *Techne* gives us access to what would otherwise be concealed. As it opens up things that might otherwise be finalized, fixed, it makes room for multiplicity**.** *Techne* sources of discovering new things to convey both specific and general for interpretative purposes is essential. *Techne* makes possible what Robert Briggs has called a "'factual approach' of practical utility and the 'creative approach' of purpose, sensitivity, and the ability to visualize an emotionally and aesthetically exciting image" (Briggs 7).

Information designers need to marshal not only expertise and analytical skills, but also engage the technology of production and of visualization (graphics, designing), to render through both the "costume and the play" as integral to meaning making. As Bolter and Gromala show in *Windows and Mirrors*, the possibilities of digital technology to "fascinate, exhilarate, and sometimes provoke" through digital art are to be embraced and not hidden as Don Norman's *Invisible Computer* offered (2-3).

In an age of epistemic *techne* where we recognize materiality, we needn't talk representation and simulation as binaries. We can talk about the interaction between the two and how that interaction instantiates meaning. More importantly, we are made more aware of the role technologies of production play and how we can develop the functional and rhetorical skills necessary to embody text and operate effectively within appropriate media for every given occasion.

Being aware of the significance, possibilities, and limitations of technologies of making reminds us that they are not neutral ideology free tools. In fact, several historians and philosophers (Foucault; Winner; Barrett) have shown that technology is not free of ideology, but that it is a product of the ideological and social persuasions of its origin. Our task then is to understand how technology is not merely carrying out its functions, but how it induces a form of human behavior (Moses and Katz 77-78).

A design process such as I propose creates an inherent tension between standardized way of doing as seen from the process models of Instructional Design

and improvisation. The two can, however, merge in a *common design workspace* that ensures continuity through iteration in design. The workflow would look like this:

Table 6.1: Interface of a 'bold Prometheus' of Epistemic *Techne*: A Collaborative-Design Model

	Levels of design	Details	Depths	Mechanism	
Tactile Interfaces	First level	Analysis, Problem formulation. Contextual inquiry Abstract/conceptual/ insight –based planning determining tasks creative judgment resulting from implicit/tacit knowledge	Epistemological	Determining content complexity and novelty determine the medium Tacit implicit	structural
	Second level	Dialectical/deliberative Conversational/ Situated response artistic activity practical	cognitive	Application of method to generate and evaluate one or more options. Leveraging IDT intelligence, tactual the place for invention that would bring about ideas, generating content, building tasks, activities, and feedback	Participatory
	Third level	Physical detailed, directional…problem solving ideas/ design Blueprints skilled	technical	Techniques and methods of visualization…affective and productive Iterative design based on existing models technical proficiency is an important part of the meaning making process as it offers the team options for rendering ideas through visualization, animation, contextualization and, together, these processes would render	
New modalities of presence| embodied knowledge | tactile interfaces reflective of epistemic *techne*.					

Limitations of this Dissertation

The thrust of my dissertation was to propose new modalities of design for Information and Instructional Design. I have attempted to do so within the confines of the dissertation genre and the theoretical nature of this dissertation. And while I have generally based by critique on Information design and specifically engaged Instructional Design as an exemplar, I did not engage theories of education because they are already subsumed in Instructional Design.

Further, even though I drew closely from the art of sculpture, I recognize that artists work individually based on their conceptual framework, skills, and with the materials they choose. It is true that a novel way of modeling an artifact can be the work of one designer's concept, expertise, and skill. However, we now know that Information design, is, by necessity a collaborative venture. And that limits what we can borrow from sculpture. Still, both Information design and sculpture do assemble and construct by combining and joining a variety of materials to create form in 3D.

Engaging sculpture whose construction and positioning invites physical participation and comparison with Studio Art, we could approach Information Design beyond Cartesian binaries of mind/body. In *techne* we can locate subjectivity in knowledge construction, allowing us to focus on the interior logic of the texts as well as their visuality.

Owing to the changing nature of technologies of communication, I cannot predictably state the future of Information design. However, given the platforms

existing right now, I have proposed a robust approach to design that could very well enable us to develop and create new modalities of presence in Information Design.

The study was limited to finding alternative approaches to designing information. Though user-experiences were deemed significant for the proposed modalities of design, a further study might be best suited to look into their effect on user experience.

This dissertation is a start toward an epistemic *techne* of Information Design that I can envision unfolding in institutions of learning and other places that handle large information. The next step in this research will be to engage the theory I have formulated to put epistemic *techne* to the test. Once enacted, I imagine the design process will unfold differently than it has heretofore. That study would help me draw more evidentiary conclusions with regard the future of Information and Instructional Design.

The emerging *interface*, tactile, engaged and transformative of the material world, is a philosophy of epistemic *techne*.

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Notes

i For more detailed analysis of the relationship between *techne* and tuche, see Kelli Pender's discussion of *techne* as an art of writing that occurs in "multilateral" ways.

ii Because aesthetics, is a word whose meaning we identify with the moment in which particular facts are judged, I am defining aesthetics as a work of art that can be interpreted as both visibly and intelligibly knowledge. Aesthetics are not ornamentation, but rather an inscription of form and content as one. I am deriving my understanding from Kant's *Critique of Judgment*

iii My thinking here is that artifacts and/or texts as products of design are not just discourse that fit the Cartesian model of mind/body binary. Rather, a techne such as I envision, allows for a move from conceptually representing texts in the abstract as information devoid of body (the way Shannon and Weaver theorized about information) to instantiating meaning in its material/physical form as in its content. This latter form is what N. Katherine Hayles has called embodied text, which is situational, kairotic, contextual—a convergence of concepts, their articulation/visualization and manifestation. If art is considered mimetic, it follows that a represented object ought to be cognitively intuited by viewer as it is rooted in concreteness, immediacy as part of the mechanism by which the artifact is invested with meaning through use of shapes and that resemble the object it represents rather than in the disembodied know-how that is the Platonic ideal. Abstractionist artifacts are not representational and are in this sense self-referential, autonomous. Such art only represents its own construction, its own internal structure and fulfills what Krauss has described as the logic of modernism, i.e. a placeless, self-referential, and itinerant. Similarly, Terry E Smith differentiates between "'pure' art of abstraction" from a "more complex naturalistic art" (206).

iv In arguing that sculpture is not trapped in the modern/post-modern wedge, I aim to show that where modernity supposedly breaks with the past to uhser in newer, better ways of being in the world, (figurative)sculpture in utilizing materialist and bodily tools epitomizes the essence of continuity with the past without suggesting a need to break with it in order to inhabit the future. Sculpture does not usher in a radical new age of technological dependency, but enables humans retain their agency in making their world through a motley combination of natural, human, and technological affordances. This is in part, because, as Latour argues, the modern world reduces objects of human and non-human knowledge to things, and postmoderns "accept the total division between the material and technological world" (Latour *Never Been Modern* 61), which sculptors do not.

v Disambiguation pages often take care of similarly worded topics while 'infoboxes' make possible the navigation of related topics.