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THE EDUCATIONAL VALUE OF CRAFTSMANSHIP:

TAKING ACCOUNT OF THE DEEP STRUCTURE OF WESTERN THOUGHT

AND ITS INFLUENCE UPON EDUCATION IN DESIGN

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THE EDUCATIONAL VALUE OF CRAFTSMANSHIP:
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A DISSERTATION APPROVED FOR THE
DEPARTMENT OF EDUCATIONAL LEADERSHIP AND POLICY STUDIES

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Dedication

There was a muddy centre before we breathed.
There was a myth before the myth began,
Venerable and articulate and complete.

From this the poem springs: that we live in a place
That is not our own and, much more, not ourselves
And hard it is in spite of blazoned days.

—from Notes Toward a Supreme Fiction
Wallace Stevens 1942

This dissertation is dedicated to my maternal grandmother Sarah McDonald Watson, 1913 – 2005, and to my father Thomas Jerome Cline, 1939 – 2003.

My grandmother taught me that every person has the right to question the place that they find themselves in and, if they find it lacking, to create a new place for themselves. Her intelligence, her compassion, her humor, her unflappable domesticity, and the cunning of her hands helped in making me who I am.

There are many things that I owe my father. Foremost is my ability to make things and to have a competent understanding of how I made those things. From a young age, I assumed that everyone knew how to do the things that my father taught me. I am also indebted to him for my curiosity, my wanderlust, and that odd mix of idealism and pragmatism that colors my worldview.

Any positive traits that I possess are but a poor reflection of their examples. Their lives and their lessons remain the model of how I understand the world and how I make my way in it.

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Abstract

Criticisms of design education suggest that educational practices have failed to produce competent designers and, concurrently, failed to allow for participation in culture (Norberg-Schulz 1965, Rudofsky 1987, Ponce de Leon 2010, Norman 2011). These criticisms manifest themselves in questions of design methodology and in issues of race, class, and gender equity in both educational and professional practices; however, they have not engaged design education from the standpoint of educational philosophy. This dissertation begins a philosophical inquiry of those criticisms of design education by critically constructing a history and philosophy of design and design education. This construction suggests that design is, at a very basic level, analogous to the processes and practices associated with making (Frampton 1996, Sennett 2008). Resultantly, this work explores three ways of making—artistry, workmanship, and craftsmanship (Risatti 2007)—whose beliefs and practices are beneficial in understanding how educators might think about and teach design.

This exploration of ways of making engages the work of educational philosophers as a means of coming to terms with criticisms of design education. Building from Jane Roland Martin's project of cultural bookkeeping (Martin 2011), this dissertation theorizes a taking account of ways of making that can influence how we understand design. Taking account allows for the identification of assets and liabilities that impact design education and, once identified, can be fostered or eliminated in educational practice. Taking account requires a methodological strategy that can identify those assets and liabilities associated with education in design. As practices in education both shape and are shaped by culture (Martin 2011), this work engages critical theories that have been applied to

other cultural practices. This dissertation has adapted, associated, and applied approaches by feminist scholars (Warren 1990, Korsmeyer 2004, Harding 1993, hooks 2015, Lugones 1987, Laird 2014, Code 1991). It has engaged the writings of African-American educators (Du Bois 2014, Washington 1986) and critical race theory (Anderson 1988) when exploring the educational practices that characterize African-American education in the South. The perceived liabilities of vocational education emerge from an exploration of the works of educational theorists (Dewey 1966 and 1997, Coffey 1992, Hager and Hyland 2002, Lewis 1991).

In re-conceptualizing Vitruvius' *de Architectura* as a treatise concerning the educational value of craftsmanship, this dissertation theorizes that his call for utility, durability, and beauty is a statement of the necessity of the designer—the *architectus*—to make judgements. This ability to make judgements—judgements that require the knowledge of *epistêmê* and the "know-how" of *technê* (Aristotle 1999 and 2004, Plato 1991 and 2002)—is the most essential skill of the designer if she is to attain the height of her profession; if she is to produce useful physical artifacts that assist in mediating human relationships with and in the world. Further, making judgements can be applied to other educational practices that require creative and critical outcomes (Churchman 1967, Schön 1983, Waks 2001)—it can be applied to practices in both design and general education. The ability to make judgments and the ability to recognize and accept that knowledge is not limited to the epistemic is a result of an education in craftsmanship. The educational value of craftsmanship is an educational theory that should provoke conversations among a variety of educational agents and, resultantly, lead to new areas of exploration in design education and in more general educational practices.

Introduction

Expectations and Design Education

As an undergraduate, like most students, I wanted to learn those things that would help me succeed in my chosen profession. For me, that meant that I wanted to learn to become an architect and, more broadly construed, a designer. Of course, at that time, I was not really sure what that meant. I do not recall having any specific expectations, just a belief that my teachers would know what I needed to learn and that we would, together, work toward my goal. I found my way to Auburn University's School of Architecture after very brief stints in engineering and visual arts. I did not know what becoming an architect might mean to me; at the time, what I was learning in my design classes seemed similar to the things I had learned in my two- and three-dimensional art classes. As an architecture student, I found that the things that I had learned in my art classes were applicable to my education as a designer; however, architectural education moved beyond the ordering principles of balance, harmony, and rhythm and beyond issues of scale and proportion that I had learned as an art student. Architectural education included conceptual issues—it engaged design from the perspectives of psychology, sociology, cognition, and philosophy—issues that may have been present but not articulated in my art classes. Questions of design were more than questions of aesthetics and the arrangements of form and space; they were questions of how humans understood and lived in an experiential world. At Auburn, the curriculum was driven by these questions of how humans encounter the world. Resultantly, the central problem of architecture—and, by extension, design—was one of human dwelling. This question of dwelling, in one form or another, I hold to be the central question of all forms of design—a question

of creating physical artifacts that assist humans (and non-human animals) in mediating our relationships with and in the world. As an undergrad—and prevailing over the personal beliefs about design held by any one of my professors—a concern for human dwelling was at the forefront of my education. Design, at least for me, was a process of inquiry into what it meant to inhabit the world and how to make that habitation both meaningful and appropriate. For me, design was—and remains—a process of exploration and discovery.

Since I have become a design educator—at least in the formal sense of teaching as a profession—I have found that students come to my classes with different expectations of what it might mean to study design. Perhaps they are more practical than I was. Perhaps their expectations are a result of social, political, educational, and economic forces; forces that have become increasingly complex since my time as an undergrad. Regardless of the reasons, most of my students appear to come to school with different expectations of what a design education might be and of how that education should be conveyed. I currently teach Architecture, Interior Design, and Industrial Design undergraduates and all, overwhelmingly, begin their educations with similar expectations; expectations that have led me to question both how and what I need to teach in order to have them succeed in their professions.

The expectations of my students are difficult to articulate. They come to school with expectations that, at least to me, seem antithetical to design. For the most part, I would suggest that my current students do not have the expectation of a curriculum based in exploration and discovery. Rather, they expect a more formulaic pathway that leads to them being designers. They expect that there will be design problems, but they also

expect that there will be singular and correct answers to those problems. Exploring precedents, finding analogous relationships in the solutions to similar problems, creatively exploring possibilities, and—perhaps most importantly—learning through experiments that might result in failure all seem a waste of time to them. I very often hear statements like, "Tell me what to do and I will do it" or, in defense of their work, "That's what my professor told me to do."

Seemingly, for my students, their expectation of learning design is no different than their expectation of learning math, or science, or history.[1] In these classes, they expect to attend lectures, learn facts, be tested and, resultantly, be qualified in their knowledge. Apparently, my students have become accustomed to proceduralist forms of education and, therefore, their conceptions of knowledge require the absolutism associated with binary certainty—they require a universal set of truths and falsities that exist without question. As a result of their habituation to an acceptance of proceduralist practices, they are not prepared for the levels of uncertainty that come with design education. They are certainly not prepared to attain, or hold as valid, knowledge that comes through acts of making and doing; forms of knowledge that are central to education in design. It is this observation, coupled with another, that has led me to this work; that has created a foundation for my present inquiry.

Diversity and Design Education

The second observation that has led me to questions concerning design education was an observation concerning social equity. As an undergrad, I was not aware that there

[1] At least in the way that these subjects are presented to them prior to their experiences in college—as subjects with definitive answers that are not subject to interpretation.

were race, class, and gender biases in education. This was more than likely a result of my unexamined privilege—at the time I was not aware of privilege or of the results of that privileging. Diversity was not an issue that was articulated at Auburn in the late 1980s even though the vast majority of my classmates were middle-class white males. Likewise, in my professional career as an architect, diversity was not an issue that demanded significant reflection. The profession echoed my educational experiences—most architects were middle-class white males. In my career as a design educator, issues of diversity and inclusion have come to be significant concerns in design education, in design practice, and in our Western cultural practices in general.

Most of my professional career as a design educator has been spent in state universities; in institutions whose student bodies should mirror the race and gender diversity in the populations from which those students are drawn. Generally, this is the case—there appears to be appropriate race and gender representation in my undergraduate classes. This representation, however, does not seem to have affected the race and gender disparity in the professions. According to the Missing 32% Project, 42 percent of architecture graduates are female; however, the number of licensed female architects is only between 15 and 18 percent (Dickenson 2014). While there is no reliable data correlating education and employment for minority architecture students, only two percent of practicing architects identify as African-American (Oguntoyinbo 2013).[2] These studies, and others exploring the same disparities, suggest that "women and people

[2] The terms African-American and Black are used almost interchangeably in this work; however, they are not generally interchangeable. I have, in most instances, chosen to use the term employed by those I have cited; i.e., if an author uses the term Black, I, in response, use that term. In contemporary practice, Black refers to people of African descent through the African diaspora. African-American refers specifically to Black people from the United States whose ancestry is tied to practices of enslavement.

of color continue to lag behind white men in terms of concrete measures of career success" (EQxD 2016). Further, studies of this kind begin to offer "insights into ways in which individual practitioners, employers, and the industry as a whole can make changes on a policy and culture level that promote satisfying careers" (EQxD 2016).

This disparity between education and employment has become significant to the profession; multiple studies and initiatives have been launched in efforts to mitigate both race and gender inequalities. These efforts, as promoted by the professions, have also begun to impact educational practices. They have resulted in the inclusion of non-Western traditions in existing classes and in the creation of new classes exclusively devoted to diversity issues. While these inclusions have begun to address issues at the surface of the problem of social equity, they have not begun to impact the deep structure of educational practice. These issues of race and gender equity are issues that design educators, for the most part, see as social problems rather than as problems related to teaching and learning. In other words, most design educators do not see issues of race and gender disparity as issues specifically related to pedagogical practices or to curricular content.

It was these realizations—that students' expectations of design do not cohere to educational practices in design and that social equity is not generally considered a problem of pedagogical practice or curricular content—that led me to my questions of how and what it means to teach design. These realizations led me to begin to think of them as problems that should be addressed through educational philosophy; that educational theory might allow design educators to begin to address these issues in more significant ways. In an effort to address these issues, this dissertation is an attempt to

begin to articulate a response both to student expectations and to the disparities of race and gender that have become significant liabilities to education in design. It was these issues that led me to pursue this work; to explore what I mean when I think about, talk about, and participate in, the education of future designers. I began this exploration by engaging criticisms of design education and by questioning what it means to be a designer. In attempting to address these criticisms and answer these questions I hope that I can begin to disrupt student expectations, engage a more inclusive way of teaching, and provide my students with the education necessary for each of them to become capable and competent designers.

Crisis in Design Education

For the past several generations, design education[3] has been in a continual state of crisis; a crisis consisting of a highly self-conscious questioning of academic identity and of unresolved self-criticisms regarding pedagogical practices and curricular content. This educational crisis concerning the teaching, content, and identity of design education has been most readily evidenced in the critical writings of both social and design theorists. As early as the eighteenth century, political philosopher Adam Smith, in *An Inquiry into the Nature and Causes of the Wealth of Nations*, suggested that the complex issues of a division of labor inherent in the mechanization and industrialization of production provided the context in which design became detached from manufacture—in which design, in a contemporary sense, became a profession for which a particular sort of

[3] I suggest that "design education" in this context includes the fields of architecture, interior design, landscape architecture, industrial/product design, and many, if not most, of the engineering fields—essentially, educational realms that cohere to the professional practices that tend to solve difficult problems associated with humankind's physical interactions with the world.

education became necessary (Smith, 1904). Smith further described the emerging role of designers when he suggests that there are those "who are called philosophers, or men [sic] of speculation, whose trade is not to do any thing, but to observe everything, and who, upon account, are often capable of combining together the powers of the most distinct and dissimilar objects" (Lees-Maffei and Houze 2010, 32). For Smith, these people of speculation were those who acted both to conceive of the physical artifacts that are used by humans in their daily activities and to innovate practices associated with the manufacturing of those artifacts—what we might think of as the first professional designers.

With the ever-increasing frequency of industrial manufacturing in the nineteenth century, an era that many consider as fully necessitating the contemporary disciplines of design, William Morris, John Ruskin, A.W.N. Pugin and others decried the newly prevalent system of machine production as antithetical to the knowledge realms associated with the education of those practicing traditional methods of manufacture. Collectively, these thinkers expressed a fear that non-critical acts of machine production—and the assignment of productive innovation to people of speculation—would supplant the traditional knowledge generated by individual makers practicing their particular trades.[4] These very early criticisms—criticisms that arose with the birth of the design professions—can be characterized as concerns about a fundamental shift in knowledge generation, acquisition, and transmission that occurred as design emerged as a distinct discipline during the transition from individual acts of making to industrial

[4] See Morris' *The Ideal Book*, Ruskin's *The Stones of Venice*, and Pugin's *True Principles of Pointed or Christian Architecture* for a more in-depth critique of industrialization. Also, see *The Design History Reader*, *The Craft Reader*, and *Twentieth-Century Design*, (among others) for a more contemporary discussion of the educational losses associated with machine-production.

forms of manufacture. Since the industrial marginalization of individual making, and the concurrent emergence of design as a profession, critical questions in and about knowledge, pedagogical practices and curricular content in design have maintained a constant presence among those theorists struggling to make sense of what design is and how design shapes and expresses our human relationships with and in the world.

In 1965, architectural theorist Christian Norberg-Schulz suggested that the shortcomings of architecture—the shortcomings of the designed environment—"necessarily implies that the training of architects is unsatisfactory. The schools have shown themselves incapable of bringing forth architects able to solve the actual tasks"[5] (Norberg-Schulz 1965, 219). In this case, those tasks were the tasks of integration and analysis; tasks that might provide the experience necessary for designers to fulfil their professional and cultural roles. Norberg-Schulz—further elaborating the phenomenological critiques of Hegel and Heidegger—was primarily concerned with the dissociation of human experience from the artifacts of our daily lives.[6] Designer and social historian Bernard Rudofsky, also in 1965, called into question the canonical nature of the design professions—particularly architecture—when he presented the exhibition *Architecture without Architects* at the Museum of Modern Art in New York City. Rudofsky's work, this exhibition and a subsequent text, visually expressed a dissatisfaction with the persistence of design history and practice in marginalizing the vernacular—in dismissing those design artifacts that did not emerge from imperialist and

[5] There appears to be much more theoretical writing from architects (about architecture) than from other fields that might be thought of as making up the discipline of design. This is, perhaps, because contemporary architects have been troubled by the privileging of ornamentation as fashion—aesthetics—over use value and spatial experience. Other design fields seem to suffer less from this privilege as the artifacts that they produce tend to place more preference on use value—on utility.

[6] See particularly his *Genius Loci: Towards a Phenomenology of Architecture* (1979).

consumerist cultures but, rather, from the daily necessities of lived experience. Both Norberg-Schulz and Rudofsky appear to be critical of the design professions—and the education of those designers—in that they are concerned that design has moved away from the necessity of human experience to an arbitrary and self-referential reliance upon itself in order to address matters of taste rather than matters of use. This shift from utility to the arbitrariness of taste implies a reliance upon a repressive system of canonical works and educational practices that do not appear to address an essential role of design—a role associated with practices in physical and useful innovation that I will explore further.

As recently as 2010, Monica Ponce de Leon—currently Dean of Princeton's School of Architecture—echoed these social and educational critiques when she noted that design education "has become associated with elite societies and, as a result, has remained outside of recent dramatic cultural shifts" (Ponce de Leon 2010). In remaining outside culture, Ponce de Leon's critique suggests that design has failed to recognize changes in the beliefs and attitudes that define cultural practices and, more importantly, has failed to engage in the construction and maintenance of culture in relation to those changes.[7] This failure to engage in cultural concerns has been most evident in how design education has been ineffective in addressing issues of equality and diversity—of race, class, and gender—that have had a profound affect upon how, for whom, and by whom design is practiced. Ponce de Leon further suggests that design education has established and maintained a model of pedagogy that "has already shown its limits, its weaknesses,

[7] When I suggest that design education has failed to engage in the construction and maintenance of culture, I use the term maintenance in the sense of the continued refinements necessary to maintain a thing in working order—something like maintaining the performative value of the thing. I do not mean for the term maintenance to be misinterpreted as attempting to adhere strictly to traditional beliefs and assumptions that might stagnate cultural progress.

and its flaws" (Ponce de Leon, 2010). At about the same time, design theorist and educator Don Norman suggested that design curricula were still reliant upon outdated methods and, resultantly, that "design education is mired in the past" (Norman 2011). Both Ponce de Leon and Norman appear to imply that design education has been limited by its unquestioned reliance upon Euro-centric traditions of knowing, as codified by canonical works and knowledge, and that the resultant pedagogical practices have become stagnant. Pedagogical practices in design, and the curricular content that influences those practices, have become removed from, and are not responsive to, the contemporary cultures in which they exist. An uncritical reliance upon a canonized past has not allowed for design to fulfill its role in relation to the complex problems associated with contemporary lived experience or in relation to cultural production. It appears that these stagnant pedagogical practices and a neglect of curricular content have been antithetical to educational concepts that could allow for a critical assessment of both physical needs and the roll of design in the construction and maintenance of culture. Resultantly, these stagnant pedagogies and their neglected curricula have ensured that design education has been unable to evolve in order to meet the ever-changing needs of people in relation to their physical and cultural environments.

In addition to its crisis of pedagogical practices and curricular content, design—as an educational practice—has had difficulty in defining itself in relation to the more widely acknowledged academic fields of education in the sciences and education in the humanities. This binary pair of educational fields, established by chemist, novelist, and educational philosopher C.P. Snow in his 1959 Rede Lecture entitled *The Two Cultures*, has become the accepted model for most contemporary educational discourse (Snow

2012). In establishing the binary opposition of education in the sciences and education in the humanities, Snow established a relationship that places educational practices in concert with other binary oppositions. Such oppositional constructs are products of what feminist environmental philosopher Karen Warren calls an oppressive conceptual framework; a framework that implies a logic of domination (Warren 1990). Among other binary oppositions, education in the sciences can be thought of as aligned with objectivist thought; education in the sciences is perceived of as objective, as concerning indisputable matters of fact. As the oppositional binary (Collins 2000), education in the humanities becomes aligned with subjectivity; it is thought of as concerning matters of opinion and beliefs that are subject to change.[8] As this binary opposition has become an accepted part of educational culture, the opportunity for other ways of knowing has been eliminated from most conversations about educational practices. Snow's two cultures have come to define the perceptual canon of knowledge and, as such, the canon of educational practice. As design is not generally perceived of as either a science or as a subject associated with the humanities—although its curriculum includes both—design education has had trouble in locating its position within educational practice; within institutional hierarchies that actively support the two culture binary.[9] Further, education in design is generally regarded as a professional field—an educational environment of training for the professions without an expectation of knowledge generation that is typically associated with the more academic pursuits of the sciences or the humanities. In some ways, this

[8] See Thomas Kuhn's *The Structure of Scientific Revolutions* (2012) for a more complete explication of the objective/subjective binary and how it effects common perceptions of the objective veracity of scientific knowledge and of educational practices in the sciences.

[9] While design is not generally perceived of as a science or a subject associated with the humanities, its curriculum includes courses in both the sciences and the humanities. This inclusion of sciences and humanities has been present at least since the time of Vitruvius and will be described in more detail when I discuss Vitruvius' explanation of the education of an architect in Chapter Four.

professional status tends to marginalize education in design as vocational; as an academic field having no knowledge value and no bearing on cultural practices.

While design practices do require, and generate, knowledge that is associated both with the sciences and with the humanities, the professional status of design education generally excludes it from any conversations regarding STEM (Science, Technology, Engineering, Math) education—those fields of education that we might broadly categorize as existing within the sciences. Further, design education is generally excluded from conversations regarding issues of individual identity, of culture, and of conversations concerning race, class, and gender equality that arise in the humanities. This professional existence outside the established binary culture of the academy, which certainly exacerbates the crisis of academic identity, may also act to intensify any criticism of pedagogical practices and curricular content—criticisms of both knowledge content and the individual identities of the students and practitioners of design-related professions—without providing a basis for resolving those criticisms. While this broader crisis of the academic identity of design education may not be able to be solved in any reliable manner, its impact upon pedagogy and curriculum will be addressed within my contention that it is the lack of a historical and philosophical framework for education that is the underlying cause of concern for social and design theorists when they are critical of design education. Theorizing a historical and philosophical framework for education in design may provide an understanding of the central beliefs and assumptions that ground and influence both curricular content and pedagogical practices in design; beliefs and assumptions that may be at the root of contemporary criticisms of design education. Such a theory provides access to what educational philosopher Jane Roland

Martin calls the deep structure of educational thought; "the culture's very general and fundamental habits of thought" that influence how we engage in educational practices; in this case, how we think about and teach design (Martin 2011, 27). I hold that it is these fundamental habits of thought, our deeply held and often unquestioned beliefs and assumptions, that act as a foundation for the deep structure of educational thought in design. These beliefs and assumptions exist at the core of criticisms suggesting that design education is failing to succeed in educating future designers or in contributing to cultural creation and maintenance.

Reconceptualizing the Crisis

The crisis of design education—these interrelated critiques of academic identity and of pedagogical practices and curricular content—appears to indicate that educational practices in design are failing to meet the challenge of producing capable designers and also failing to allow the disciplines of design to participate in the creation and maintenance of culture. While this crisis is predominantly seen as a failure of education, most of the criticisms leveled against design education have had more to do with design methodologies and very little to do with educational practices. Design methodologies, in this sense, are those theoretical and stylistic decisions that affect the formal attributes of design artifacts; i.e., classicism, modernism, minimalism, or any of the other *-isms* that are represented through physical manifestations. Norberg-Schulz supports this methodological bias when he suggests that the reason for the failure of design education "has been the lack of an integrated theory of architecture which defines and co-ordinates the problems" (Norberg-Schulz 1965, 224). Design theorists have concerned themselves

with criticisms of design methodologies and attempts both to modify and to unify those methodologies in response to perceived problems; however, they have not thought about their criticisms as identifying educational problems. Design theorists have discussed what design might mean to them and how their particular understandings of design should be implemented in educational practice, but they have failed to consider how educational thought might impact educational practices in design—how an exploration of the deep structure of educational thought in design might change how we think about and teach design. This is the true crisis of pedagogical practices in design—a not knowing who we are in regard to the deep structure of educational thought and how educational practices might respond to that knowledge. It appears necessary to establish an educational framework—a framework that is historical and philosophical—that might ground pedagogical and curricular decisions regarding education in design. There will always be different theoretical positions—different methodologies of design—from which design is taught, however, these positions should be secondary to an educational framework upon which they can be constructed and evaluated. It is this educational framework that might ensure that design education produces capable designers who can respond to needs that define our physical relationships with and in the world and ensure that the practice of design returns to its role as an active agent in the creation and maintenance of culture.

Design theorists have thoroughly criticized design education as not meeting the challenge of producing capable designers, and of failing to engage culture, but they have been unable to consider their criticisms as problems of educational theory; they have been unable to move beyond criticisms of design methodology and address problems from an

educational standpoint. In criticizing methodologies of design, they have failed to consider Martin's question of how education is or is not furthering the assets and limiting the liabilities of our cultural practices (Martin 2011); or, in a more specific sense, how education can further the assets and limit the liabilities of the educational and professional cultures of design. It is to these shortcomings of design pedagogy—a preponderance of criticism of design methodologies and an unawareness of educational thought—to which one must necessarily respond if there are to be useful, practical, and meaningful educational experiences; experiences that both produce capable designers and further Martin's goal of education achieving its primary end; "to form the best individuals and cultures it can" (Martin 2011, 204). Re-conceptualizing the crisis of design education as a problem of educational thought, rather than as a crisis of the shortcomings of any particular theory of design, may suggest solutions to those perceived problems—problems of pedagogical practices and curricular content and issues of academic identity—that provoke criticisms of design education. In order to evaluate education in design as an educational problem, it is necessary to engage the deep structure that grounds educational practices in design. Because education in design is a relative newcomer to the field of education, it is necessary to establish and engage a historical and philosophical structure for design education that might allow for interpretation, for interrogation, and for criticism. Because education in design has not been engaged from an educational standpoint, there is a need to establish a means of uncovering and evaluating those beliefs and assumptions that inhabit the deep structure of education in design and that subsequently influence how we think about and teach design. This search for a history and philosophy of design that might act as a framework for educational practices in design

has mirrored my own personal search for understanding my identity as a designer and as a design educator. In extrapolating from my personal questioning of what it means to be a designer and what it means to be a design educator, perhaps, a means of thinking about and talking about an educational philosophy of design can be explored.

A Maker of Everythings

In 2007, I was pursuing a Master of Fine Arts in Furniture Design at the Savannah College of Art and Design (SCAD) in an effort to prepare myself to further my career as a designer and as a design educator. I was also employed by SCAD as the Furniture Shop Manager, a position that required me to assist undergraduate students in realizing their designs—in educating those students as makers. I was spending about sixteen hours per day either working, or drawing, or making; living my life as a designer and as a design educator. This level of engagement with my work, while professionally fulfilling, gave me very little time for the normal pursuits of a husband and father. One of the things that I missed due to my academic and design obligations was the first grade Parent/Teacher Conference for my then six-year-old daughter, Rebecca. It was an encounter there, later relayed to me by my wife, which really codified the questions that I was encountering as I thought about what it might mean to be a designer and a design educator; of how I might be able to think about myself as a designer and a design educator and what that might mean to my students and, relatedly, to the broader field of education in design.

Rebecca was a new first grader at a new school, the Jacob G. Smith Latin Academy—a Latin magnet school for Savannah that just happened to be our locally zoned elementary school. As a magnet school, the student body of Jacob G. Smith was made

up of children from families that spanned all tiers of Savannah society; a society stratified by racial and socioeconomic boundaries. As happens in many social settings, people were trying to place themselves, and others, within some sort of framework regarding social status. One woman asked Rebecca what her father did. Becca dutifully answered, "He makes things." Not really satisfied, or, perhaps just curious, the woman asked what kind of things. Becca, rolling her eyes at the silly questions asked by adults, answered "Everythings." To my six-year-old daughter I was a maker of everythings. Not satisfied—perhaps because "a maker of everythings" made little sense to her—this woman turned to my wife who settled the question with "My husband is at SCAD." This seemed to have worked; it wrapped up the conversation and the woman drifted off to her next conversation.

While I found the retelling of the encounter entertaining, I also realized that the content of that conversation paralleled the content of the questions about design and design education that I was having at the time. Becca's response that I was "a maker of everythings" actually made some sense to me. At the time, I was engaged in designing and fabricating products as diverse as bar tools, clocks, tables, seating environments, aircraft interiors, and digital laboratories. However, in light of the continued questioning of the woman at Becca's school, it was clear to me that being "a maker of everythings" was not quite the right answer. I was a maker; and I was confident that, within reason, I could make almost anything. But, what was a maker? What did it mean for others to think of me as a maker? How did thinking of myself as a maker answer questions about what it might mean to be a designer? At the time, it seemed to me that a maker—if defined in a generalist sense—was someone who worked with their hands to make things.

In a more refined way, a maker might be thought of as one who creates physical artifacts that assist human (and non-human) beings in negotiating their relationships with and in the world. In light of these definitions, "a maker of everythings" might simply be thought of as a worker; a tradesperson who participates in practices of production, of fabrication, of manufacture. This, however, was not the type of maker I was. In knowing that I was not the type of maker associated with manufacturing—with the work that workers do—I began to think about other makers that I might be; of other ways that being a maker might be defined.

My wife's addendum to the conversation, her statement "My husband is at SCAD," provided additional territory for me to explore in order to determine what sort of maker I might actually be—of how I might define myself as a maker in order to understand myself as a designer and a design educator. SCAD is known as an institution that produces both artists and designers; its institutional reputation as an art school is well known and well received in Savannah. This reputation, however, positions those associated with SCAD as fundamentally different from those who have chosen more traditional career paths—SCAD does not intentionally produce doctors or lawyers or mechanics or carpenters. The woman's acceptance of my being at SCAD was enough for her—she had placed me in a category that was different than most career professionals and different from those employments associated with work in the trades. Seemingly, however, she had no interest in determining what sort of "maker of everythings" that I was beyond her knowing that I was not a tradesperson and that I was not a traditional professional. This distinction was not enough for me in my search for how I might understand myself as a designer.

Being associated with SCAD—and SCAD being a school of art and design—I seemed to have two additional descriptors available to me of what a maker might be. I could possibly identify either as an artist or as a designer. In some sense this was helpful, I could think about what it meant to be a maker in the ways that artists work and, additionally, what it might mean to be a maker in the ways that designers work. In a very obvious sense, a maker that identifies as an artist is one who practices artistry; one who creates physical artifacts or actions that we call art. Likewise, a maker that identifies as a designer can be seen as one who practices design; one who creates physical artifacts that we think of as having been designed. These simple definitions, while clearly differentiating between artistry and design, did very little in helping me determine how I might perceive of my work as a designer and of my desire to teach others who wanted to be designers. Like my earlier definition of the practices associated with manufacture, these simple definitions of the practices of artistry and design did not seem to explain how I thought about what I did. Activities that we can categorize as the practices of artists and workers appeared easy enough to understand as negations of what I was; I did not see the work that I was doing as that of an artist or as that of a worker. The only identity of maker that appeared to remain to me was the sort of maker that produces physical artifacts through a process of design. I had come to the conclusion that designers were the sort of makers that produce design artifacts, however, this definition also remained unfulfilling.

The Relationship of Making to Design

As a designer, I did make things. I conceived of and produced prototypes; eventually, many of those prototypes led to my constructing finished objects. These finished objects are what I am thinking about as design artifacts—objects of my making that solved practical problems; that solved design problems that I posed in response to perceived physical needs in relation to lived experience in the world. Design problems, in this sense, were problems that required physical solutions to address the needs of humans (and non-human animals) as we negotiate our physical relationships with and in the world; solutions that allow for responses to the stimuli provided by our physical environments. I spent untold hours in the shop creating my own prototypes and their resultant design artifacts and helping others make the things that they had conceived—the physical solutions to their perceived problems. This simple revelation—being a maker that identifies as a designer—helped me begin to understand myself; it helped me begin to define who I was when I said that I was a designer and it allowed me to begin to clarify how I might think about design education. Still, this understanding of myself as a maker associated with the practices of design rather than as an artist or as a worker did not quite provide an understanding of how I might conceive of this designation in relation to design education and in relation to criticisms of education in design.

Even in beginning to define myself as "a maker of everythings"—as a designer—other closely related issues that might affect both my self-definition and how I thought about design education arose out of my continued reflections upon Becca's encounter. The first of these tangential issues arose from the woman's asking Becca what her *father* did. This question seemed to imply that there was some privileged position given to my

occupation; that my being male privileged my occupation over that of my wife. Was my employment—as a man—in some way more important than the employment of my wife who was a part of this encounter? Further, was a male "maker of everythings" in some way the norm? Certainly, looking at the contemporary history of design, it is obvious that the majority of celebrated designers have been male—the canons of various design disciplines are overwhelmingly focused upon the accomplishments of men.[10] This relationship between professional practice and gender led me to question whether gender played a role in how I identified myself as a designer or in how others identified designers. More importantly, this realization led me to conclude that gender bias has, often unnoticed and unquestioned, impacted educational practices in design.

The second issue raised by Becca's encounter was originally a bit more difficult for me to conceptualize. Both my wife and daughter are Asian. Did the questioning woman assume that I was Asian as well? If so, did my perceived Asian identity in some way qualify my occupation as a maker? Would being Asian—and thus outside traditional Western canons—make me somehow less of a designer in this woman's eyes?[11] As I am not Asian—I identify as white—how might my racial identity situate me as a designer, and more importantly, what effect might this have on me as a design educator? How

[10] In many cases, those in positions of power—predominantly white men—took credit for the works of others; of women, of minorities, of the enslaved, of the oppressed. This taking of credit silenced the voices of others and further contributed to the positions of privilege inhabited by those men and contributed to homogenizing the canons of knowledge associated with their work.

[11] Or, perhaps a more capable designer? The Western acceptance of, and infatuation with, design originating in Asia could have a significant impact upon how designers of Asian descent are viewed. Japanese design—from all eras—has been considered some of the best in the world. Japanese design concepts like *wabi sabi* have found a place in mainstream design education and in the popular design press. Likewise, mimicry of Chinese design found a foothold in the explosion of Chinoiserie during the Eighteenth Century. While this remains more a decorative style, a matter of taste, it still allows the possibility of one thinking that Asian designers are equally or more capable than their Western counterparts. Of course, using words like Western and Asian in an attempt at defining various traditions is antithetical to educational practices that attempt to eliminate privilege.

might my culturally diverse students of both sexes think of designers, and of themselves as designers, when the vast majority of their role models were like me? Like the gender hierarchy presented above, it appears that an obvious racial hierarchy also exists both in design education and in the design professions as well.

There also appears to be a class hierarchy that is implied and reinforced by the race and gender hierarchies. Traditionally, those white males who have made up the ranks of designers have been from the upper and (more recently) the middle classes. These questions of race, class, and gender—questions of privilege—have become important issues for me as I define myself as both a designer and, more particularly, as a design educator. Issues of race, class, and gender privilege appear to have an effect upon the type of maker one might become.[12] Further, these questions of privilege begin to call into question the history of design—they begin to interrogate the privilege of the canon of design; the privilege of those design artifacts identified as canonical and the privilege associated with the designers who produced them. Seemingly, defining myself as a designer was becoming more complicated and, further, was not yet providing me with the answers that I was seeking.

Design as Craftsmanship

Ultimately, this understanding of myself as "a maker of everythings" only began to allow me some very loose understanding of what it meant to be a designer and how that understanding might affect me as a design educator. I still did not have a deep understanding of what a designer was; of what being a maker that identified as a designer

[12] The categories that I have chosen to differentiate types of makers—workers, artists, and designers—all appear to imply racial, class, and/or gender biases.

might mean. Just as Smith's comment about the profession of design emerging with the rise of industrialization implied that education in design was a newcomer to the academy, it turns out that the terms design and designer are also of relatively contemporary origin. Art theorist Howard Risatti suggests that these terms originated in the early Industrial Revolution; they arose because of a need to differentiate between those objects that were handmade and those that resulted from machine production. "Before industrial production took over, the idea of 'design' as it had come out of Italy [*il designo*] was not understood as an endeavor abstracted from the practical realization of objects by separate individuals working with their hands but as a feature integral to their making" (Risatti 2007, 155 – 156). Prior to industrialization there was no distinction between maker and designer. In its contemporary understanding, the term designer implies someone who conceives of objects, spaces, and/or places—design artifacts—that act to solve complex and pragmatic problems; physical artifacts that mediate and improve our human (and non-human) relationships with and in the world. In other words, a designer conceives of things that make our lives easier, or more efficient, or less stressful, or any other number ways of saying that products of design allow for an improved quality of life.[13] There is no real sense of making within this contemporary conception of a designer as one who conceives, although, in reality, most designers normally are makers. In trying to find a more fitting term for what it is that I thought that I was doing—envisioning and making things—I began to think about where the contemporary professions that we associate with design might have come from; I began to think about and imaginatively construct a

[13] An improved life might be thought of as one where basic needs are satisfied. As such, human (and non-human) beings are allowed time for contemplation, for recreation, for relaxation. One might even argue that this allows for the enhancement of our cultural practices. An improved life is one where we are allowed indulgences after basic survival is assured.

history that might assist in understanding what it meant when I called myself a maker who practiced design. It seems reasonable to think that even though design is a contemporary term that there have been people since the beginning of human history who conceived of and produced artifacts in an attempt to make life better—people who worked to renegotiate and redefine our physical encounters with the world.

In trying to identify early designers—those people who worked to create artifacts that shaped and expressed our physical encounters with the world—the term craftsman, as defined by sociologist and cultural critic Richard Sennett, began to allow for a more robust conception of the history of the practice of design.[14] According to Sennett, a craftsperson is one who works with physical materials to modify them into useful objects that are a result of problem finding and problem solving related to needs that arise out of our lived experiences in the world. In this sense, traditional objects of craft can be thought of as bowls, blankets, stools—physical artifacts that contain, that cover, and that support (Sennett 2008). These artifacts that contain, cover, and support are representations of the design artifacts necessary to solve the problems that humans have encountered in responding to their physical environments. For Sennett, the craftsperson is a maker that is involved in the practices of craftsmanship; in those practices that produce physical artifacts intended to mediate our physical relationships with and in the world. As the craftsperson that Sennett is describing is a pre-industrial maker, it can be assumed that

[14] The term craftsman, like the term craftsmanship, is highly problematic in its gender implications. While Sennett did identify these terms as problematic (see his work *The Craftsman*, p. 23), I think it is important in any critique of the underlying assumptions and beliefs about education in design to respond to and raise awareness of these problematic terms. I will use the terms craftsperson and craftspeople when discussing the individuals whose practices are related to craftsmanship; however, I have not found a suitable gender-neutral term to replace the term craftsmanship. This is possibly due to the generally accepted meaning of craftsmanship in its adjectival forms. Other, gender-neutral, terms tend to marginalize the high level of skill and the reciprocal relationship associated with learning implied by the term craftsmanship.

this craftsperson was engaged in processes that might now be called design. Further, Sennett goes on to say that craftsmanship gives name to the basic human impulse to do a job well for its own sake, and that craftsmanship in practice involves developing skills and knowledge that focus on the objective work of making in order to solve problems rather than on the subjective nature of ourselves. In thinking about craftsmanship as a practice of engaging specific forms of skill and knowledge in order to solve problems, I suggest that the knowledge engaged by craftspeople is a sort of mitigated relativism, a relativism that occupies the spaces that exist between the problem, the physical material engaged in solving the problem, and the knowledge, skills, and beliefs employed by the craftsperson in addressing the problem at hand.

In order to solve the complex and practical problems of physical engagements with and in the world, we can understand craftsmanship as a series of related practices that allow for a broader conception of knowledge than that available in binary systems—binary systems implied in Sennett's objective/subjective differentiation. Craftsmanship can be thought of as both a practice and a way of generating forms of knowledge that challenge binary assumptions. Further, in thinking about craftsmanship as an expression of making that depends upon a mitigated form of relativism to create physical artifacts that assist in mediating our physical relationships with the world, we can say that practices of craftsmanship just are the practices of technological innovation and that the physical artifacts created by craftspeople just are technological artifacts. If we accept the premise that craftsmanship just is technological innovation, then perhaps we can understand design practices—in their efforts at improving quality of life—as practices originating in the technological innovation first practiced by craftspeople. It is this idea of design

originating in craftsmanship as a practice of technological innovation that has the potential to alleviate the crisis of identity manifesting itself in contemporary criticisms of design education and to allow for conversations about privilege—canonical, gender, class, and race—in regard to making; in regard to the field of design. This understanding of craftsmanship as originating in and embodying the role of technological innovation might provide value in theorizing an educational philosophy of design.

The Deep Structure of Craftsmanship

To begin any exploration into the idea of craftsmanship as an educational philosophy—as a means of teaching design in a way that addresses both the practical requirements of technological innovation (material/physical/environmental concerns) and cultural issues associated with privilege—it seems appropriate to investigate the conceptual origins of craftsmanship; to engage the deep structure that grounds our beliefs and assumptions in regard to craftsmanship. This investigation is necessary in order to develop an understanding of what a term like craftsmanship implies for a philosophy of education in design and how design, as an educational concept, might find its place in relation to the established binary culture of educational practice. An exploration of both the mythological and the historical origins of craftsmanship appears appropriate to any effort to begin a conversation about the role of craftsmanship in pedagogical practices and in the academic identity of education in design. Through a re-visioning of the Greek myths that involve Pandora, Prometheus, and Hephaestus, and through analysis of the historical writings of the Roman architect Vitruvius, I will theorize a more fully coherent association of design with craftsmanship and, further, with the technological innovation

that describes practices related to design. This association will then suggest that design, as a practice, can be thought of as a technological (*technê*-logical) means of addressing and mediating the physical relationships that humans encounter with and in the world. As such, an examination of craftsmanship provides a substantive foundation from which to theorize an educational philosophy of design; a foundation that provides a historical and philosophical framework upon which educational practices in design can be constructed and evaluated.

Further, this historical and philosophical framework can act to counter the hierarchal structure of privilege currently associated with design education and practice. Establishing a philosophy of education in design radically alters the critique—it replaces the pedagogical primacy of critiques associated with design methodology; of particular theories of design that might be thought of as subjective manifestations of taste.[15] This move from a multiplicity of criticisms regarding methodological practices to an educational framework that depends upon a critical investigation of its history and philosophy allows for an educational philosophy that is robust in its acceptance and validation of a variety of forms of knowledge and, as such, responds to criticisms of race, class, and gender equality that plague design education and the design professions. In this sense, the framework that I wish to explore creates an educational philosophy for education in design that responds to mythological, to historical, and to contemporary philosophical thought. This proposed framework gives design educators a way of making

[15] It should be made clear that design theories as pedagogical guidelines are none-the-less theories of teaching and learning. They teach us a way to understand the world and to make use of that knowledge. Any particular design theory teaches us a particular way to view and solve problems and, thus, is a theory of learning. Generally, we do not associate design methodologies as educational theories of learning but, rather, as theories of aesthetic expression. As such, we do not allow that these methodologies might also educate non-designers in understanding how to relate to, or interact with, an environment or object.

judgments concerning our pedagogical practices and the content of design curricula. Additionally, it fulfills my goal of delineating an educational basis upon which design pedagogy—in any of its particular design methodologies—can be constructed and evaluated. Concurrently, this educational philosophy acts to articulate the educational value of craftsmanship—it provides a means of discussing craftsmanship as an educational concept that might have benefit beyond design education.

Taking Account: An Analysis of Making

In attempting to reconceptualize criticisms of design education as regarding issues of educational structure rather than issues concerning methodologies of design, I suggested that it might be beneficial to theorize the deep structure of design; to theorize a historical and philosophical framework of design so that we might be able to understand what design is and how we might think about and teach design. Reflecting upon my own struggle to understand myself as a designer and a design educator, I came to the conclusion that my identity as a designer was tied to my practices as a maker. In determining what it might mean to be a maker, and how this might influence how I identified as a designer, I conceived of three ways of making that might help define my understanding of myself as a designer. Ultimately, I came to the conclusion that as a maker, I might think about myself as an artist, as a worker, or as a craftsperson. As a designer, I could be engaged in activities that arise out of our understandings of the ways of making associated with artistry, with workmanship, or with craftsmanship.[16] Any of

[16] Like the term craftsmanship, the term workmanship is problematic in its gender implications. When talking about individuals, I have used the gender-neutral terms worker and workers. However, like the term craftsmanship, I have not found an acceptable gender-neutral term to represent workmanship. The subtleties and implications of the term workmanship seemingly cannot be replaced. It also seems

these three ways of making might help me identify how I think about myself as a designer and, of more importance, how I might think about my role as a design educator; how I might engage educational practices in design.

Since I hold that some form of making exists within the most fundamental core of practices associated with design, I argue that it is particularly important to understand the way that making is thought of in relation to design; how any particular form of making influences the deep structure that supports our beliefs and assumptions about design. While I constructed brief arguments for why I think that the making associated with craftsmanship is most appropriate to how I see myself as a designer, I think that it is necessary to more fully explore artistry, workmanship, and craftsmanship in order to assess the ability of each to provide positive contributions to a framework of professional practice and educational thought in regard to the broader concept of the education of designers. In much the same way that Martin's concept of cultural bookkeeping can be engaged in order to evaluate the assets and liabilities that are foundational to a culture's beliefs about education, I will engage each of the three ways of making in order to identify and assess the particular assets and liabilities that they might bring to design practice and, additionally, to the deep structure of educational thought in design. In the first sense, I will evaluate whether or not the particular assets and liabilities associated with each of the three ways of making actually contribute to the skills and aptitudes necessary to design. I will be asking if an education in artistry gives students the skills and abilities needed by designers; if an education in workmanship gives students the skills and abilities needed by designers; and if an education in craftsmanship gives students the skills and

necessary to employ some gender-biased terms to illustrate the problems of gender subordination in relation to the professions associated with both workmanship and craftsmanship.

abilities needed by designers. Fundamentally, I will be asking if any of these three ways of making is beneficial to the education of designers if design is thought of as the process of problem seeking and problem solving that creates physical artifacts that assist in mediating human (and non-human) relationships with and in the world. Simultaneously, I will explore the beliefs and assumptions that formulate the deep structures of each of these ways of making. I will take account of the assets and liabilities that shape how we understand each of these ways of making at a fundamental level.

Taking Account: A Feminist Critique

In taking account of the beliefs and assumptions that formulate the deep structure of each of the three ways of making, I will engage Martin's theory of cultural bookkeeping as a means of determining the issues that influence our understanding, at a fundamental level, of these various ways of making. Like Martin, I will assume that there are two dichotomies that are at the structural core of Western thought—the existence of a nature/culture divide and the existence of two separate spheres, the public and the private, that divide our concept of that culture (Martin 2011). It is the nature/culture divide and the public/private spheres of culture that form the "rock bottom" dichotomies that "have long informed Western thought quite generally" (Martin 2011, 28). These dichotomies are what Martin suggests form the deep structure of Western thought; they are concepts which form our "fundamental beliefs about the social order" (Martin 2011, 26). This deep structure might also be defined by what feminist philosopher of epistemology Sandra Harding calls the "sexist and androcentric assumptions that are 'the dominant beliefs of an age'—that is, that are collectively (versus only individually) held"

(Harding 1993, 52). Further, the binary nature of the deep structure of Western thought is reinforced by feminist aesthetic philosopher Carolyn Korsmeyer's concept of deep gender—oppositional concepts that manifest themselves in the gendered terms masculine and feminine (Korsmeyer 2004). Black feminist scholar Patricia Hill Collins has theorized that binary oppositional thinking—where fundamentally different entities are related through their definition as opposites—provides "ideological justification for race, gender, and class oppression" (Collins 2000, 70). The two rock bottom dichotomies populating the deep structure of Western thought are best understood as inhabiting binary conditions; as proposing conceptual identities that exist together as polar opposites. There exists a binary opposition between nature and culture. There exists a binary opposition between the public sphere and the private. These binary oppositions, by their very natures, form systems that are associated with oppression, with subjugation. As Martin suggests, "the reasons differ according to the thinker but the motive is usually the same: 'separate from' signifies 'superior to'" (Martin 2011, 29).

In recognizing the deep structure of Western thought as grounded in the oppressive construction of binary oppositions, in accepting that one of the binary pair is superior to the other, we can once again return to Karen Warren's theory of oppressive conceptual frameworks. The theoretical constructs of Warren's ecological feminism begin to unite all perceived forms of oppression; a critique of the patriarchal oppression of women by feminist theorists, a critique of the subjugating oppression that exists in the fundamental dichotomies of the deep structure of Western thought, and a critique of identity predicated upon Snow's educational binary. "Insofar as other systems of oppression (e.g., racism, classism, ageism, heterosexism) are also conceptually

maintained by a logic of domination, appeal to the logic of traditional feminism ultimately locates the basic conceptual interconnections among *all* systems of oppression in the logic of domination. It thereby explains at a *conceptual* level why the eradication of sexist oppression requires the eradication of other forms of oppression" (Warren 1990, 132). This statement, the notion that there is an interconnectedness among all systems of oppression, can be seen, in conjunction with feminist philosopher Maria Lugones' notion that "Unity—not to be confused with solidarity—is understood as conceptually tied to domination," (Lugones 1987, 3) to conceptually implicate the essentializing character of any binary as a form of oppression that can be exposed and scrutinized through application of feminist theories. Through the logic established by Warren, the binary oppositions that are at the core of the deep structure of Western thought can be considered part of a feminist critique. If the fundamental dichotomies of nature/culture and public/private are scrutinized as oppressive systems then the language, the voice, established in feminist critique can be appropriated to bring awareness to and affect change in these beliefs and assumptions that underlie Western thought and that act to negatively influence how we think about and teach design.

Chapter One: An Accounting of Artistry

Making: The Deep Structure of Design

In attempting to understand criticisms of design education—criticisms of pedagogical practices and curricular content and of academic identity as proposed by Monica Ponce de Leon, Don Norman, Christian Norberg-Schultz, and Bernard Rudofsky—I have come to view these criticisms as something more than a means of questioning what is taught in design. These critiques of design education can be reconceptualized as questions concerning the deep structure of beliefs and assumptions that constitute educational practices in design. Seemingly, most criticisms of education in design have not been considered questions of educational philosophy but, rather, have been criticisms of design methodology. When I am thinking about methodologies of design, I am referring to the many *-isms* associated with theories of design and the physical manifestations of those theories; classicism, modernism, structuralism, deconstructivism, and multiple others. Most criticisms of design education have been relegated to questions of how and why we choose to accept and perpetuate particular methodologies of design and of how and why those methodologies are judged to be successes or failures. While this questioning of, and subsequent responses to, methodologies are a result of changing beliefs—of changes in the dominant worldviews of the cultures in which they arise—it does little to address problems that might be thought of as educational. Methodological inquiry, in this sense, is not equivalent to educational inquiry. In order to respond to the weakly articulated, but substantially deeper, criticisms of design education that are educational in nature, we must turn to an inquiry of educational practices; an inquiry concerning the deep structure of education in

design from an educational standpoint. To look at design education through the lens of educational philosophy requires that we begin to name, describe, and interrogate those practices that result in design education failing to produce capable designers and simultaneously failing to participate in the creation and maintenance of culture.

In order to reconceptualize contemporary criticisms of education in design as problems of educational thought rather than problems of design methodology, I have proposed theorizing a history and philosophy of education in design. The theorization of such a history and philosophy might allow for an interrogation of the beliefs and assumptions that exist at the "rock bottom" of how we talk about and teach design; beliefs and assumptions that form the deep structure of our thoughts concerning design and the education of designers. As design is a relatively contemporary term, one whose history originates in the beginnings of the Industrial Revolution, I have suggested that one must turn to other, more long-lived practices, that might be thought of as the historical precursors of design practices. These precursors of design might be thought of as those practices that extend the scope and history of design such that there is a deep structure to explore; a structure that parallels the longstanding need of humans to create physical artifacts that assist in mediating our relationships with and in the world. As I hold that some form of making is necessary to any conception of the practices of design, and is, likewise, necessary in creating physical artifacts, I have proposed three distinct ways of making that might be explored as possible means of conceptually extending the more recent history and philosophy of education in design; three ways of making that are possible precursors to the practices that we now call design.

In considering my personal experiences regarding what it means to be "a maker of everythings," I have concluded that there are three ways of making that might help me understand my role as a designer and as a design educator. I might be the sort of maker that is involved in practices of artistry, in practices of workmanship, or in practices related to craftsmanship. Each of these ways of making might provide insights that inform how I think of myself as a designer and how the artifacts that I produce can be thought of as designlike. More importantly, taking account of these distinct ways of making provides me with a more encompassing conceptual arena for exploration—an arena that allows me to conceptualize educational practices in design that predate the Industrial Revolution—as I attempt to articulate the deep structure that supports a history and philosophy of education in design. In exploring different ways of making—in engaging these ways of making as educational—I can approach the deep structure of design; I can engage the core beliefs and assumptions that influence how we think about the practice of design and the education of designers.

In engaging these possible precursors, practices that conceptually extend the deep structure that influences how we think about design, it is necessary to determine if these precursors embody practices that are perceived of as designlike; if the practices associated with any particular way of making are equivalent to and support those practices that constitute the role of design. As I have defined design as that set of practices that produce physical artifacts that assist in mediating human (and non-human) relationships with and in the world, then any particular form of making that might extend the deep structure of thought about design must function to support this understanding of the role of design. First, it must be determined if any particular way of making produces artifacts that fulfill

the requirements of a functional critique associated with design practices. A second determination as to whether any particular way of making might be beneficial in conceptualizing a more thorough history and philosophy of education in design involves a taking account of the beliefs and assumptions that form the deep structure of thought in regard to that way of making. This taking account entails an exploration of the assets and liabilities inherent in any particular way of making. Most importantly, such a taking account is necessary to expose those liabilities that might limit the ability of design education to produce capable designers and to participate in the creation and maintenance of culture. The first of these determinations is a matter of whether or not a particular way of making fulfils the functional requirements of design to create physical artifacts that assist in mediating our human (and non-human) relationships with and in the world. The second determination, whether or not a particular way of making perpetuates liabilities, requires an engagement with the deep structure of thought that underlies the beliefs and assumptions that we hold. This taking account of the deep structure of education in design, of those practices that might be thought of as leading to successes and to failures, is an educational theory that is based upon and grows out of the cultural bookkeeping theorized by Jane Roland Martin.

While I hold that making is necessary to any understanding of design practice, a general idea of making—of creating physical artifacts—is not particularly useful when attempting to identify the type of maker that I, as a designer, might be. Further, a general idea of making does not engage possible ways of making that might be beneficial in extending the deep structure of thought in design education beyond its origins in industrialization. The concept of making, alone, is too broad a category to assist in

establishing a means of identifying and evaluating how to further educational assets and limit educational liabilities that might allow or prevent design education from producing capable designers and participating in the creation and maintenance of culture. In any of the three ways of making that I have described—artistry, workmanship, and craftsmanship—there is an association with a 'know-how' that manifests itself as the manual skill needed to create physical artifacts. While the "know-how" of the practices of artistry, workmanship, and craftsmanship might differ, it is not the "know-how" in and of itself that might distinguish the value of these ways of making. In order to understand the educational value of these different ways of making, it is necessary to explore each in relation to the physical artifacts that they produce and to the intentions that underlie those artifacts. Additionally, it is helpful to engage each of them in an educational setting; to assess critically design curricula that are associated with making—the creation of physical artifacts—as it is applied to artistry, to workmanship, and to craftsmanship.

Howard Risatti, in *A Theory of Craft* (2007), provides an argument for why contemporary craft just is art; an argument that collapses the existing distinction between those artifacts that are traditionally thought of as works of fine art and those that are traditionally thought of as the products of craftspeople. The work of glass sculptor Dale Chihuly is an excellent example of this proposed collapse—his works blur the boundaries of the art/craft distinction as they exist as works of fine art but are produced from the craft tradition of glass blowing. While Risatti's arguments have some merit; especially in a contemporary environment where craft artifacts are not necessarily intended for practical uses; I am not interested in whether the contemporary artifacts that we call art and the contemporary artifacts that we call craft are different, but in what ways they—throughout

history—might establish the educational value of artistry, of workmanship, and of craftsmanship. For the purpose of conceptually extending the deep structure of design, my interests lie in the educational value of understanding the intentions of particular practices rather than the artifacts produced. As most artifacts are representational of the intentions of the maker, it is these intentions that must be understood in order to determine their educational value. The intentions associated with any particular way of making might affect how we educate design practitioners and, additionally, this intentionality might apply, more broadly, to how we think about general education and cultural production. As such, I will begin with an examination and conceptualization of the role of artistry as it might influence education in design. I will engage how an education in artistry might be a possible way of making that precedes and informs education in design; a precedent that extends the historical origins of design and of design education. After determining how the making associated with artistry might impact education in design, I will take account of how the deep structure of an education in artistry might maintain and perpetuate a logic of domination that is miseducational and, as such, limits the ability of education—education in artistry, education in design, and general education—from participation in the creation and continued maintenance of culture.

The Role of Artistry: A Functional Critique

In order to determine if practices associated with artistry might extend the conceptual origins of education in design it is necessary to determine if those practices might be of educational benefit to designers. It is necessary to determine whether the practices associated with artistry provide the knowledge and skills of design practices;

whether they can be thought of as providing the intentionality necessary to design artifacts. The knowledge and skills of design practices can be thought of as that knowledge and those skills that illustrate the intentionality necessary to design artifacts. In order to make such a determination, it is important to accomplish two tasks. The first is to define what is meant when discussing the term artistry; the second is to identify instances of this in relation to design education. When I discuss artistry, I am referring to practices associated with the production of artifacts that we call art. Art, as I define it, consists of those artifacts that document and communicate the beliefs of the cultural and social communities within which they originate. Artistry, in this way, is similar to educational philosopher John Dewey's assertion that the production of art results in artifacts that are representational of human experience. Artistry, then, just is "part of the significant life of an organized community" (Dewey 2005, 5). As such, art is intended to reflect and communicate "the emotions and ideas that are associated with the chief institutions of social life" (Dewey 2005, 6). In the sense that I am using the term, artistry applies to the work of individuals in the production of works that speak to the cultural beliefs, practices, and aspirations of that particular group.

Artistry, like workmanship and craftsmanship, involves both knowledge and skills associated with manual competence in the creation of well-made things; it requires employing the "know-how" appropriate to the practice at hand. It is here, however, that the similarities between artistry, workmanship, and craftsmanship end. The production of art does not approach the level of pragmatism associated with the production of workmanship. Artistry is not solely concerned with production—in some cases, it is not concerned with the skill of production at all. Further, the practices associated with artistry

do not achieve, nor aspire to, those conditions necessary to craftsmanship—the creation of physical artifacts that are intended to functionally mediate our physical relationships with and in the world. While artistry does, in many cases, produce physical artifacts, those artifacts serve different functions than artifacts associated with other ways of making.

On the surface, the artifacts produced by artists are quite different than the artifacts produced by workers and the artifacts produced by craftspeople. Generally, we hold the products of artistry—whether they be paintings, sculptures, music, writing, or any other number of expressions—to be somehow different from the practical, utilitarian artifacts that are the products of workmanship or of craftsmanship. The artefactual products of artistry are generally held to have cultural value—to speak to us as cultural beings—while the artifacts produced by workers and craftspeople primarily possess use value. While this differentiation is convenient in day-to-day use, it does not yet fully distinguish how artistry, workmanship, and craftsmanship differ in relation to my attempt to extend the conceptual structure of design education. It is necessary to explore how education in artistry differentiates itself from educational practices in workmanship and craftsmanship and, thus, might possibly contribute to the fundamental knowledge and skills necessary to education in design.

In a specific sense, I wish to differentiate artistry as a way of making that might impact education in design on a more theoretical level. The work of artists—those engaged in artistry—is, in one noteworthy way, similar to the work of craftspeople and, in other equally significant ways, is strikingly different. Artists, very much like craftspeople, act intentionally in the production of their work. In *The Human Condition*,

Hannah Arendt distinguishes *Homo faber*—humans as makers—as distinct from *Animal laborans*—humans as beasts of burden—in that *Animal laborans* approaches work as an end in itself where *Homo faber* is engaged in work for the purpose of making something (Arendt 1958). This intentionality separates both the artist and the craftsperson from the drudgery of workmanship; the worker acts without any intention other than producing artifacts—the production of the worker acts as an end in itself. The artist and the craftsperson both act intentionally in their productivity—production becomes a reciprocal relationship whereby the artist or craftsperson negotiates with the act of production; making judgments—based in the processes of making—that affect the continuing act of production. In this way, the production of the artist and the craftsperson rises above Arendt's *Animal laborans* and expresses the intentionality of *Homo faber*. The intentionality necessary to making judgments brings us much closer to the expression of the knowledge and skills needed by designers. Intentionality appears to be at least one appropriate means of extending the conceptual history and philosophy of education in design.

While intentionality is shared by both artists and craftspeople, it is their different applications of intentionality that further allow us to approach an understanding of the knowledge and skills necessary to the education of designers. One of the two important ways that the intentionality of artistry differs from that of craftsmanship is in how it employs the concept of the judgment of utility. Craftsmanship requires an intentionality of use, of function. The artifacts produced by craftspeople are readily placed into the functional categories of containing, covering, or supporting (Sennett 2008). These artifacts respond to the embodied needs of human beings—and non-human animals—as

we interact with the world where it is necessary that we contain, cover, or support in order that we both survive and thrive in response to actual physical conditions. For artifacts produced within the realm of artistry, judgments of utility are something else altogether. Works produced by artists, in general, do not need to possess the utility of containing, covering, or supporting.[17] The artifacts that count as the products of artistry are not primarily intended to have an immediate impact upon the physical conditions that exist in the world.

The use intentions of artifacts associated with artistry are not in their physical utility, but in their ability to communicate ideas and concepts to the observer. Such communication is abstract just as language is abstract—it names things without being the things themselves. These named things—the ideas and concepts of abstraction—are the result of socially and culturally agreed upon standards and they are conveyed in the particular vocabulary of the particular social/cultural group in which they are produced. The utility of artifacts associated with artistry does not suggest immediate physical impact upon the world; rather, these artifacts act upon the social/cultural world of the particular groups that generate and understand their communications. The use intentionality of artistry is dependent upon a particular social/cultural milieu for it to have meaning. The implied meaning—the use—of these artifacts is subject to the interpretations of the human minds that constitute the social/cultural group to which the artifacts belong. This suggests one possible reason that anthropologists can never truly know the intentions behind the sculptural and ceremonial artifacts of most long-dead cultures—particularly

[17] Works of art, however, can fulfill these functions. Here I am thinking of ceremonial objects—chalices, memorial quilts, honorary swords—that represent function but do not actually function in the mundane way that cups, quilts, and swords actually function.

those cultures with no written language. Anthropologists, and people more generally; however, have very little trouble in understanding the use function of the tools and other utilitarian artifacts of those same cultures. In making this differentiation, the use intentionality of artistry differs from that of craftsmanship in that it is necessarily subjective—it is subject to cultural beliefs and practices—while the use value of craftsmanship is specific to particular needs.[18] In this sense, the use value of craftsmanship can be thought of—in some ways—as objective; the utility of craft artifacts is directly related to addressing physical problems that exist in the world.

The second important way that the intentionality of artistry differs from that of craftsmanship is in how it employs the concept of the judgment of aesthetics. In attempting to understand what it means to be a designer, to produce physical artifacts that assist in mediating relationships with and in the world, I would suggest that designers work according to both functional and aesthetic criteria. As noted above, the judgments associated with utility—judgments that might be thought of as objective—fulfill the functional criteria of the work of a designer. While artistry, very much like design, requires processes that allow the artist to create physical artifacts that might describe our social/cultural relationships with and in the world, it does not prioritize the judgment of utility.[19] It is, rather, the aesthetic realm that is critical to the intentionality of artistry. Artists are primarily concerned with aesthetic judgments in regard to their work rather than the functional utility of the artifacts that they produce. Philosopher Peter Angeles

[18] While subjectivity can—and does—play a role in design, it should not be considered one of the problematic issues of design education. I believe that the subjectivity present in design must be thought of as secondary to the use value of designed artifacts. Later, I will suggest that this subjectivity is necessary in theorizing craftsmanship as a form of mitigated relativism that may be useful in reconceptualizing educational practices in both design and general education.

[19] While it does require judgments of utility in conveying its social/cultural meaning, its primary form of judgment concerns aesthetic value.

suggests that the primary function of the artifacts associated with artistry is "to produce an aesthetic experience of beauty without regard to what economic or practical use they may be put" (Risatti 2007, 72). Aesthetic judgments, in disregarding the economic or practical use of the artifacts produced, generally place no significant emphasis on the material properties of those artifacts.[20] In many cases—performance art, orchestral works, dance, impromptu speeches, etc.—there are no actual physical artifacts that remain in existence. In contrast to this, design requires a reciprocal relationship with the physical properties of materials—materials either natural or man-made—in order to produce actual artifacts that must embody both aesthetic and functional criteria. Likewise, any complete framework for education in design must equally address both the aesthetic and functional criteria of physical artifacts that exist in the world. As such, education in design must, necessarily, include pedagogical practices that address aesthetic judgments; some form of education in artistry appears pertinent to education in design.

From the perspective of design thinkers, there is another possible way of characterizing those practices that distinguish the products of designers from the products of artists and from any other physical artifacts. Urban planner and learning theorist Donald Schön, in theorizing 'designlike' practices, argues that design practices consist of problem solving in an experiential world (Schön 1983). One central intention of the designer is to solve a problem that exists. Artifacts that we call art may act to depict the existing (perceived) world, to define possible worlds, and/or to represent beliefs and customs regarding the social world, but they are generally not thought of as artifacts that

[20] While artists may choose particular materials because of their ability to communicate particular ideas, because of their ease of use, or because of their physical durability, they do not, generally, choose materials based upon their performative characteristics in regard to usability; to the wear caused by use.

are created in order to solve physical problems. In some ways, 'designlike' problem solving can be thought of as a pragmatic approach that generally distinguishes design artifacts from other artifacts.[21] Further, Schön distinguishes design "know-how"—the ability to solve problems—as the central form of knowledge transmitted by design education. Schön, as an educational theorist, prioritizes this 'know-how" knowledge over the generally accepted two culture model of knowledge in the sciences and knowledge in the humanities. In prioritizing the ability to solve problems as the primary task of education in design, it appears that an education based solely upon the intentionality of artistry is an insufficient methodology of educating designers. However, in attempting to determine what form of making might conceptually extend a history and philosophy of education in design, it remains beneficial to explore an educational critique of the deep structure of thought associated with education in artistry.

The Deep Structure of Artistry: An Educational Critique

The second necessary step in determining the educational value of extending the history and philosophy of education in design through the educational practices associated with artistry is in taking account of the assets and liabilities that might be inherent in an education in artistry. It is important to expose those practices and beliefs in the deep structure of education in artistry that might be miseducative; those practices that we would consider both educational and cultural liabilities to the practices of design. As established earlier, a feminist critique is useful in exposing and naming such liabilities

[21] I suggest that the concept of problem solving is a necessary requirement of design artifacts. It may also be a requirement of other artifacts; however, I do not hold that it is primarily or fully necessary to the existence of those artifacts that we do not categorize as design artifacts.

and, as such, in creating the possibility of conversations that might assist in eliminating those practices. In *Education Reconfigured: Culture, Encounter, and Change* (2011), Martin proposes a process of cultural bookkeeping that is beneficial in determining the educational assets and educational liabilities that might be transmitted in any encounter between learners and any number of educational agents. For Martin, educational agents are not limited to formalized practices that we associate with schooling; she "acknowledges the brute fact of multiple educational agency by including in the educational realm all of a culture's groups, institutions, organizations, social movements, and the like" (Martin 2011, 63). As educational agents can take most any form, I will suggest that the three ways of making that I have associated with "a maker of everythings" can be considered educational agents and can be held accountable for the assets and liabilities that they pass on when they are associated with education in design. This taking account of the assets and liabilities of ways of making that might conceptually extend the history and philosophy of education in design allows for an understanding of the educational value of any particular way of making as an educational agent and how it might be beneficial in creating a framework for educational practices in design. Martin's bookkeeping project aims to "identify the whole wide range of a given culture's educational agents, the full extent of the assets and liabilities in each one's portfolio," and, as such, to address those assets and liabilities in an effort to improve educational practice. (Martin 2011, 110). Such a valuation allows criticisms of design education to move beyond the surface of methodology and interrogate the deep structure of beliefs and assumptions that exist at the core of education in design.

For Martin, the list of educational agents, one comprised of school, home, family, and culture is vast; however, in exploring education in design I will not be looking to a multitude of individual agents. I will only engage in taking account of the ways of making that might impact design education—theories of making associated with artistry, with workmanship, and with craftsmanship and how they might impact the deep structure of design; how they might structure how we think about and teach design. I will adapt Martin's theory of a deep structure of educational thought to an accounting of practices in artistry, in workmanship, and in craftsmanship as a means of illuminating the beliefs and assumptions that form the foundations of education in design. Such a taking account is necessary in order to expose deeply held beliefs that can be thought of as liabilities that impact the education of designers and prohibit design education from participating in the creation and maintenance of culture. In exploring education in design at its "rock bottom," it may be possible to begin conversations that assist in limiting liabilities and fostering assets that produce capable and competent designers that might, through their professional practices, become educational agents that continue to further cultural assets and eliminate cultural liabilities.

Martin theorizes that there are two primary dichotomies that form the foundation of the deep structure of thought in Western culture; "a nature/culture split that encompasses mind/body dualism and a two-sphere analysis of society with its accompanying gender divide" (Martin 2011, 28). I suggest that these dichotomies exist as part of what Karen Warren calls an oppressive cultural framework; a framework of binary pairs that limit our abilities to make choices. In associating feminist critiques of patriarchal oppression with the binary dichotomies of Martin's nature/culture split and

the gender divide of a public/private analysis of society there exists a conceptual link between the oppression associated with these dichotomies and the elimination of a broad range of possible choices as theorized by feminist scholars. As feminist philosopher bell hooks has noted, all oppression is unacceptable in that "being oppressed means the absence of choices" (hooks 2015, 5). Absence of choice is implied in such binary pairs; only two possibilities exist rather than the multiplicity of choices that might exist outside of oppressive binary frameworks. Without the ability to make choices, it can be assumed that oppressive binary frameworks limit the intentionality of making associated with practices in design. In Martin's case, the oppressive cultural framework is one that is predicated upon dichotomies; systems that, like the gendered assumptions of patriarchy, imply the binary opposition of domination and subordination. As domination and subordination are expressions of oppression; then oppression, as a concept, may be the means to relate a general feminist critique to an accounting of the beliefs and assumptions that exist at the "rock bottom" of education in design.

The Patriarchal Assumption

One possible means of taking account of the assets and liabilities associated with the deep structure of any particular way of making is through application of Carolyn Korsmeyer's concept of deep gender. Korsmeyer suggests that "gender can be the lens through which we discover basic aspects of philosophy itself at its very roots, as well as the common frameworks of thinking that it supports" (Korsmeyer 2004, 85). An analysis of instances of deep gender in educational practices associated with artistry and its conceptual relationship to aesthetics and canonical value systems may provide a point of

departure for taking account of the assets and liabilities that ways of making associated with artistry might bring to a conceptual extension of the history and philosophy of education in design. Korsmeyer provides a framework for this deep gender analysis in her work regarding feminist responses to the canon of fine arts.

In the sense that Korsmeyer uses the term, deep gender is a predominantly hidden system of value judgments that hinge upon "oppositional concepts and schemes of value whose meanings fluctuate in different historical and cultural contexts" (Korsmeyer 2004, 3). Her oppositional concepts readily manifest themselves within the binary opposition of the gendered terms *masculine* and *feminine*. These terms, as gendered, represent not sexual difference, but rather, the "many ways that cultures mold their members into different social roles" (Korsmeyer 2004, 2). Further, this social gender binary is intimately associated with the intellectual binary of mind/body dualism represented in Martin's nature/culture split and with the gendered assumptions of a public/private dualism in Western beliefs. Within Korsmeyer's concept of deep gender, the privileged and dominant binary *masculine* is associated with the Cartesian mind, and further, with culture, reason, the fine arts, and countless other seemingly neutral identifiers. In opposition to this privilege, the subordinate *feminine* binary is associated with the Cartesian body, with nature, with emotion, with craft, and with other identifiers opposite those in the dominant category. In utilizing the gender categorization of these binary pairs, Korsmeyer holds that deeply embedded gender claims can be exposed in what might otherwise be seen as neutral ideas, statements, beliefs, and systems.

It is within the oppositional values of gendered binaries—within the hierarchy of dominant and subordinate—that we find the cultural liability of patriarchal oppression

and possible means to overcome that liability. It is deep gender claims, claims hidden beneath the structure of appearance, that support the oppression of women and others who do not fall within the dominant patriarchy encapsulated under the conceptual binary *masculine*. The patriarchal oppression present in the binary dominant/subordinate exemplifies Karen Warren's logic of domination. In identifying this logic of domination represented within deep gender binaries, one can conceptually implicate all patriarchal systems as forms of domination that can be engaged and transformed through feminist critique. The patriarchy of deep gendering, as established by Korsmeyer's gender binaries, can be logically conceived of as fully embedded within culture, and as such, shown to play a significant role in cultural miseducation. This deeply embedded bias toward the oppression associated with the masculine binary is what I will call the patriarchal assumption. For Martin, this patriarchal assumption is a cultural liability that exists within the deep structure of Western culture's beliefs and assumptions that influence educational thought and, as such, should be eliminated by and through educational practice.

Korsmeyer employs her concept of deep gender as a method of revealing ways that feminists have begun to use aesthetic values as a means of questioning the deep structure of thought associated with an education in artistry; the deep structure of thought supporting the established canon of the fine arts. In challenging the traditions of the canon, Korsmeyer is not interested in creating a narrow definition of the practices associated with artistry but, rather, in broadening that definition in order to be both more inclusive and to expose and question established societal norms; norms that limit Martin's goal of education to form the best individuals and cultures and, more specifically, for

education in artistry and education in design to produce capable artists and designers and prepare them to participate in the creation and maintenance of culture. Korsmeyer notes that "one agenda (among many) of some feminist artists has been to question the terms of classification and evaluation employed in art and to defy those standards in their own work—thereby resisting the gendered ideals that pervade art traditions" (Korsmeyer 2004, 105). Through both the intellectual critique (theory) provided by feminist aesthetic philosophers and the particular works (application) of feminist artists, the patriarchal assumption represented within the canon of fine arts has been exposed and; likewise, a means has been provided of overcoming this particular cultural liability.

In attempting to mitigate this liability, Korsmeyer notes that "tradition remains the overarching point of reference for feminist and postmodern artists, who refer continually to the past, whether ironically, parodically, or confrontationally. Tradition unavoidably frames the work of even the most iconoclastic artists, for only God creates *ex nihilo*" (Korsmeyer 2004, 128, 129). *Ex nihilo*—literally "out of nothing"—is significant both to Korsmeyer's critique and to any reasonable understanding of the canonical role of art. Korsmeyer, in assuming a feminist position, places herself in opposition to some thing—in this case that thing being a patriarchally privileged definition of the concept of artistry. This positioning against is a rejection of existing conditions. Feminist artists, in struggling against the existing and ever-present canon have begun its transformation. Due to the deeply embedded gender oppression of the patriarchal assumption, a singular and wholesale dismantling cannot be expected; however, change at the fringes none-the-less weakens the patriarchal and canonical structures present in the fine arts. Korsmeyer's theoretical works and the production of

feminist artists are, in effect, responding to existing conditions that they find unacceptable in relation to their beliefs about the world. It is from this position of the rejection of existing conditions—of a canon that enforces traditional ideas and normative standards—that change can and does occur. In changes to—and the subsequent expansion of—the canonical tradition that results, there exists a denial of absolutism and universals in all of their forms and a simultaneous engagement with culture itself in challenging those deeply established positions of tradition.

This struggle against and rejection of norms and standards within the fine arts tradition indicates that art—and its evaluation—is value-laden; that it is meaningful and thereby contributes to the deep structure of our cultural identity. In this conception of the structural value of fine arts, those works of art that question the canon become political in nature. Contemporary feminist works of art that critique the canon of fine arts concurrently engage in a political critique of culture; "art is a means to uncover aspects of social position that have been just as eclipsed and distorted as ideas about femaleness and maleness in cultural history" (Korsmeyer 2004, 107). Understanding contemporary feminist art as a critique of culture implies a need to transform that culture—for culture to be modified as a result of interaction; for culture to learn and grow in the same way as the individual. The methodology of this transformation, by way of Korsmeyer's concept of deep gender and Warren's logic of domination, might further be employed to dismantle other canonical traditions that are shown to perpetuate both educational and cultural liabilities.

By applying the concepts of Korsmeyer's deep gender, culture has been situated within the realm of the binary *masculine*; it is patriarchal in form and structure.

Resultantly, patriarchy has traditionally held a canonical position within cultural discourse. This patriarchal canonicity has allowed for all institutions, groups, and individuals who participate in culture to be subsumed under the oppression associated with deep gender and patriarchy. Traditional philosophical aesthetics is a product of patriarchal culture. The canon of fine arts is a product of patriarchal culture. Traditional design education is a product of patriarchal culture. However, it is not just at this culturally relational level that the oppression of patriarchy exists; it exists too in the relations between aesthetics and the fine arts canon, between the fine arts canon and fine arts education, between aesthetics and the canon of design, between the canon of design and design education. The oppression of patriarchy is evident in all of these relations in that they are all bound by the commonality of culture, a culture that is based upon and within patriarchal assumptions.

The canonicity of the patriarchal assumption is key to allowing a feminist critique that serves as the means of taking account; as that line of inquiry that identifies both educational assets and liabilities and raises them to consciousness "for everyone to see and understand" (Martin 2011, 111). Such taking account allows us to identify and make judgments about practices, beliefs, and assumptions; judgments that determine if our foundational beliefs and assumptions are assets worth protecting or liabilities that should be exposed and subjected to scrutiny. I intend to employ this taking account of assets and liabilities in order to explore the value of the practices that result from the deep structures of education in artistry, in workmanship, and in craftsmanship as they might be employed to conceptually extend the history and philosophy of education in design.

The *École des Beaux Arts*: An Education in Artistry

While we can assume that the knowledge and skills necessary to an education in design—one conceptually extended through the educative practices of artistry—have, throughout history, been transmitted in some form or other by various educational agents, the first formal instances that we can reliably engage are those of apprenticeships and the guild system. Young men—and during this time we can assume that it was, predominantly, only young men—who had an interest in, a capacity for, or were perhaps forced into practices associated with artistry and craftsmanship were made apprentices to established master artists and craftspeople. Under this system, students learned from both the tutelage of the master and from the practices of producing associated artifacts. An apprentice model of education was based in both theory and practice—theories and practices grounded within lived experience—and, resultantly, produced new masters who were intimately familiar with all aspects of the cultures and environments they worked within, with the forms and materials of their trade, with functional utility and aesthetic expression, and with the intricacies of making in relation to their particular arts. While these processes and traits appear to be what Martin might term cultural assets, there are also aspects of those practices that can be viewed as liabilities through the lens of deep gender. A master/apprentice relationship remains firmly within the deep gender binary established in Korsmeyer's masculine/feminine critique. The liability of the patriarchal dominance of an apprenticeship-based education is echoed by Dewey when—in relation to traditional education—he relates this form of knowledge dissemination and acquisition to "customary and traditional beliefs [that] held men in bondage" (Dewey 1966, 270) and

that this knowledge was "merely the accumulated opinions of the past, much of it absurd" (Dewey 1966, 302).

The deeply embedded patriarchal assumption prevalent in the deep structure of Western thought—and therefore, in educational practices—was perpetuated and further reinforced during the rise of intellectualism that accompanied the Enlightenment. It was at this time that formal schooling, at least for the realms of knowledge associated with the masculine binary, took the place of apprentice and guild systems. In design education the predominant example of formalized design education would be the establishment of the *Académie des Beaux-Arts* in Paris. It is in the educational practices of the *Académie* that we can see a form of design education—an education based upon principles associated with artistry—that precedes the Industrial Revolution.

The *Académie des Beaux-Arts* was established in France in 1648 during the reign of Louis XIV. The *Académie*, later renamed the *École des Beaux-Arts*, was founded by Cardinal Mazarin, Chief Minister to the King of France, as an educational institution capable of providing a continuous source of artists and designers to attend to the decorative needs of the French aristocracy. As an institution, the *École des Beaux-Arts* established a pedagogy based upon rigorous examination and appropriation of historical precedent as the primary means of articulating design decisions. The structural, material, ornamental, proportional, geometric, and spatial qualities present in the works of Greek and Roman antiquity were unquestioningly re-appropriated as solutions to students' assignments. This model of unquestioning acceptance can be seen as representing what educational philosopher Susan Laird describes as a monarchist sensibility; a description both pertinent to its literal formation and to its pedagogical methods (Laird 2014). An

educational model based upon the unquestioning acceptance of precedent can be seen as representing a monarchist sensibility—grounded within and supported by the patriarchal assumption—in that practices based upon the precedents of history, much like those of the monarch, appear above reproach. This monarchist authority is articulated by the doctrine of the divine right of kings. Just as the monarch, by divine right, is not subject to any earthly authority—and, as such cannot be questioned—the precedents of Western design history were granted an academically sanctioned divine authority. In removing any notion of earthly accountability, the *École des Beaux-Arts* removed design pedagogy from the realm of any real and tangible world—and, thus from the changing cultural constructs of particular societies—and placed it within an unfounded domain of appropriation that served only to communicate the power of the monarchy and to preserve monarchist privilege. It is this removal from lived experience and its impact upon educational and professional practices that Rudofsky criticized over three hundred years later.

Conceptually, an acceptance of the monarchist principle of divine right creates another binary condition that acts as a liability to education in design. The divine is paired in contrast to the worldly. In applying Korsmeyer's conceptual logic, the divine is placed within the dominant masculine binary and the world of lived experience joins the subservient feminine. This divine/worldly binary pairing reinforces the already firmly established assertion that education in design is deeply gendered and, as such, oppressive in its limitation of choice. An education in design based upon the deep structure associated with the patriarchal assumption perpetuates liabilities derived from those gendered assumptions and fails to allow for the multiplicity of choices that are necessary

to any meaningful forms of knowledge acquisition and cultural production. In accepting the divine authority of a monarchist model—in removing any notion of worldly accountability—design education was removed from any corresponding relationship to those characteristics associated with the feminine; it was firmly and authoritatively grounded in the masculine binary.

This notion of divine right in design education was further perpetuated by the relation, maintained at the *École des Beaux-Arts*, between instructor and student. This relationship was modeled upon existing oppressive systems and remained, predominantly, one of master and apprentice. This model confers divine authority upon one, the master, and unquestioning subservience upon the student. This relationship of mastery is continually reinforced since, according to Sherry Ahrentzen, feminist architectural scholar and Research Professor of Architecture at Arizona State University, "the studio, being a closed system, becomes an incubator in reproducing these beliefs" (Ahrentzen 1996, 75). It is, perhaps, this elitist system—one established under the doctrine of the divine right of kings and still practiced in contemporary educational practice—that Ponce de Leon and Norman are calling into question when they express concerns with the unchanged model of studio instruction. It is certainly a model that has contributed to the perception of design fields as constituting elitist professions and, as such, predicating design's exclusion from the construction and maintenance of culture. Understandably, a pedagogical model based upon monarchist assumptions must be rigorously critiqued if design is to reinterpret itself as culturally relevant and capable of meaningfully addressing both educational practices and cultural uncertainties. The first significant challenge to the deeply gendered authority of monarchist design education

came during the period that might loosely be termed Modernity with the foundation of the *École Polytechnic*.

A Rejection of Monarchist Privilege: The *École Polytechnique*

It was not until 1792, that design education began to question the authority of the monarchist practices of the *École des Beaux-Arts*. At that time, under the auspices of Jean-Nicolas-Louis Durand, design education at the *École Polytechnique* was "organized to create scientists and technicians with specialized skills" (Tavernor 2009, xxxiii). This shift away from a monarchist and canonical understanding of design cohered to the shift toward rational understanding typical of late Enlightenment thought. The logic of mathematics, the technologies of industrialization, and a belief in humankind's authority over the natural world began to assert more influence on design education than the monarchist call for the preservation and veneration of tradition. As a result of this shift, design expression, design practice, and design education became "the servant of a new kind of rationality and science" (Tavernor 2009, xxxiv). In attempting to escape monarchist privilege, the *École Polytechnique* traded one form of privilege for another. In attempting to move beyond canonical ways of knowing, the faculty of the *École Polytechnique* did not attempt to shift design away from a position of monarchal privilege and toward the practical, material, appropriate, world of human experience but, rather, became subservient to the objectivist rationality of science. The project of Modernity abandoned the monarchist ideal in favor of a positivist universalism coherent with the belief systems established in scientific ways of knowing.

This positivist understanding of design knowing, while not fully supplanting the monarchist model, continued into the early twentieth century. In his 1923 essay "Towards a Collective Construction," designer and *De Stijl* theorist Theo van Doesburg noted that "Our epoch is hostile to every subjective speculation in art, science, technology, etc. The new spirit, which already governs almost all modern life, is opposed to animal spontaneity, to nature's domination, to artistic flummery. In order to construct a new object we need a method, that is to say, an objective system" (Cross 2006, 119). Six years later, the Swiss-French architect and planner known as Le Corbusier fully objectified the house as a "machine for living." In addressing the second *Congrès Internationaux d'Architecture Moderne,* Le Corbusier described the utility of the house as consisting "of a regular sequence of definite functions. The regular sequence of these functions is a traffic phenomenon. To render that traffic exact, economical and rapid is the key effort of modern architectural science" (Cross 2006, 95). The sensual world of embodied humanity and its multiplicity of choice was not given a chance; monarchist assumptions were replaced with the efficiency of the rationality of design in the machine age. These early attempts to transform design into a scientific project were continued in the design methods movements of the 1960s. According to design educator and researcher Nigel Cross, "the desire of the new movement was even more strongly than before to base design process (as well as the products of design) on objectivity and rationality" (Cross 2006, 95). The design methods movement reached its peak when political scientist Herbert Simon, in *The Sources of the Artificial*, called for the development of "a science of design… a body of intellectually tough, analytic, partly

formalizable, partly empirical, teachable doctrine about the design process" (Cross 2006, 96).

Critique of Positivist Design

Simultaneous to the peak of the design methods movement, there was a critical interrogation of its scientific bias. In *Notes on the Synthesis of Form*, architect and design theorist Christopher Alexander rejected his earlier works on rational methods of design noting that the fields differed in that "scientists try to identify the components of existing structures, designers try to shape the components of new structures" (Cross 2006, 97). There was also a rising awareness that comparisons between science and design had been simplified and that there was, perhaps, more complexity in the distinctions between these two methodological endeavors than first assumed. Many thought that "perhaps there was not so much for design to learn from science after all, and rather that perhaps science had something to learn from design" (Cross 2006, 97). Cross further explicated this position when he noted that designers have "been seduced by the lure of *Wissenschaft*, and turned away from the lore of *Technik*; they have defected to the cultures of scientific and scholarly enquiry, instead of developing the culture of designerly enquiry" (Cross 2006, 06). A culture of designerly enquiry might be thought of as a middle ground culture based upon feminist critique of patriarchal systems and upon the functional intentionality of design practices. This contemporary interrogation of a design methodology founded upon scientific principles, on scientific ways of knowing, on the romanticization of science as a paradigm for human life, led to a destabilization of design knowing, and consequently, to a destabilization of design education. The rejection of Classism in favor

of a Modernist sensibility and the subsequent rejection of Modernism has left design education without a clear philosophical foundation.

In light of this critique, I argue that it is not, perhaps, particular methodologies of design that must be rejected in order to ameliorate criticisms but, rather, the development and interrogation of the deep structure of thought that supports a history and philosophy of education in design that is necessary. In asking what we know—what informs the structure of our beliefs and assumptions—as designers, we may be able to understand and justify approaches to how we teach design. An interrogation of the deep structure of beliefs and assumptions that inform education in design should lead to a more robust understanding of what it means to know as a designer and thus offer up theories and practices that ensure the disciplinary veracity of design education. In some ways, such an understanding might address the identity crisis of education in design and ensure that design education is substantially differentiated from the beliefs and assumptions associated with educational practices in both the sciences and the monarchist traditions upheld by design curricula based upon the communicative value of artistry.

One significant challenge to both the positivist foundation of design as a scientific paradigm and the monarchist privilege of education based in the practices of artistry is the work of Donald Schön. Critical of design science as structured to solve well-defined problems, Schön offered a constructivist paradigm that addressed the reality of design practices that deal with "messy problematic situations" (Schön 1983, 47). Design methodologist S.A. Gregory notes that "the scientific method is a pattern of problem-solving behavior employed in finding out the nature of what exists, whereas the design method is a pattern of behavior employed in inventing things of value which do not yet

exist. Science is analytic; design is constructive" (Gregory 1966, 06). The constructivist paradigm calls for "an epistemology of practice implicit in the artistic, intuitive processes which some practitioners do bring to situations of uncertainty, instability, uniqueness, and value conflict" (Schön 1983, 49). In these processes, the absolute control of the designer is relinquished in favor of appropriate responses to problems that might not be controllable in large systemic systems; in favor of synthetic solutions that actually work, not forced solutions that fail to address the complexity of lived experience. Cross furthers this paradigm when he notes that admonitions of this type are "on the constructive, normative, creative nature of design. Designing is a process of pattern synthesis, rather than pattern recognition. The solution is not simply lying there among the data… it has to be actively constructed by the designer's own efforts" (Cross 2006, 24).

Artistry and Design Education

In attempting to address contemporary criticisms of education in design as problems of educational thought rather than problems of design methodology, I have begun to examine the deep structure associated with ways of making that might conceptually extend the relatively recent history and philosophy of education in design. As such, I have begun to work toward the possibility of naming, describing, and interrogating those beliefs and assumptions that exist at the "rock bottom" of how we talk about and teach design. These "rock bottom" beliefs and assumptions provide the foundation of the deep structure of our thoughts and practices in regard to education in design. As the practices associated with artistry comprise one way of making that might extend the history and philosophy of education in design, it was necessary to theorize

whether those practices were designlike and, further, to determine if the beliefs and assumptions associated with an education in artistry were assets or liabilities that might impact practices in design education. In addressing the designlike nature of the practices associated with artistry, I have concluded that those practices fundamentally differ from the practices necessary to the creation of design artifacts. Works associated with artistry, as I have defined them, are intended to communicate the beliefs, assumptions, and aspirations of the communities from which they emerge. Such artifacts do not fulfil the functional requirement of design artifacts to have a physical impact upon our relationships with and in the world. The artifacts that result from practices of artistry are not intentional in the functionalist sense that design artifacts must be.

While the artifacts that we call art do not satisfy the functional intentions of design artifacts, an accounting of the educational practices that inform our understanding of artistry remains beneficial in attempting to access the deep structure of thought in regard to education in design. Educational practices associated with artistry predate our contemporary practices of design and, in some ways, provide some of the beliefs and assumptions that constitute the deep structure of educational thought concerning design. The canonical, patriarchal, and monarchist assumptions that underlie education in artistry can also be seen as underlying educational practices associated with design. The patriarchal binary that enforces the gender bias in the fine arts is equally present in the established canons of design practices; canonical structures that continue to reinforce the oppressive nature of the patriarchal assumption. Further, in some ways, design education emerged from the same sorts of educational practices that established both the patriarchal privilege of the master/student relationship associated with apprenticeships and the

monarchist sensibilities of formalized art and design education as practiced at the *École des Beaux-Arts*. Later educational reactions to the *École des Beaux-Arts*—the rise of positivism associated with the *École Polytechnique*, and the design methods movement that associated design practices with scientific ways of knowing—can all be considered extensions of the two dichotomies, theorized by Martin, that form the foundation of the deep structure of Western thought. These educational practices can be thought of as maintaining an oppressive cultural framework that reinforces the nature/culture split and the public/private spheres of society. In continuing to promote concepts embedded within patriarchal assumptions and grounded in the monarchist traditions of the *École des Beaux-Arts*—traditions based upon the unquestioning appropriation and acceptance of the forms and traditions of antiquity—education in design stands opposed to the emotional and aesthetic human experiences and encounters existing within the messy vitality of lived experience; opposed to responsive practices that might allow for design to participate in the construction and maintenance of culture.

As a result of their reliance upon canonical knowledge, upon the patriarchal assumption, and upon monarchist sensibilities, ways of making that might be associated with education in artistry can be seen to be burdened with liabilities that cannot alleviate contemporary criticisms of design and design education. The history and philosophy of education in artistry does not appear to provide the conceptual strength necessary to extend the deep structure of education in design. It does; however, allow us to expose and interrogate liabilities in design education that have arisen out of educational practices associated with artistry—it allows us to name the canonical, patriarchal, and monarchist assumptions that influence the deep structure of education in design. Such naming might

then lead to discussions among educational theorists, design theorists, and design educators in efforts to address contemporary criticisms of education in design.

Further, there appear to be assets that an education in artistry might bring to any reconceptualized theory of educational practices in design. Artistry, as an educational practice, can provide design students with the manual skills and the practical wisdom associated with effective communication and with aesthetic judgment. Artistry, as a practice, is traditionally concerned with communicating the beliefs, assumptions, and aspirations regarding our cultural and social relationships with and in the world and, resultantly, it can assist designers in understanding the necessity of grounding their works within the structure of beliefs that come out of our present cultural practices. Additionally, while traditional forms of artistry do not aspire to physical manipulation of the world but, rather, to the documentation and perpetuation of cultural beliefs, contemporary artistic practices eschew this reliance upon tradition and begin to interrogate our established beliefs and practices. Particularly, the work of feminist artists has begun to destabilize the canon of fine arts. Such practices may also be beneficial to education in design as we strive to address criticisms of our elitism and our problems related to race, class, and gender equality; our inability to participate in the creation and maintenance of culture.

While the practices, beliefs, and assumptions associated with artistry as a way of making and with educational practices associated with artistry are not wholly appropriate to extending the deep structure of education in design, it has been beneficial in illuminating possible ways to understand and respond to criticisms of design education in relation to those practices, beliefs, and assumptions. In the ways of making associated

with workmanship and craftsmanship we may find alternative practices that fulfil the functional requirements of design and that overcome liabilities that have led to criticisms of design education. Chapter Two will explore education in workmanship and how that might move us closer to the type of making that does have a physical impact upon our relationships with and in the world. It will also attempt to identify practices in the education associated with workmanship that continue to foster liabilities that exist within the deep structure of Western thought and that are detrimental to educational practices in design.

Chapter Two: An Accounting of Workmanship

The Deep Structure of Design

Previously, I theorized that as "a maker of everythings" I might be thought of in different ways; ways that cohere to three ways of making that I related to the practices associated with design. I might be thought of as an artist, a worker, or a craftsperson. As a maker, I might participate in practices of artistry, of workmanship, or of craftsmanship. In any of those three ways of making I theorized that there exists a relationship with the "know-how" of creating physical artifacts. The artist, the worker, and the craftsperson depend upon their particular forms of "know-how" in creating the artifacts that define their practices. As the "know-how" of their particular practices are passed down to future artists, workers, and craftspeople, it can be assumed that some form of education must occur. These forms of education should be seen as embodiments of Jane Roland Martin's educational agents.

In order to understand the educational value of these different ways of making—of these different educational agents—it is necessary to take account of the assets and liabilities of each in an educational setting. As such, I have begun to critically engage the deep structure of educational thought that is associated with these ways of making. In the last chapter, I discussed the possibility of the beliefs, assumptions, and practices associated with an education in artistry acting as a means of extending the history and philosophy of design in order to expose a deep structure upon which educational practices in design might be constructed. After taking account of the beliefs and assumptions that exist at the "rock bottom" of thought associated with an education in artistry, I concluded that such an education, while providing some assets that we might consider beneficial to

an education in design, was not able to fully flesh out the theoretical structure that the history and philosophy of design education might require if it is to respond to contemporary criticisms. This chapter will continue to engage making as a means of extending the deep structure of thought concerning education in design. I will explore education in workmanship as a manifestation of the making associated with workers in order to engage the core beliefs and assumptions that exist in the deep structure of thought about such an education and how that structure might influence how we think about design and design education.

Understanding Workmanship

In order to engage in an accounting of the educational assets and liabilities of the making associated with workmanship as a means of conceptually extending the deep structure of education in design it is important to clarify what is meant when discussing the term workmanship. Further, it is necessary to identify the deeply held beliefs and the educational practices related to workmanship that might be considered either assets or liabilities that could have an impact upon education in design. Workmanship, like artistry, involves some form of skill in the creation of physical artifacts; it requires a form of "know-how" appropriate to the act of making such artifacts. Workmanship, as a practice, is "directly connected to the potential ability of the hand to work physical material" (Risatti 2007, 163). As makers, workers, artists, and craftspeople equally have the potential to possess the technical ability to work physical materials in the creation of well-made objects—artifacts that can express and mediate our relationships with and in the world. Resultantly, as noted previously, the "know-how" of making does not assist

in illuminating the differences between workers, artists, and craftspeople. The work of workmanship, however, can be differentiated in that it does not attempt to engage those conditions necessary to the work of artistry or craftsmanship. Workmanship, as a practice, does not imply the intentionality of the work produced by those that we call artists and craftspeople. A worker is one who executes the intentions of others; the work of workmanship is not an intentional act in and of itself. Workers only act to convert abstract notations—whether they be the intentional ideas of designers or artists—into physical artifacts. Howard Risatti (2007, 163) defines workmanship as "labor produced by the noncreative hand." In this way, workmanship can be seen as a disinterested exercise; as the employment of the manual competence associated with "know-how" without the critical engagement associated with the intentionality of the making of artists and the making of craftspeople.

Workmanship can be thought of as containing only the knowledge related to acts of production; the manual competence of "know-how" that comes with performative acts of making and doing that do not involve intellectual engagement.[22] There is no opportunity for the worker to engage her intellect beyond interpretation and translation. The primary concern of the worker is in interpreting the ideas, the drawings, and/or the models of others and then translating those interpretations into artifacts through the manipulation of the physical properties of various materials—materials generally chosen by a designer or an artist. In this sense, workmanship can be thought of as simply a

[22] I do not mean to imply that workers do not have agency, nor that they do not develop knowledge. My contention is that these are not the primary intentions of workmanship. Knowledge development by workers, and how that might lead to innovative practices, has traditionally not been encouraged and, as such, limits the possibilities for workers to express their agency. In this way, workers might be thought of as suffering a form of oppression related to their work and their social class.

process whereby once the worker has learned the "how-to" of making she continues to produce with no intention beyond the act of production. The knowledge of workmanship consists, primarily, in following directions and producing well-made things; there are no explicit acts of intentional judgment in the work of workmanship. While there are many other ways of talking about workmanship; i.e., in the adjectival sense of something well made, in relation to making, it is only a disinterested process of labor. In this way, the practice of workmanship is the exercise of productive skill without intellectual engagement. When I talk about workmanship as a way of making, I mean that an individual is engaged in a rote process of production (labor) where she uses manual skill to manipulate physical materials in order to create physical artifacts.[23] In this sense, there is no engagement with the intentionality of judgments that we might associate with artists and craftspeople; there is no sense of communication and no sense of problem solving. In the work of workmanship, there is no attempt to innovate that might lead to changes in the artifacts produced or in the means of production. Resultantly, as we will see later, the productive skill of the "know-how" of workers is insufficient to insuring that education in workmanship can provide the deep structure of thought that might expand how we conceptualize of education in design prior to industrialization. Engaging the productive labor of forms of making associated with workmanship cannot convey the practical knowledge and intentional judgements expressed in the work of artistry and the work of craftsmanship. It is a combination of "know-how" and intentional judgments

[23] The artifacts produced by workers do not necessarily serve solely in a capacity that could be construed as actively mediating our physical encounters with and in the world. The artifacts produced by workers might be practical (possessing utility), communicative (stating beliefs about the world), or trivial (things that we might find appealing but that have no significant use value).

that appears to be crucial to insuring the creation of capable and competent designers; to responding to contemporary criticisms of education in design.

The second task involved in taking account of workmanship—in identifying its deeply held beliefs and how they influence educational practices—is much more difficult. Few, if any, schools that teach design have touted their educational practices as invested in teaching students the skills necessary to attain competence in productive labor. In my career as a design educator, I have only encountered discussions of the skill associated with workmanship in its negation. Statements like "I don't teach software (or any manual skill); that is something students can learn on their own or at a trade school" are common in faculty meetings when curriculum is discussed.[24] This type of statement is generally not questioned and is usually followed up with "I have more important things to teach them." These "more important things" are normally theories associated with particular design methodologies. Even in beginning level classes, manual skills are hastily discussed, seldom demonstrated, and rarely is their necessity reinforced in the classroom. The expectation is that students can learn these manual skills, through a process of trial and error, on their own time, by performing them.[25] As such, it appears that most design educators hold that educational practices that prioritize "know-how" are not of significance to the education of designers; these practices are contingent to the knowledge required by a design education.

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[24] Here, software is meant to indicate computer programs that assist designers in documenting their ideas. Software is, seemingly, the realm of the draftsperson (the skilled laborer) and is not thought of as essential to the work of the designer. I, however, do not hold this view.

[25] I have found that this lack of teaching manual skills results in dangerous and inefficient practices on the part of students; I am particularly thinking about the use of Xacto knives, box cutters, and other bladed instruments that are regularly used by students. This lack of engagement with manual skills also limits the ability of both students and teachers to engage in evaluative practices that can produce capable and competent designers and allow those designers to participate in the creation and maintenance of culture.

In searching for educational practices in workmanship, as they relate to contemporary design education, it is necessary to broaden the scope of what we consider the realm of design education. While I hold that competence in manual skills is something that is necessary to designers, it is not currently available in most design schools. As suggested above, most design educators see manual skills as not related to design education and that these skills should, therefore, be learned in trade schools. Since most design schools do not associate themselves with educational practices that allow for the teaching and learning of productive skill, it is beneficial to explore vocational education as a model case for education in workmanship. It is within the vocational arts associated with design fields that we can find examples of educational practices that address the "know-how" associated with workmanship. The vocational arts that engage in forms of technical instruction appropriate to the "know-how" of design can be thought of as falling into three broad categories. The first of these are those traditional trades associated with fabrication: carpentry, machine operation, brick and stonemasonry, and welding. Generally, workers employ these fabrication skills in the production of artifacts conceived of and documented by designers. There is also technical instruction associated with those more traditional trade skills that are now primarily considered recreational pursuits: woodworking, weaving, blacksmithing, and pottery. Finally, there is instruction in those new fields of production that have arisen as a result of technological progress: Computer Aided Drafting (CAD), Computer Aided Machining (CAM), digital image editing, digital media production, and digital page layout.[26] All of these productive skills

[26] There are probably other vocational skills that can be thought of as "design-like;" however, those listed here at least provide examples that assist in establishing the nature of this relationship. Additionally, many of these skills are directly related to domestic skills—a relationship that will be explored more fully later in this chapter.

are closely related to, and act in support of, the education of design professionals and reflect practices associated with the manipulation of physical materials in order to produce physical artifacts.[27]

The association of workmanship with vocational education is beneficial in understanding why design schools do not align themselves with, or provide room in their curricula for, workmanship. Education in workmanship, vocational education, is generally thought of as preparing individuals for employment in manual trades and clearly has negative connotations (See Hager and Hyland, Anderson, Crawford, Lewis, and Coffey). This negative stance is expressed in judgments concerning the value of education in workmanship. These negative values can be thought of as the result of a lack of privilege associated with workmanship; with the subjugated labor of the working and lower classes. An exploration of the negative values associate with the vocational arts allows for ways of identifying and interrogating liabilities that exist within the deep structure of thought associated with education in workmanship. As such, it allows us to make judgments about how these practices have had an effect upon education in design; how the negative values associated with workmanship impact design education.

A Critique of Vocational Education

The bias against workmanship, a type of making whose educational practices are now associated with vocational skills training, has a long history. The Greek myths are populated with stories that discuss the origins of practices associated with the production

[27] Even those practices that are digital in nature generally end in the production of physical artifacts. This might be a point of argument in skills like web design; however, I would suggest that we must accept the technical construction of the internet—if not its content—as a new form of physical and artefactual reality.

of physical artifacts. These productive acts were seen as necessary to human life; practices that became the skills and labors that defined humanity. These practices—including weaving, masonry, metalsmithing, carpentry, and pottery—each required particular skills; particular *technê* in order to produce useful artifacts. *Technê*, as I am using the term, just is the set of particular skills—the manual competence—employed by a maker in creating physical artifacts. *Technê* represents the "know-how" of a particular practice; i.e., there is a *technê* associated with weaving, a *technê* associated with metalsmithing, and a *technê* associated with carpentry. The Greeks associated these skills—the *technê* of material practices—with the Daimona Tekhne and placed them, like her, within the sphere of the domestic.[28] This association with the domestic ensured that *technê* remained subordinate to the privilege given knowledge in *epistêmê*—knowledge associated with universal truths—and its associations with the universal character of the gods; an association with that which cannot be questioned. In associating *technê* with the domestic realm, it was seen as beneath the dignity of culture; antithetical to the pursuits appropriate to the citizen. The subordination of the domestic, of the *technê* associated with the production of physical artifacts, is a form of oppression that can be exposed by feminist critique. This oppression acts to silence the "know-how" of *technê* and, therefore, undermines educational practices associated with workmanship.

Once *technê* in domestic practices—what we might think of as those practices associated with vocational education—was acquired, there is an assumption that those skills were passed down to others; that there was teaching and learning associated with *technê*. There is, however, no substantial exploration of how these skills were passed

[28] The Diamona Tekhne and her relationship to Greek thought is discussed further in Chapter Four.

down; of how, over time, others became skilled in the production of physical artifacts or in the innovations necessary to create new artifacts that could mediate our relationships with and in the world. Even though the Greeks did not provide us with a clear understanding of the curricular structure and practices associated with education in *technê*, vocational education—education in the domestic arts—can be thought of as one of the first, and most important, means of educating. Theorist of vocational education David Coffey (1992, 11) has suggested that "life was primarily sustained by the passing on of manual skills from one generation to the next. Most people were educated 'on the job', in particular by experiencing some sort of formal or informal apprenticeship." This passing on of skills should not be considered a formal education in the sense that we currently understand but, rather, as training that happened through making and doing; as on the job training that taught new learners the skills of their particular practices. In a more contemporary context, historian of American culture Studs Terkel's stonemason noted that his education was of an informal nature, consisting of on the job training:

> I started back in the Depression times when there wasn't any [formal] apprenticeships. You just go out and if you could hold your job, that's it. I was just a kid then. Now I worked real hard and carried all the blocks I could. Then I'd get my trowel and I'd lay one or two. The second day the boss told me: I think you could lay enough blocks to earn your wages. So I guess I only had one day of apprenticeship…I admired the men that we had at that time that were stonemasons. They knew their trade. So naturally I tried to pattern after them. There's been very little change in the work (Terkel 1989, 19).

This same stonemason also suggested that this form of educational mimicry was common to those who began as, and were considered, unskilled workers. He noted that the laborer always feels that she is at the bottom of the scale "and always wants to get up to a skilled trade" (Terkel 1989, 18). By mimicking the work of those who already possessed the requisite skill, she could eventually reach the same level.

The Roman architect Vitruvius expressed the necessity of vocational education when he suggested that the learning of *technê* was a matter of practice that consisted in "the ceaseless and repeated use of a skill…according to a predetermined design" (Book I, Chapter I, 1). We can think about this "predetermined design" as embodying the educational practices that were provided by a teacher; skill that was acquired either formally or informally in the guidance of the learner's hand. It is from the formal and informal education that passed down generationally that the practices of vocational education arose. As educational practices became more formalized, vocational education—for the most part—replaced the apprenticeship model in regard to the training of workers. This transition was a result of cultural changes brought about by the emergence of formal education in other knowledge fields, the rise of enlightenment thinking that prioritized the objectivity of scientific practices, and the rise of industrialization that required uniformity in the education of workers. Even in the transition from the "on the job training" associated with both informal and formal apprenticeship models, the formalization of vocational education did not exist independently, but was an integral component of the structure of general education. At one time, shop classes, instruction in home economics, agricultural training, industrial training, and other skills classes were an inseparable part of our common curricula.[29] The general education system intended that students have both the knowledge of *epistêmê* and the skill of *technê* as they were prepared to live productive lives; lives that supported their intellectual and vocational efforts and, likewise, mirrored cultural practices.

[29] For further clarification of the relationship between vocational and general education and its eventual dissolution, see Matthew Crawford's *Shop Class as Soulcraft: An Inquiry into the Value of Work* (2010).

Philosophers of vocational education Paul Hager and Terry Hyland (2002, 271) raise the question as to why general education and the education of vocational training "came to be differentiated, with different forms and strands distinguished in terms of prestige and status in ways that generally disfavor and disvalue vocational studies." Theodore Lewis, also a philosopher of vocational education, suggests that this differentiation has been the result of class distinctions; that "vocational education has been conceived of as being unworthy of the elite, and more suited to the oppressed or unprivileged classes" (Lewis 1991, 97). This class distinction can, likewise, be traced back to the Greek differentiation between *technê* and *epistêmê*. Early Greek philosophers—who articulated what we might think of as the "rock bottom" of Western philosophical thought—in attempting to rationalize the beliefs and practices that arose from the age of myth led to an intellectually clear distinction between *technê* and *epistêmê*. The knowledge of *epistêmê* was associated with universal and unwavering principles and, as such, was the domain of the citizen, the domain of culture. In this sense, *epistêmê* exists within Carolyn Korsmeyer's masculine binary—it exists within and continues to perpetuate the patriarchal assumption. The "know-how" of *technê*—the manual competence of the worker that completes the binary pair—was associated with the contingent; it existed in the realm of the domestic. *Technê*, as representational of the domestic was the province of the worker, the craftsperson, the artist, and the enslaved.

The specialization of *technê* is unquestionably contingent; it depends on the particular materials used by the maker, the particular processes in which the maker is involved, and the physical artifacts produced. The practices and artifacts associated with metalsmithing are quite different from the practices and artifacts associated with weaving

and; therefore, the *technê* associated with these practices and artifacts is necessarily different. Through sustained practices of making and doing one can attain competence in the *technê* of any particular practice; however, these acts of production do not assure that knowledge beyond manual competence is acquired. In Vitruvius' theory of the education of the designer it is the knowledge of *epistêmê* coupled with *technê* in a particular practice that allows the designer to attain professional knowledge. It is ultimately this reciprocal relationship between the universal knowledge of *epistêmê* and the contingency of *technê* that allows for what Aristotle referred to as *phronesis*; the attainment of practical wisdom.[30]

In Plato and Aristotle, we see a distinction between those who acquire the practical wisdom of *phronesis* and those who only perform at the level of production. The person who has attained *phronesis* is one who can give an account of what she produces; she knows why in relation to her "know-how." Aristotle further clarified this concept in the *Metaphysics* when he suggested that an account of the goal in mind is the basis for reasoning that ends in action (Parry 2014). For the worker, there is no giving account; no engagement with practical wisdom, only an unquestioned act of production. Over time, it appears that our privileging of the universal knowledge of *epistêmê* over the contingency of *technê* created a binary opposition of such magnitude that the idea of the attainment of *phronesis* became lost to educational practice. Our polarization of the binary pair marginalized *phronesis* and has restricted its discussion in the realm of educational discourse. The practical wisdom—the ability to make critical judgments—

[30] See Chapter 4 for a further discussion of the Aristotelian concepts of *technê*, *epistêmê*, and *phronesis*.

associated with an education in both epistemic and technical knowledge was lost to an oppressive conceptual framework embedded within the patriarchal assumption.

The Liabilities of Workmanship

The bias against workmanship and the education of workers can be further explored as embedded within more contemporary cultural liabilities that must be exposed and explained if we are to engage in dialog that may work toward eliminating them from the deep structure of our educational practices. In *Democracy and Education*, John Dewey attempted to address this polarizing distinction when he suggested that "labour and leisure, theory and practice, body and mind," are false oppositions (Dewey 1966, 306). More recently, Hager and Hyland have noted that our conception of vocational education has been heavily influenced by "a series of related and overlapping dichotomies inspired by the ancient Greeks, viz. body vs. mind, hand vs. head, manual vs. mental, skills vs. knowledge, applied vs. pure, knowing how vs. knowing that, practice vs. theory, particular vs. general, and training vs. education" (2002, 272). Through these oppositions, we can begin to see the establishment of oppressive conceptual frameworks that act to differentiate individuals and marginalize the voices of those individuals; voices that might affect both educational practices and cultural creation.

Dewey (1997, 19) implicates traditional education—which can be thought to include vocational education—as oppressive when he first theorized that any system of teaching that is "imposed from above" opposes the ideas of the expression and cultivation of individual identity that arises out of the value of individual experiences. All systems that are imposed from above must be considered as oppressive in that they do not care

for, nor respond to, the needs of the individual members of an arbitrarily perceived unitary group. In *Shop Class as Soulcraft*, social and educational theorist Matthew Crawford (2010) further implicates education as oppressive in that its goal appears to be the creation of a class of workers who are procedurally inclined; a class of workers that does not question but only performs as instructed. As a result of the privilege given to the epistemic—to the knowledge that we associate with objectivity—educational opportunities that were intended to teach the manual and intellectual competencies of particular skills and trades have been marginalized. The opportunities to engage in innovative practices and an ever-changing culture of progress were removed from schooling in favor of classes that prioritized an information economy grounded in rules, procedures, and uncritical processes. While current procedural forms of education might state that their ultimate goal is to create workers who can respond to the challenges of the twenty-first century and regain a competitive edge in the global economy, I would argue that their practices do not actually achieve the goal of teaching students to respond to contemporary technical and cultural challenges. On the contrary, their educational methods perpetuate oppressive frameworks that favor procedural practices over creative processes and over the attainment of multiple forms of knowledge necessary to solve difficult problems and make critical judgments.

Crawford's theory that we are creating a "class" of workers further appears to suggest the domination implicit in an oppressive conceptual framework. Seemingly, educational practices that do not allow for multiple ways of knowing—multiple ways of engaging the world—appear to be representative of an oppressive conceptual framework, a framework that Warren describes as patriarchal in that "it explains, justifies, and

maintains subordination of women by men" (Warren 1990, 127-128). In this case, education that denies multiple ways of knowing acts to subordinate all people, the environment, social constructs, and labor to an oppressive patriarchal system. This is especially problematic when it comes to silencing the practical wisdom found in the physical acts associated with making and doing—with innovative practices that assist in mediating our physical relationships and experiences with and in the world.

These acts of silencing, the elimination of those forms of education that do not cohere to the dominant epistemic binary, are oppressive liabilities. Such liabilities do not allow for multiple ways of knowing and limit the ability of students to see that their experiences in making and doing can lead to forms of knowledge that exist outside of binary frameworks. It is in this engagement with making and doing that students can gain problem solving skills; the ability to solve what philosopher and systems scientist C. West Churchman (1967) called "wicked problems." The ability to solve these problems come out of the ability to make practical judgments; they arise out of our ability to reconcile *epistêmê* and *techn*ê into the wisdom of *phronesis*. The false oppositions of labor and leisure, practice and theory, and *technê* and *epistêmê*, can be addressed through feminist critiques of the oppressive character of binary oppositions and, as such, can be shown to be liabilities that we must eliminate from educational practice. If the goal of education, and particularly design education, is to teach students the knowledge and skills to make the practical judgments necessary to solve "wicked problems" and to participate in the taking account necessary to ensure cultural progress, then the liabilities of oppressive conceptual frameworks must be addressed in all learning environments.

Vocational education, and likewise, education in workmanship, can no longer be seen as allowing for the practical wisdom of *phronesis*; it has become oppressive in that it maintains class and social distinctions. It perpetuates a liability of oppression in allowing for the manual competence of *technê* but discouraging its relationship to knowledge in *epistêmê* and, therefore, limiting the possibility of realizing the heights of knowledge attainable with *phronesis*. Vocational education if conceived of and implemented only as skills training for those who are othered by privilege—those who are not dominantly raced, dominantly classed, or dominantly gendered—is an educational liability that must be confronted if we are to reach the full potential of every individual and are to ensure that our cultural practices do not continue to limit our educational practices. All individuals need to be encouraged to pursue forms of knowledge that exist beyond the privilege of the epistemic and should be able to access educational practices that will allow them to participate in the creation and maintenance of culture. The oppressive educational framework that perpetuates race, class, and gender subordination must be reconceptualized. If we create a framework that allows for multiple ways of knowing, for multiple educational voices, then we can allow all people to strive toward knowledge that will allow them to make critical decisions; that will allow all people to make judgments about their individual and social/cultural relationships with and in the world.

The Hampton-Tuskegee Model of Vocational Education

Historically, there have been schools that we might think of as having attempted to cast off the oppressive conceptual framework of race, class, and gender subordination

associated with vocational education. Such schools were primarily established in order to provide vocational training; however, they also attempted to institute changes in the cultural contexts in which they existed; to participate in what I have termed a taking account of the deep structure of educational thought. These schools, at least in some ways, might be thought of as engaging educational assets that would ensure that an education in workmanship was also an education that allowed for human dignity and equity; an education that ensured that the "how-to" knowledge of the *technê* of workmanship could be coupled with knowledge in *epistêmê* and, thus, provide an opportunity for students to attain the judgments of *phronesis*—to become capable practitioners of their vocations—and to participate in the creation and maintenance of culture. Two such schools, related in cultural context and in educational theory and practice, were the Hampton Normal and Agricultural Institute and the Tuskegee Normal and Industrial Institute.[31]

Hampton, founded in 1868 by Samuel Chapman Armstrong, has long been considered a model of educational progress for African-Americans after their emancipation.[32] Tuskegee, founded in 1881 by Hampton graduate Booker T. Washington, was based upon and grew out of the model of vocational education

[31] While there are many schools that might have been associated with thinking about the role of workmanship as educational practice, Hampton and Tuskegee allow me to discuss the critical reality of the educational models and the aspirational aims stated in regard to those models. Many schools established to provide training for the professions (whether those professions were industrial, agricultural, or educational) did not do so in order to challenge cultural norms. Further, Hampton and Tuskegee allow me to consider race as one form of subordination that acts to maintain the logic of domination associated with the patriarchal assumption that exists at the "rock bottom" of Western thought.

[32] This has been theorized to be a mistaken assumption. It can be argued that those who considered Hampton a progressive model of educational practice were white people seeing it as a way to maintain the subjugation of newly emancipated Black people. However, I will argue that there were previously enslaved people who, like Booker T. Washington, saw this model as a pragmatic means of contributing to and gaining a foothold in the culture that sought to suppress them. See Anderson's *The Education of Blacks in the South, 1860-1935* (1988) for a more thorough discussion.

established at Hampton. This model of education is generally regarded as one that would allow for recently emancipated Black people to attain intellectual and technical abilities that would allow them to engage their individual and cultural identities and to be completely equal participants in the creation, and economic life, of a newly emerging culture.[33] Recent scholarship, particularly historian of education and critical race theorist James Anderson's *The Education of Blacks in the South, 1860-1935* (1988), provides an excellent critique of the claim that educational practices at both Hampton and Tuskegee were progressive. Anderson suggests that these models of education, while viewed by whites as progressive, "represented the ideological antithesis of the educational and social movement begun by ex-slaves" (Anderson 1988, 33).

The primary concept articulated by Anderson's critique is that the educational models at both Hampton and Tuskegee were models that continued the oppression of the newly emancipated Black men and Black women of the United States. Neither Hampton nor Tuskegee addressed the issues relevant to most previously enslaved people; issues of freedom and how that freedom influenced social order. According to Anderson, education at Hampton—and by extension at Tuskegee—represented a curriculum supported by Armstrong's social class and ideology. Rather than providing a curriculum that supported the values of the newly emancipated Black people, Anderson notes that Armstrong, in addressing challenges to the oppression arising from the privilege of white culture, "developed a pedagogy and ideology designed to avoid such confrontations and to maintain within the South a social consensus that did not challenge traditional

[33] While the enslaved Black people of the United States had attained both intellectual and technical abilities and had been participants in both cultural and economic life, their contributions had been silenced as a result of their enslavement and their marginalization at the hands of white culture.

inequalities of wealth and power" (Anderson 1988, 33). Armstrong, as a result of his beliefs in the supremacy of white culture and in attempting to avoid confrontations, concentrated his efforts on creating a "nonskilled or semiskilled black work force that would support the southern economy" (Anderson 1988, 47).[34] The educational philosophy indorsed by Armstrong served only to maintain an existing oppressive cultural framework that ensured the continued racial and class subjugation of a legislatively free people. Current practices in vocational education, in an uncritical acceptance of the Hampton-Tuskegee model as representative of its history, have continued to further this oppression. In separating vocational training from intellectual engagement, vocational education has failed to address criticisms of race, class, and gender equality. Design, as representational of a variety of professional fields, has also struggled in regard to issues of race, class, and gender. It may be that design's educational identity as representing professional fields has similarly detached it from intellectual engagement and, in much the same way that vocational education has failed to address such criticisms, is limiting its ability to address instances of race, class, and gender inequality.

The Hampton-Tuskegee Philosophy

In contrast to Anderson's claim of maintaining an existing oppressive cultural framework, the Hampton-Tuskegee philosophy of education, at least as implied in the writings of Washington, was intended to act as a means of helping eliminate the oppression of race and class disparity in the antebellum United States. Nevertheless, the

[34] Armstrong's beliefs about the supremacy of the white race and its responsibility to rule over "the weaker dark-skinned races" (Anderson 1988, 38) is thoroughly delineated in James Anderson's *The Education of Blacks in the South, 1860-1935.*

hopeful rhetoric associated with Washington's descriptions of Tuskegee did not necessarily cohere to the actual educational practices employed. The Hampton-Tuskegee model, in practice, can be criticized—in support of Anderson's scholarship—as maintaining the race and economic privilege associated with white men in the United States. Read generously, however, the curriculum at Tuskegee theorized in *Up from Slavery* (1986) intended to create students that could be employed and could establish themselves within a pre-existing and hostile culture. This was to be accomplished through an education that dignified labor—similar to the dignity that came with skill as described by Terkel's stonemason—by elevating it beyond *technê*, beyond the knowledge of skill associated with manual competence. The curriculum at Tuskegee, at least according to the writings of Washington, was, resultantly, heavily invested in an education in *technê*. An education elevated beyond the drudgery of labor, however, theorized an equality in the value of knowledge gained through manual competence and through traditional educational practices that provided epistemic knowledge. *Up from Slavery* suggests that Washington held that both *technê* and *epistêmê* were necessary to the creation of new cultural practices that might ensure racial and class equality; educational concepts that were seen as necessary in challenging the cultural practices associated with white Northern industrialists and white Southern landowners.

Prior to opening Tuskegee to students, Washington spent a month traveling and investigating what he found to be a subjugated community of impoverished and miseducated people. Resultantly, he decided that "to take the children of such people as I had been among for a month, and each day give them a few hours of mere book education, I felt would be almost a waste of time" (Washington 1986, 118). He further

clarifies this position when he suggests that there were Black people who had some formal education in grammar and mathematics but "had little thought or knowledge of applying these rules to the everyday affairs of their lives" (Washington 1986, 122). As a result of this investigation, Washington was convinced that the teaching of epistemic knowledge—of validating only the knowledge of *epistêmê*—would not suffice. He clearly suggested an educational philosophy that valued multiple, and practical, sources of knowledge; "We wanted to teach them to study actual things instead of mere books alone" (Washington 1986, 126). There is, however, some question as to whether Washington effectively accomplished this task. Educational practices at Hampton and Tuskegee are generally thought of as practices in effective vocational training, in teaching the "know-how" of *technê* as a means of attaining racial equity; however, Anderson has documented many examples of how the Hampton-Tuskegee educational model did not actually achieve these goals. He suggests that the Hampton-Tuskegee model involved very little education in *technê*—Anderson suggests that an education at Hampton or Tuskegee only provided a level of instruction that produced semiskilled labor (See Anderson 1988, 47, 55, 59, 60, 75, 77). In accepting Anderson's assertion that the Hampton-Tuskegee model produced only semiskilled labor, it suggests that this model of education did not achieve Washington's philosophical goals. Educational practices were, seemingly, more concerned with continuing to create laborers that would maintain the privilege of white industrialists and white landowners and continue the subjugation of Black labor.

In *Up from Slavery*, Washington indicated that his intent to engage the students in labor was to have them understand "not only utility in labour, but beauty and dignity; [they] would be taught, in fact, how to lift labour up from mere drudgery and toil, and

would learn to love work for its own sake" (Washington 1986, 148). "Work for its own sake," in this sense, should not, however, be taken as representing the simple productive capacity of workmanship. In the context of Washington's hopeful account, the students at Tuskegee would be educated in both the technical and intellectual skills that would raise their work above drudgery, above the simple labor of the worker. In an educational philosophy that provided instruction in both general and vocational practices, Washington was attempting to establish practices that, contrary to Armstrong's practices, destabilized their cultural contexts, practices that would provide the practical wisdom that we might associate with *phronesis*. Washington's philosophy was attempting to move beyond oppressive binaries and allow for ways of knowing that did not cohere to his era's cultural beliefs and assumptions. Nevertheless, Washington's philosophy of education in both manual and intellectual competence, while its rhetoric was hopeful and progressive, did not ultimately achieve his goals but, according to Anderson, continued to maintain conservative cultural values—cultural values that aligned with the greed of white industrialists and white landowners who wished for emancipated Black people to remain subjugated. As Anderson (1988, 99) noted:

> They [white southerners] knew that blacks as a class had never submitted willingly to racist oppression or acknowledged the legitimacy of whites to rule over them. Most white southerners, therefore, were naturally suspicious of the [northern] philanthropists' claim that blacks could be formally schooled to accept subordinate social and economic roles. Consequently, black education became the ideological medium of conflict between southern whites' wishes for the preservation of traditional, coercive methods of subordination and the educational reformers' demands for modern, subtle forms of social control. The southern white opposition to universal education for both races was tied to entrenched social values, and it especially frustrated the philanthropic northerners.

This statement strongly suggests that the fate of the newly emancipated Black people would not have improved regardless of educational philosophy or method of instruction.

Either educational system, the traditional denial of universal education proposed by white southerners or the subtle controls proposed by white northern philanthropists, was intended to ensure that Black people remained subjugated to the white race. Such systems maintained the liabilities of race, class, and gender subordination. Anderson's critique of these systems, however, provides a means for educational theorists to engage the liabilities of other subordinating systems—particularly vocational education—that continue to be furthered through miseducative practices.

While the educational model of Hampton-Tuskegee—by way of Anderson's critical research and insights—has been shown to have both maintained and perpetuated cultural liabilities associated with race, class, and gender subordination, I would like to theorize Washington's *Up from Slavery* as an educational model that could have addressed these liabilities. Washington's goal, the creating of an environment that encouraged the acceptance of new assets and the elimination of past liabilities, was one of hopefulness. As a form of philosophical speculation, Washington's work can be seen as offering a way to limit the liabilities of subordination and providing guidance in creating educational and cultural assets that can be of benefit to both general and vocational education. Further, this speculation may also suggest methods of combatting oppression in regard to practices specifically associated with design education.

Washington's Idealist View

Washington's *Up from Slavery* offers a different, and arguably more idealistic, account of educational philosophy at Tuskegee; a philosophy that allowed for the education of previously enslaved people in the skills of manual competence—of *technê*—

and in the educational subjects associated with *epistêmê*.[35] Such an education would, ostensibly, provide ways for a newly emancipated people to participate in the economy and culture of the world that they now inhabited. Washington suggested that the future of Black people "rested largely upon the question as to whether or not he [sic] should make himself [sic], through his [sic] skill, intelligence, and character, of such undeniable value to the community in which he [sic] lived that the community could not dispense with his [sic] presence" (1986, 202). Washington suggests that educational practices at Tuskegee were successful in insuring the transition to an integrated community when he noted that voting practices had evolved such that "the disposition to vote against the white man merely because he is white is disappearing, and the race is learning to vote from principle, for what the voter considers to be for the best interests of both races" (Washington 1986, 111). In this theory of skill, intelligence, and character, we can see the practical value of education; an education that provides a framework that is both vocational and intellectually engaging. The ideas that Washington espoused in *Up from Slavery*, while perhaps idealistic and, as such, existing outside the reality of the historical narrative, can be thought of as offering a hopeful account of goals and practices that can ultimately be helpful in theorizing a means of evaluating the educational assets and liabilities that exist at the "rock bottom" of educational practices in workmanship. From the diverse standpoints of the hopefulness of *Up from Slavery* and the critique provided by Anderson, we can begin to assess the assets and liabilities that support the deep

[35] I argue that Booker T. Washington's view, as expressed in *Up from Slaver*y, was idealistic in that it portrays the hopefulness of Washington's educational philosophy and may not represent the actual educational practices that existed at Tuskegee.

structure of educational thought and the resultant educational practices associated with vocational education and with the work of workmanship.

Washington's Educational Philosophy

Up from Slavery presents a philosophy of education that may well be beneficial in re-theorizing both general and vocational education as they exist in contemporary society; in theorizing how the disjunct between education and lived experience—between a patriarchal culture that privileges objectivist ways of knowing over silenced epistemologies that exist as a result of race, class, and gender subordination—might be healed. Washington's philosophical position can be found within the narrative of his life and works and it is worthwhile to tease this position from the text of *Up from Slavery* and to explore it as a developed and grounded philosophy of education. In any act of coaxing theory from a narrative account there is an element of interpretation; and with interpretation come the interpreter's biases. As I am a product of the deep structure of Western thought, one founded upon the patriarchal assumption, I must be continually mindful of how that bias allows for the danger of misinterpretation. It is my intention to mindfully consider the broader theoretical notions in order to piece together a coherent philosophy that might suggest some means of addressing the liabilities present in my biases and, likewise, present in contemporary educational practices.

In describing the beginnings of Tuskegee, as realized through the fog of time, Washington noted that both he and alumni of the school were "glad that we started as we did, and built ourselves up year by year, by a slow and natural process of growth" (Washington 1986, 162). Tuskegee's slow and natural building up can be held as the

foundation of Washington's educational philosophy; all else builds from and is judged by this curricular foundation in educational—both general and vocational—and cultural engagement without endangering the fragile existence of a free but still subjugated race. As Washington stated, "The wisest among my race understand that the agitation of questions of social equality is the extremest folly, and that progress in the enjoyment of all the privileges that will come to us must be the result of severe and constant struggle rather than of artificial forcing" (1986, 223). In this sense, Washington can be seen as not desirous of maintaining a subordinate position but rather of promoting a pragmatist stance that employed practical wisdom to address a particularly difficult situation. Education at Tuskegee can be viewed as opposing the oppressive framework of Western privilege not through the force of rhetoric but, rather, through the pragmatic acts of creating an environment of competence and confidence that would ensure the economic success of previously enslaved people and allow them to slowly integrate themselves into the resistive cultures of the industrial north and the agrarian south. Washington's teaching of "civilization, self-help, and self-reliance," (Washington 1986, 149) a teaching of identity through the teaching of intellectual and manual competencies, provided the potential for his students lives to be meaningful, dignified, and fully participatory in both economic and cultural production.

Of particular importance in theorizing his educational philosophy is Washington's use of the term "ourselves" in describing a Tuskegee education. This term is one that places the impetus of educating previously enslaved people on themselves; Washington is suggesting that, as he saw it, his work was not directed by the desires of white culture to continue exploiting the labor of Black people. Washington's assertion that "It means

a great deal, I think, to start off on a foundation which one has made for one's self'" (Washington 1986, 162) reinforces this suggestion and stresses the importance of self-direction, self-help, and self-reliance as fundamental to any educational process. Washington builds from the foundation of self-reliant engagement when describing the growth of the school and its students. "But gradually, by patience and hard work, we brought order out of chaos, just as will be true of any problem if we stick to it with patience and wisdom and earnest effort" (Washington 1986, 161). This statement codifies a narrative of problem solving; engaging in an experiential world and pragmatically solving problems as they are encountered; in making the critical judgments that we associate with *phronesis*. Throughout the text, Washington identifies and then solves problems—pragmatic problems of individual identity, of utility, and of cultural integration. He justifies a vocational education grounded in solving the problems presented in and through lived experience as a necessary complement to an academic education when he asserts that "The individual who can do something that the world wants done will, in the end, make his way regardless of his race" (Washington 1986, 155). This is not a denial of epistemic knowledge, simply a re-positioning of the necessity and value of the practical arts; an assertion that vocational education can act to destabilize the privilege associated with objectivist epistemology and allow for the possibility of multiple ways of knowing that are grounded in the practical wisdom of lived experience. An introduction of the practical arts—of engaged practices of making and doing—may likewise destabilize student expectations and encourage an acceptance of knowledge beyond the epistemic and beyond the binary of objectivity and subjectivity.

This pragmatic re-valuation of the vocational arts should be read as descriptive of the beliefs that Washington saw as necessary to education at Tuskegee. Washington theorized the pragmatic when he advocated that the students be "taught the latest and best methods of labour;" (Washington 1986, 148) however, he did not mean for their education to stop at the level of labor, his intention was to teach them the wisdom "to lift labour up from mere drudgery and toil…" (Washington 1986, 148). The building of the campus buildings by the students at Tuskegee represents a best practices means of accomplishing this educational task. The buildings, and the knowledge that they were the products of student labor, provided a tangible and permanent sense of personal accomplishment; an educational knowledge of the value of individual life experiences. The buildings act as a pedagogy of "civilization, self-help, and self-reliance" (Washington 1986, 149) that is built upon Washington's foundation of a slow and natural building up; a unification of theory and practice that leads to the ability to make judgments; a unification of multiple forms of knowledge associated with *phronesis*. This can be seen as equivalent to a unification of the disjunct between education and lived experience theorized by Dewey; a unification that allows for making informed judgments. The unification of an education in *technê* and *epistêmê* provides a critical wisdom that just is *phronesis*.

In *The Souls of Black Folk*, W.E.B. Du Bois presents a criticism of Washington's privileging of vocational education over what Du Bois presents as a striving toward higher culture. Du Bois, in his aversion to Washington's educational beliefs, indicates that there are many who have "deep regret, sorrow, and apprehension" (Du Bois 2014, 26) regarding Washington's leadership. It is possible that this criticism can be read as an

intellectualist explication of the differences between contemporary education grounded in what we think of as objectivist knowledge and educational practices that employ an experiential and material engagement with the world in order to broaden possible ways of knowing. Du Bois noted that, in the cultural practices espoused by Washington, the ideals—Du Bois' educational ideals related to a classical liberal education—implicit in a new cultural beginning for newly emancipated Black people had been abandoned in favor of industrial and commercial successes. Du Bois argued that Black people bear the responsibility for critical discrimination, based in a liberal education, if they were to have cultural equality (Du Bois 2014). While these differences between Washington and Du Bois are subject to criticism, it appears to explicitly highlight the binary discrepancy between *technê and epistêmê*; it suggests that it is this binary opposition that differentiated the educational philosophies of Washington and Du Bois. While Du Bois advocated for an equality grounded in the dominant paradigm of epistemic knowledge, Washington proposed a pragmatist approach to cultural integration that foremost valued the necessity of both skill and knowledge. While it might seem as if Washington prioritized the educational value of workmanship over the privilege of epistemic knowledge, I suggest that Washington's educational philosophy—in advocating for dignity in labor—sought to unite *technê* and *epistêmê* as a means of addressing and overcoming the oppressive cultural frameworks that continued to subjugate people based upon their race, class, and gender identities.

Tuskegee: The Educational Value of Workmanship

It is this heightened sense of the dignity of labor—the practical wisdom of *phronesis*—that can be attained through education in the "know-how" of *technê* and the intellectual engagement of *epistêmê* that established the educational philosophy that Washington suggests in *Up from Slavery*. In order to ensure that the educational assets associated with workmanship, as an expression of manual competence, can support a conceptual framework for education in design, it must be taught and understood as part of a unified model of practical knowledge far more engaging than the toil of disinterested labor. This "know-how" form of intelligence—the experiential knowledge of *technê* coupled with *epistêmê,* allows for students to attain *phronesis*—the practical wisdom that gives dignity to work, that raises manual labor to the heightened level of reciprocal engagement—the ability to work and to make intentional judgments about that work. Washington, in articulating the necessities of manual competence and intellectual engagement, noted that "no race can prosper till it learns that there is as much dignity in tilling a field as in writing a poem" (Washington 1986, 129). This statement suggests an equality between the manual/technical/vocational and the intellectual; an equality that was necessary in challenging the oppressive conceptual frameworks of American antebellum culture.

Washington recognized the need for dignified labor but he also realized that there must also be technological progress if the students of Tuskegee were to be recognized as active contributors to—and indispensable members of—a new American economy and a new American culture. In describing his pedagogical goals—the teaching of the dignity of labor—Washington noted that he did not intend to "teach them to work in the old way,

but to show them how to make the forces of nature—air, water, steam, electricity, horse-power—assist them in their labour" (Washington 1986, 148). This goal provided a powerful and meaningful way forward in a time of social, political, economic, and environmental uncertainty. Coupled with his call for dignity in labor—for the critical judgments associated with *phronesis*—this statement grounds a pedagogy that provides an understanding of the necessity of innovation; of technological progress. The dignity of manual competence associated with *technê*, coupled with the intelligent knowledge of *epistêmê*, allowed students to employ the practical judgments of *phronesis* and allowed them to move beyond drudgery and toil to become problem solvers. The exercise of the practical wisdom of *phronesis* positioned the students at Tuskegee to become creative innovators; to engage in the creation of physical artifacts that mediated their relationships with and in the world. Relying upon a critical engagement with lived experience, the students at Tuskegee would be able to apply the wisdom of *phronesis* in solving problems that had an effect upon their daily lives and the economic and cultural lives of those around them.

Also implicit in Washington's statement concerning labor and technology is an understanding of the forces of nature as assistive forces to be harnessed in the progress of humankind rather than subjugated resources to be manipulated and exploited. This understanding, while perhaps not fully intentional, can be seen as revolutionary in its view toward stewardship of the ecological world. Speculatively, one might suggest that this view emerges from Washington's own observations of white culture's exploitation of Black people both before and after their emancipation. It would be reasonable to assume that anyone who had felt the disinterested sting of oppression at the personal level

might also be painfully aware of exploitation at any level.[36] When Washington noted that he "learned that assistance given to the weak makes the one who gives it strong; and that oppression of the unfortunate makes one weak," (Washington 1986, 165) he provides an ethic of care that can be applied equally to the individual and to the environment.

In an effort to ensure that the students of Tuskegee were able to participate fully in economic and cultural production, Washington theorized a pedagogy of intellectual engagement and of experience in manual competence; he had the students erect their buildings, construct their furniture, and even grow and prepare their own food. He was obviously satisfied when he noted that "hundreds of men [sic] are now scattered throughout the South who received their knowledge of mechanics while being taught how to erect these buildings" (Washington 1986, 149). These lessons were lessons concerning the material engagement of making and the reflective judgments of *phronesis* that arose from the knowledge of intellectual engagement. From these lessons students learned the skills necessary to find dignity in labor; they learned to solve real problems, to think critically about what they were doing, and to think creatively in an effort to improve their technologies and their lives.

Without the self-confidence learned through self-reliance, the students of Tuskegee would not have been prepared to contribute to the social and economic health of a struggling nation. They would have assumed the menial positions of drudgery associated with laborers and would have experienced similar exploitations that emancipation was intended to correct. With an educational foundation in manual competence and intellectual engagement, Washington noted that the skills learned by his

[36] Of course, there are marginalized people who do not recognize systemic oppression and, as such, might not be willing to equate human oppression with environmental exploitation.

students “caused many of the white residents of the neighbourhood to begin to feel that the education of the Negro was not making him worthless, but that in educating our students we were adding something to the wealth and comfort of the community” (Washington 1986, 153). This community engagement was a nascent form of the construction of a new social paradigm. Washington and his students were beginning to employ the lessons of their manual competence to initiate a dialog of change; a shift from racial discrimination to economic and cultural inclusion.

The ability to employ the practical judgments of *phronesis* in initiating cultural dialog concerning the equality of all subordinated people and concerning the concept of human dignity can be thought of as missing from traditional forms of education in workmanship. It is only in theorizing education at Tuskegee as hopeful—only in my theoretical speculation—that we can elevate workmanship to something more than disinterested labor. While this appears to have been Washington’s goal, other forces seemingly conspired to ensure that the education of previously enslaved Black people did not attain that level of engagement. As such, it appears that the Hampton-Tuskegee model—at least as realized in practice—does not assist in establishing an education in workmanship as fully extending, and providing a foundation for, the deep structure of educational thought in design. It appears that the educational value of workmanship, in its present forms, is not yet sufficient to ensure that education in design accounts for the assets and liabilities necessary to counter contemporary criticisms.

Vocational Pedagogy and Design Education

Washington's pedagogical model does, however, possess critical similarities to the contemporary educational/social critique theorized by Crawford (2010) in his *Shop Class as Soulcraft*. Crawford theorizes a return to the teaching of manual competencies as a means of engaging knowledge of the physical attributes of the world; as a means of engaging ways of knowing that exist outside the binary knowledge associated with contemporary educational practice. Crawford's theoretical position presents a critical and creative education as necessary to escape the inherent oppressions of procedural and objectivist knowledge. It appears; however, that the practical wisdom originally espoused as a means of educational inquiry by Washington—and recently echoed by Crawford—has become marginalized as a form of common education in the United States. This has not always been the case. As stated previously, vocational education was originally theorized as an integral part of general education. Historically, general educational practice included courses that we now think of as vocational; shop classes, home economics, agricultural training, and other skill classes. These classes, as originally conceived and implemented, were not focused on teaching manual labor, but rather were intended to teach the competencies—both manual and intellectual—necessary to prepare students for mastery of particular trades and to give them the intellectual abilities to participate in economic, technological, and cultural progress. The skill training programs offered by U.S. high schools served as excellent working examples of educational practices grounded in the intellectual merits of material and manual competence. Crawford has noted that the shift away from education in manual competence became readily evident in the mid-1980s when educational journals began promoting a

technology revolution, the high-tech job market, and a globalized future. Crawford noted that we had shifted from a material economy to a virtual futurism; to a "vision of the future in which we somehow take leave of material reality and glide about in a pure information economy" (Crawford 2010, 03). This shift to a pure information economy is analogous to the critique of monarchist structures that exist in forms of design education that do not acknowledge the necessity of lived experience; of experiences associated with the domestic nature of *technê*. Such curricula suggest that design students need have no concern for site, for client, for materiality, or for the environment; these concerns being contingent to the purity of intellect associated with monarchist theories of design. All of the contingencies of lived experience exist in a state of subservience to the monarchist will of the designer.

In American educational systems, this shift away from skills training culminated in the 1990s when skills training was removed from most schools as educators substituted the intelligence associated with manual competencies—with *technê*—for coursework that would allow students to become knowledge workers. Along with the demise of shop class, there was a concurrent shift away from the intellectual competencies promoted by a liberal arts education. The shift away from these core competencies in general education further reinforced the monarchist model of design education that subjugated the value of the 'know-how' of *technê* to the idea of pure design—design associated with the will of the designer and the universal character of *epistêmê* supplanted the ability of the designer to make practical judgments. Within the information economy, the practical judgments afforded by manual competence engaged with knowledge in the liberal arts—a critical and curiously engaged intelligence that we understand as *phronesis*—is removed

as a valid way of knowing and as a valid means of education in design. With this shift away from a reciprocal and engaged knowledge, we, seemingly, no longer cared to know how to till a field or how to write poetry. As Crawford put it, this "disappearance of tools from our common education is the first step toward a wider ignorance of the world of artifacts we inhabit" (Crawford 2010, 01). This disappearance of tools implies a disappearance of both the physical artifacts that we commonly call tools and the intellectual capabilities that are necessary tools of critical engagement with the physical world, with the creation of culture, and with multiple forms of knowledge. The intelligence of *homo faber* has shifted from the material world of making to that of *homo sapiens*—knowing man—to a realm of disinterested knowledge and information that is not informed by the wisdom of *phronesis*; by the reflective judgments available through a coupling of the intelligent 'know-how' of *technê* and the knowledge of *epistêmê*.

In an effort to re-engage the world, an approach to design education that embraces practical wisdom and its requisite engagement with the intellectual, the manual, and the material appears to be as least one promising response. The idea of practical wisdom, one encompassing both the physical acts of making and the intellectual skills necessary to facilitate judgments in regard to those acts is, perhaps, an appropriate framework upon which to build a new theory of educational practice. This model of education founded in making judgments grounded in lived experience might most readily emulate the model of learning dignity in labor theorized by Booker T. Washington as he led the students of Tuskegee toward integration within an established and dominant system that still viewed newly emancipated Black people as not capable of participating in the social, political, and economic culture from which they were disenfranchised yet inextricably tied.

Up from Slavery provided a new means of viewing the world that Washington hoped might eventually become accepted practice. An education tempered with the manual competence associated with *technê*, likewise, might change the currently dominant educational model founded upon procedural and objectivist epistemologies. The inclusion of educational practices that lead to an engaged practical wisdom and its goal of creating creative and critical learners might replace the paradigm of the singularity of epistemic knowledge with one of multiple ways of knowing.

The narrative works of Washington and Crawford are essential in conceiving of an educational philosophy that is both grounded in practical wisdom and aware of the necessity to move beyond methodologies that are objectivist in nature. The historical narrative of Washington is particularly valuable in that it was conceived of in response to cultural uncertainties very similar to our own; a period of social, political, economic and environmental uncertainty. The educational philosophy provided in *Up from Slavery*, in responding to the particular context of a newly emancipated people, is beneficial in elucidating educational wisdom. Washington's theories might be appropriately employed to interrogate the oppression of race, class, and gender subordination and allow educational practice to engage other ways of knowing. As such, we might be able to work toward the creation of creative and critical learners who are not limited by the cultural biases that exist in the deep structure of Western thought that favors procedural and objectivist knowledge. In advocating a space for the inclusion of an education in manual competence—for an education in *technê*—in design pedagogy, a similar outcome might be expected. If we teach our students the dignity of labor, the critical judgments required to move beyond the drudgery of disinterested labor, and the self-confidence that

comes from self-reliance, then design education can begin to repair and resume its relation to cultural discourse and the ethos of contemporary culture. Washington believed that "the individual who can do something that the world wants done will, in the end, make his way regardless of his race" (Washington 1986, 149). This statement, if interpreted as a call for educational practices that embrace manual competence, may well be the means to construct an effective framework for design education. Such philosophical speculation, however, eliminates contemporary vocational education—education in workmanship—as beneficial to practices in design education. However, in the ways of making associated with craftsmanship we find an alternative that appears to cohere to a model of beliefs and practices that will benefit design education; beliefs and practices that can assist in theorizing the deep structure of education in design.

Chapter Three: The Origins of Craftsmanship

An Examination of Craftsmanship

In an effort to come to terms with several longstanding criticisms of design education, criticisms of pedagogical effectiveness, of curricular content, and of academic identity, I suggested that these criticisms were erroneously focused on design methodology—on what counted as design—rather than upon any perceived limitations in regard to educational thought. Critics of design education have generally delineated their beliefs about what they have considered good design—methodological practices that represent matters of taste and opinion—and how those beliefs might be implemented in educational practice. In concerning themselves solely with methodological critiques, most critics have failed to consider how educational thought might impact educational practices in design. They have failed to realize how an exploration of the deep structure of educational thought in design might change how we think about and teach design. This reconceptualization of those criticisms of methodology in design education as, more appropriately, criticisms of educational thought has paralleled my attempts to situate myself as a designer and as a design educator. In identifying as "a maker of everythings," I have begun to explore what a maker might be—how one who identifies as a maker might have an impact upon educational thought.

As a maker, as one who produces physical artifacts, I began to explore ways of making that might have an impact upon how I work as a designer and how I teach others to become designers. In order to gain some perspective on how I might conceive of what it means to be a maker, I came to the conclusion that there were three ways that I might think of myself—I could be a maker that created artifacts associated with artistry, with

workmanship, or with those practices that we call design. As noted earlier, however, being a maker that identified as a designer did not lend any clarity to what it is that I thought I did. In digging deeper into the idea of what being a designer might mean, I found that the term design was of relatively recent origin—it came to have its present meaning during the rise of industrialism when acts of making were mechanized and, resultantly, removed from the hands of craftspeople. This association of design with earlier practices of craftsmanship allowed me to think of a designer as a craftsperson, as one who produces physical artifacts that are associated with mediating human (and non-human) relationships with and in the world. A craftsperson was a type of maker who conceived of and produced useful things. The work of craftsmanship implies a continual and reciprocal process from conception to the completion of physical artifacts that, in some way, are useful in the daily lives of humans. While this association of design with craftsmanship was helpful in beginning to understand myself as "a maker of everythings," I was still not satisfied with how I could clearly distinguish between makers that identified as artists, as workers, or as craftspeople.

I was not yet sure how each of these three ways of making might influence how I thought about and taught design; of how my identity as a maker might impact educational thought. In each of these ways of making there are similarities that can be perceived of as beneficial to educational practices associated with design. Generally, artists, workers, and craftspeople are engaged in processes that involve physical materials and that produce physical artifacts as a result of those processes.[37] An engagement with physical

[37] Here, I qualify my assertion with the term "generally" as some of the practices associated with artistry do not produce physical artifacts. I am thinking primarily about theatrical and musical productions and performance art. I would argue, however, that for the most part, even these involve some processes that depend upon physical materials for their execution. For the purpose of distinguishing these three as types

materials and the aptitudes necessary to produce physical artifacts appears to be an essential component in the education of designers. The communicative skills of the artist and the productive skills of the worker and the craftsperson seem appropriate to the education of designers; contemporary designers employ these skills in order to conceive of, study and refine through a process of prototyping, and successfully communicate their ideas to others. Both the skills associated with making and with visual communication are assets that should be developed in young designers through educational practices. These similarities, however, are outweighed by differences in the intentionality inherent in each of these ways of making. The intentions of the artist, the worker, and the craftsperson differ radically.

As noted earlier, it is not the means of production or the artifacts produced that primarily differentiate artists, workers, and craftspeople. It is the intentionality of the artist, worker, or craftsperson that distinguishes their ways of making. I have suggested that the intention of the artist is to create artifacts and/or events that communicate a culture's beliefs about the world; communications that express how a particular group perceives of the world or wishes their world to be perceived. In this case, the physical characteristics of the artifact produced are not necessarily as significant as the idea or ideas communicated. In the case of the worker, I have suggested that there is no intention beyond the act of making; the worker makes as an end in itself. The craftsperson, on the other hand, intentionally works to create physical artifacts that assist in mediating human (and non-human) relationships with and in the world. The artifacts produced by

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of makers, I think it is an appropriate claim if we agree that making is thought of as related to the production of artifacts.

craftspeople are primarily concerned with utility; with the value that the artifacts have in doing things that need to be done.

While the skills, processes, and intentions of artists, workers, and craftspeople can be seen as assets in regard to each of their particular ways of making, they serve distinctly different purposes. These skills, processes, and intentions also begin to differentiate educational practices that might be implemented in regard to the teaching of artists, of workers, and of designers. Even though some of the assets associated with the practices of artistry, workmanship, and craftsmanship may be beneficial to education in design, there are also beliefs and practices that exist in regard to each of these ways of making that can be perceived of as liabilities to design education. In an attempt to identify liabilities that might negatively influence educational practices related to design, I theorized the necessity of exploring what Jane Roland Martin called the deep structure of thought; the fundamental beliefs and assumptions that support our understandings of and influence educational practices in relation to artistry, to workmanship, and to craftsmanship. Resultantly, I have begun to engage the deep structure of thought in regard to each of these ways of making in an attempt to think about contemporary criticisms of design from an educational standpoint. In doing so, I have begun to identify liabilities that exist within the deep structure of Western thought and to explore how these liabilities might have an impact upon education in design. An exploration of this deep structure attempts to reach the "rock bottom" that grounds our beliefs and assumptions about the world and, as such, provides a foundation for educational thought; for how we think about and teach design.

Having previously taken account of the ways of making associated with artistry and workmanship—the deep structure of thought that influences how we understand the work of artists and the work of workers and how we understand education in artistry and workmanship—I have come to the conclusion that it is primarily liabilities that exist at the "rock bottom" of Western thought that are most detrimental to educational thought. Resultantly, it is important to return to an examination of this deep structure of thought and its association with craftsmanship to determine if this way of making can assist in challenging those liabilities. An exploration of the deep structure of thought that supports an education in craftsmanship may provide direction in identifying and mitigating liabilities that currently exist in educational thought and, as such, in practices related to education in design.

The "Rock Bottom" of Western Thought

In theorizing the deep structure of thought that conceptually grounds our beliefs and assumptions in regard to the history and philosophy of education in design, it is beneficial to engage the conceptual origins of craftsmanship. Practices associated with craftsmanship—the making of physical artifacts that are useful to humans in living their daily lives—can be thought of as practices that stand in as the precursors of those practices that we currently associate with design. These practices have produced physical artifacts that can be identified and understood as useful throughout the entirety of the historical record. We have identified and collected artifacts produced by craftspeople from almost all periods in the archeological record of humankind; useful artifacts that existed prior to recorded history. Museums are filled with artifacts that contain, that

cover, and that support; artifacts that have, over time, described and explained human relationships with and in the world. Recorded history is also filled with references to the artifacts that humans have created and used. Our earliest recorded documents also give us a glimpse into how early humans understood craftsmanship and how they explained its origins and necessity. In the Western historical tradition, some of our earliest accounts of craftsmanship are found in Greek mythology.[38] These same myths also contain what might be thought of as the "rock bottom" beliefs and assumptions about the world that are the foundation of Western thought. The mythical stories recorded by the Greek poets begin to flesh out our understanding of what it means to be human; they construct and explore our human relationships with and in the world. Social psychologist Émile Durkheim has noted that myths provide the basis of our means of categorizing the world—of making the world understandable—and, as such, myths can be seen as forming the basis of philosophy and science (Durkheim 1995). Further, social anthropologist Perry Cohen has theorized that "one of the important functions of myth is that it anchors the present in the past" (Cohen 1969). Myths, in this way, act to establish the historical basis of our contemporary beliefs about the world. Popularizer of classical Western mythology Thomas Bulfinch, in attempting to expose the Greek myths to a broader audience, suggested that the origins of mythology might be thought of as allegorical; "that all the myths of the ancients were allegorical and symbolical, and contained some moral, religious, or philosophical truth or historical fact… there are many myths which have

[38] While craftsmanship certainly exists in other cultural traditions, I limit myself to Western sources for three reasons. First, the temporal scope of this project does not allow for the scholarship necessary to explore these ideas from within different cultural perspectives. I leave that work in the capable hands of others as they explore other traditions. Secondly, I am writing from, and am a product of, a Western tradition that gives me a particular knowledge base to work from/within. Finally, I have focused upon Western traditions as they establish the foundational beliefs and assumptions of which I am critical.

arisen from the desire of man [sic] to account for those natural phenomena which he [sic] cannot understand" (Bulfinch 1990, 228 – 229). Bulfinch's suggestion that myths be considered allegorical, coupled with Durkheim's assertions, allows us to think about them as a pre-rational way of comprehending things that we could not easily explain.

In accepting that the Greek myths are allegorical lessons that describe our beliefs and assumptions about the world and our relationships within it, these myths can be thought of as the "rock bottom" of Western thought. They constitute the foundation from which all subsequent thought arises, responds to, and is structured. As such, the deep structure of thought in regard to our understanding of craftsmanship can be thought of as emerging from the same foundation that anchors the beliefs, assumptions, and practices that are responsible for what Martin called the nature/culture split and the binary relationship associated with the public and private spheres. In theorizing craftsmanship as the historical and philosophical progenitor of design, it is necessary to engage craftsmanship at this "rock bottom"—in the allegorical stories of the Greeks that underlie the origins of Western thought. Taking account of some of the assets and liabilities contained within these allegorical foundations—and how each might influence educational practices in design—may prove beneficial in conceptualizing how we think about and teach design. In engaging craftsmanship at its "rock bottom" it may be most beneficial to begin with an exploration of the relationship between the origins of craftsmanship and the patriarchal assumption. The patriarchal assumption—what I have described as the deeply embedded bias toward the oppression associated with the masculine binary—appears to be intimately tied to the origins of craftsmanship. As I will suggest, the patriarchal assumption embodies those beliefs and assumptions that—at least

to the archaic Greek mind—made craftsmanship necessary; those beliefs and assumptions that created both the nature/culture split and the public/private realms of human behavior.

The Origins of the Patriarchal Assumption

Greek mythology provides us with the landscape for exploring the most basic beliefs and assumptions that have informed Western thought concerning human relationships with and in the world. These myths constitute the 'rock bottom' of Western thought; they are the origin of, and foundation for, the deep structure of Western thought and, resultantly, contain both assets and liabilities that affect how we think about the world and our relationships with and in it. They originate the dominant beliefs and practices that shape the structure of our contemporary lives. At a "rock bottom" level, they inform how we understand the world and our place in it. It is within the allegorical tales of the Greek myths that we find both the origins of the patriarchal assumption and, as a result of that assumption, the need for humans to engage in the practices of creating useful artifacts in order to negotiate our relationships with and in the world. After an account of the origins of the patriarchal assumption and the needs that arose from it, I will engage and re-vision the role of Pandora in originating the necessity of craftsmanship. The origins of the patriarchal assumption and the allegorical origins of craftsmanship—of making physical artifacts that assist in mediating human relationships with and in the world—begin with Prometheus and his gifts to humanity—a humanity that originally consisted only of men.

In order to theorize the origins of the patriarchal assumption, it is necessary to turn to the archaic Greek understanding of the creation of the world and the position of

humankind within it. Prior to this exploration of the origins of western thought, it is important to understand that the stories that we collectively call the Greek myths are a later, written, compilation that selectively combined, condensed, and editorialized multiple oral traditions. Classical scholar Timothy Gantz has suggested that we should "adhere to the concept of a general corpus of traditional tales known to professional storytellers of the time of Homer and earlier, and while each of these storytellers made his [sic] own selection (and, no doubt, some innovations), the appeal of this corpus surely derived from a certain canonical element maintained despite the diversity of individual treatment" (Gantz 1993, xviii). In other words, even though the Greek myths as we know them today are a compilation of multiple stories told by multiple tellers, we should accept them as basically cohering to and explaining a more-or-less unified Greek worldview. In this sense, the basic structure of the creation of the world is generally understood as having evolved from a need for order, a need to organize Chaos. Further, while the place of humanity within an organized world is not completely clear, most agree that it has been codified into the story of Prometheus and his defiance of Zeus. These stories, of creation and being, can be seen as providing an etiological understanding of humankind's relationship to the world; they act as causal explanations of the human condition. The creation of the earth and its subsequent population with men arose out of the desires of Gods and Nature to differentiate the discordant singularity of Chaos.[39] As Bulfinch described it, they separated:

> earth from sea, and heaven from both. The fiery part, being the lightest, sprang up, and formed the skies; the air was next in weight and place. The earth, being

[39] I use the term "men" here only because, according to the archaic Greeks, there were no women in the initial creation. All of humanity consisted solely of men. Women, and most particularly Pandora, came later as it became necessary to differentiate men from the gods. This, of course, differs from primitive Greek theology which was matriarchal.

> heavier, sank below; and the water took the lowest place, and buoyed up the earth. Here some god—it is not known which—gave his [sic] good offices in arranging and disposing the earth. He [sic] appointed rivers and bays their places, raised mountains, scooped out valleys, distributed woods, fountains, fertile fields, and stony plains. The air being cleared, the stars began to appear, fishes took possession of the sea, birds of the air, and four-footed beasts of the land (Bulfinch 1990, 25).[40]

After the formation of the world, the Greek stories are not consistent in their explanations concerning the creation of mankind. Bulfinch does, however, remind us that there was a race of giants, the Titans, that inhabited the earth before the age of man. It was two of the Titans, Prometheus and his brother Epimetheus, who—at least in some stories—are said to have been tasked with creating mankind and equipping these men with everything necessary to ensure their continued lives on earth. This differentiation of mankind from the world—one where men were a secondary act of creation and, as such, not an integral part of the world—can be thought of as the first of two binary distinctions that foreshadow the patriarchal assumption. In creating this first binary there is also an act of privileging. There is an implied privileging of the world over humanity in that men must be additionally equipped in order to survive; men—in that their survival is not assured—are made contingent to the assumed permanence of the world. In this binary pair the power of nature is privileged over the perceived physical weakness of man. This first binary differentiation is representational of Martin's nature/culture split and is one of the most basic of our "rock bottom" assumptions.

While it is not completely clear in Greek accounts as to how or when mankind came into being, it is consistently understood that the original men—the *anthropoi*—lived "like gods, without toil or cares, without even old age, and they feast constantly, as the

[40] This description of the creation of the world from Chaos may have been influenced by Bulfinch's Christian beliefs. See, particularly, Genesis Chapter I.

earth produces an abundance of food for them" (Gantz 1993, 153). While these men were mortal and did experience death, new men were created and inhabited subsequent ages until we arrive at Hesiod's final race of men. This process of death and rebirth further solidifies the claim of man's being contingent to the permanent character of both the world and the gods. Regardless of their origin, the men who were to benefit from the largess of Prometheus consisted of the final race—the iron race—of the Five Ages of Man.[41] This iron race is assumed to have been a lesser race of men who were required to struggle in the world as opposed to the first and golden race of the *anthropoi*. As a result of their struggles, Prometheus acted as a benefactor to the race of iron on two different occasions. The first of these occurred when he represented mankind in the sacrificial division at the banquet of Mekone where Prometheus divided a sacrificial cow between the gods and men. In dividing the cow into what should have been equal portions—of which Zeus would have first choice—Prometheus deceived Zeus, and benefited mankind, by covering the choicer cuts with entrails and covering the bones and offal with coveted fat. For this deception, the angered Zeus withheld fire from mankind. Interpretations of this story suggest that it provides the etiological basis of offering only the bones and offal as sacrifice to the gods while humankind benefits from the more nourishing cuts.[42] Another possible interpretation of this story suggests that this act of deception explains the initial differentiation of mankind from the gods, who, prior to the Mekone feast, existed with equal standing—an equality that allowed both to participate in a common

[41] See Hesiod's *Works and Days* for a more complete explanation of the Five Ages of Man.
[42] See Carlos Paradas' *The Era of Zeus* for a more comprehensive discussion of sacrificial practices in ancient Greece.

banquet.[43] In accepting this interpretation, Prometheus' deception created the second of a pair of binaries that predated and influenced the patriarchal assumption.

When the lives of men were not differentiated from the lives of the gods—when men could sit at the same banquet table as the gods—there was an implied equality of existence. Both the gods and men coexisted in an eternal state with no privileging in their differences. As a result of the deception at Mekone and Zeus' subsequent retribution, this differentiation became one of privilege; the gods were made superior to men by virtue of their association with fire. Like the initial binary created between man and nature—the nature/culture split—the distinction between the gods and men appears to be a binary pairing that manifests as an oppressive conceptual framework. In the differentiation of the gods and men, in the denial of fire by Zeus, it is clear that a dominant/subordinate relationship was created that privileged the gods over men. This privileging of the gods over men provides the basis for the monarchist privilege described by Susan Laird and applied to my critique of education in artistry and its reliance upon canonical systems.

In most interpretations of this privileging of the divine, the subsequent introduction of Pandora can be seen as the ultimate degradation of man in his relation to the gods. Pandora, the first woman in most tellings of the story, releases great suffering and evils upon the lives of men. This degradation is also characterized by the necessity of the "lesser" womankind to ensure the continuance of human life whereas the gods—who existed beyond temporal constraints—needed no external means of reproduction. Again, humanity is contingent in relation to the universal character of the world and the universal character of the gods who exercise control over the world. Pandora's story is

[43] Eliot Wirshbo's *The Mekone Scene in the Theogony: Prometheus as Prankster* provides a more thorough explanation of the interpretation posed above.

further characterized by the introduction of the domestic; a sphere of existence associated with the feminine and seen as subordinate to civic life. It is in this binary pairing that we find the second of Martin's "rock bottom" assumptions, the differentiation of the civic and the domestic—the privileging of the public over the private realms of human existence. The creation of woman as both a punishment for the actions of Prometheus and as a means of allowing the continued existence of humanity places women and their domestic sphere as secondary to the civic life of men. This third oppressive conceptual framework, built upon the nature/culture split and the divine/human differentiation, is the basis of the patriarchal assumption. In re-visioning the role of Pandora, in reinterpreting the allegory, there is a possibility of addressing some of these "rock bottom" liabilities that continue to influence the structure of our beliefs and practices in regard to education in design.

The Gift of Fire

Prometheus second transgression against the gods was his stealing of fire and providing it to mankind against the wishes of Zeus. After the withholding of fire as a result of Prometheus' deception at Mekone, he purposefully stole fire from the gods and gave it to mankind in order to ensure their survival. In maintaining the allegorical character of Greek myth, the gift of fire might readily be thought of as the gifts of culture and civilization—a gathering of people around the fire; the creation of place out of undifferentiated space. Fire can also be construed as the first gift of technology; the first tool that allowed humans to mediate their relationships with the hostile world in which they lived. Fire gave humankind the ability to push back the night, to control irrational

fears, and, ultimately, to plan for the future. Fire also gave humankind the ability to cook food, to distill spirits, to forge metals, and to clear land. These advantages led to permanent settlements and the possibility of civilization. Additionally, fire gave humankind charcoal to draw and, the leisure, confidence, and need to create art. In this way, it can be theorized that fire allegorically represents civilization, culture, and craftsmanship; the "know-how" that allowed humankind to make a place for itself in the world.

While it is generally suggested that the allegorical fire gifted to the race of iron originated in Zeus' chariot of the sun, there is some speculation that the fire Prometheus stole was actually taken from the forge of the blacksmith god Hephaestus. Having taken the fire from Hephaestus rather than from Zeus himself would further align Prometheus' gift with the origins of craftsmanship. Hephaestus, as god of the forge, is known as the god of craftsmanship.[44] He is the first god associated with the making of physical artifacts.[45] In this light, Zeus' original withholding of fire after the feast of *Mekone*—when man became differentiated from the gods—can be thought of as the denial of the skills necessary for men to live in relation to the world; a judgment that would force mankind to suffer against the natural forces of the earth for all time. Prometheus' acts to benefit the race of iron should, therefore, be thought of as a gift providing necessary skills—providing the practices of craftsmanship—so that mankind might manipulate the physical and material environments in order to both survive and thrive in the world.

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[44] Hephaestus is variously considered the god of fire, the god of the forge (metalsmithing), the god of the building arts (stonemasonry), the god of the Fine Arts (sculpture), and the god of craftsmanship. I take it, allegorically, to mean that he was the god of making those things necessary to allow humans to live their daily lives—the god of craftsmanship.

[45] Later, we will see many of these skills associated with the *Diamona Tekhne*, but in the original narratives (narratives that are, perhaps, clouded by the patriarchal assumption) it is Hephaestus that represents the "know-how" of craftsmanship.

Another work, Aeschylus' *Prometheus Desmotes* appears to support the suggestion that Prometheus gave more than the simple gift of fire to mankind. More correctly, the *Desmotes* further supports the suggestion that fire acts as an allegorical stand in for the "know-how" associated with craftsmanship. In the *Desmotes*, as Prometheus begins his suffering chained to a rock, he provides his account of the acts that led to this retaliation by Zeus. First, Prometheus explains that he significantly aided Zeus in his rise to power and was responsible for Zeus acquiring the thunderbolt—an outward manifestation of fiery power and, quite possibly, a representation of the gods' dominion over the world (*PD* 219-221). Prometheus then makes us aware that at some point in the past—possibly after the deception at Mekone—he had convinced Zeus not to eliminate the human race (*PD* 232-36). In these statements, Prometheus shows us both his respect for the position and power of Zeus and his affection for humanity. These statements also support the binary distinction between gods and men and the oppressive conceptual framework that privileges the gods.

Finally, after establishing the differentiated relationship between the gods and men, Prometheus confesses that the gifts that he had given to mankind far exceeded the gift of fire. Prometheus' gifts included advances in agriculture, the domestication of animals, writing, divination, and architecture (*PD* 442-506).[46] These gifts can be interpreted as forms of craftsmanship—as the "know-how" necessary to create and use physical artifacts that mediate human relationships with and in the world. While architecture is the only of these that might be most readily associated with a contemporary understanding of design, they all provide an etiological understanding of humankind's

[46] Divination, in this sense, is what we might think of as medicine.

shift from a pre-technological world to one where humans were able to create those artifacts necessary to their survival. The gifts of Prometheus establish humankind's ability to create useful artifacts and, as such, differentiate themselves from the world. Having accepted these abilities as gifts, humankind is afforded the opportunity to avoid the pitfalls of hubris. In accepting that the "know-how" of craftsmanship is not derived from any intrinsic ability but, rather, is the result of Prometheus' gifts, humans can actively create those artifacts necessary to their survival without seeming to challenge the supremacy of the gods. Nonetheless, these gifts associated with craftsmanship are the necessary result of the privileging of both the world and the gods over humanity—they are the skills needed for humans to be equipped to survive in the world.

The *Desmotes*, in focusing upon the relationship between Prometheus and Zeus, eliminates any mention of Pandora. In disregarding the Pandora story arc, Aeschylus minimizes the relationship between the feminine and the domestic and, resultantly, the privilege associated with the public over the private realms of human life. While this minimization of the generally accepted story of Pandora might seem beneficial to feminist criticisms of Western thought, it might also be thought of as a patriarchal/political move to attribute to Prometheus assets that might otherwise be associated with the feminine. While most stories attribute Prometheus only with the gift of fire—a gift that might allegorically be representational of culture—the *Desmotes* further attributes to Prometheus those gifts that we might think of as allowing for civilization and the "know-how" skills necessary to survival. The gifts of the "know-how" associated with craftsmanship, and the survival of the race of iron, honor the reputation of Prometheus alone.

The story of Pandora can be re-visioned in such a way that it is Pandora that provides humankind with the gifts necessary to survival in the world; the gift of childbearing and childrearing, the gift of domestication, and the gift of the "know-how" that we associate with craftsmanship. Aeschylus' failure to mention Pandora in relation to the gifts bestowed upon the race of iron eliminates from Western thought any concept of the feminine as beneficial to humankind. A re-visioned story of Pandora allows us to view the feminine as an asset to the needs of humanity rather than as a liability that, in some way, degrades the human condition. In failing to address Pandora, the *Desmotes* continues to perpetuate oppressive conceptual frameworks that privilege men and minimize the contributions of women. In re-visioning the role of Pandora—in depoliticizing the masculine/feminine binary—it may be possible to begin to counter some of the "rock bottom" assumptions that affect our understandings of craftsmanship and any value that it might have upon educational thought.

Pandora and the Origins of Craftsmanship

While the story of Prometheus has traditionally been associated with his providing the gifts necessary for humans to live their daily lives—an allegorical fire that provides us with the origins of culture, of civilization, and of craftsmanship—there is another story, the story of Pandora, that might be thought of as more accurately representing the origins of craftsmanship. Most people are somewhat familiar with the myth of Pandora; she is a figure that I remember from a childhood fascination with history and with the stories of mighty heroes, fearless warriors, and adventurous explorers. The Pandoran stories that most of us know—the contemporary retellings of the ancient Greek originals—have been

modified to reflect more accurately changes in Western thought; changes that resulted from the rise of Judeo-Christian beliefs and a rationalist worldview. Contemporary interpretations of the Greek myths have cast them as outdated stories, as entertainments, rather than as explanations of our beliefs about the world. In the contemporary version of the Pandoran myth, the most important element of the plot revolves around Pandora opening a box and releasing evils upon humanity.[47] If we reflect a bit more upon the story, we might recall that Pandora was created by the gods. For the majority of people, that is the extent of the story of Pandora; we know that she was a woman and that she was—in a very clear sense—the root of all evil. This understanding of the role of Pandora, the association of the feminine with evil, can certainly be viewed as representing an oppressive conceptual framework. In the binary opposition of masculine and feminine, to associate the feminine with evil suggests that the masculine—associated with good—should rightfully be considered superior to the feminine. This interpretation of the story of Pandora, which does not differ substantially from the Hesiodic version, is fundamental to the patriarchal assumption; it supports the rationale for prioritizing the masculine binary and marginalizing the feminine.

Since contemporary renderings of the role and significance of Pandora have been influenced by changes in Western beliefs, it is necessary to turn to the ancient texts in order to recount her role such that we might find more clarity in regard to how she was understood in the archaic context. There are two major works, both by Hesiod, that address Pandora. In both, Pandora is discussed only in regard to the transgressions of Prometheus. The first account of Pandora occurs in the *Theogony*. Zeus, in his anger at

[47] While most contemporary stories suggest that Pandora opens a box containing evils, the original myths suggest that this container was a jar; a *pithos* that was intended for bulk storage.

Prometheus for gifting men with fire, plots against humanity in an effort to ensure that further evils fall upon them. He has Hephaestus mold earth into the form of a woman; a woman intended to embody the anger of Zeus and the punishment of men. This unnamed woman—for she is not yet known as Pandora—is dressed by Athena and crowned by Hephaestus. In the *Theogony*, Hesiod—paraphrased here by Gantz—tells us that this beautiful maiden "will be an inextricable snare and evil for mankind, for from her will be born the (or a, since the Greek could mean either) race of women, who will be lazy and draw men of their prosperity" (Gantz 1993, 155). Pandora is then given to Epimetheus and it is assumed that the race of women was the result of their union.[48] The *Theogony*, much like in contemporary versions of the story, associates Pandora with evils being bestowed upon mankind. Unlike more recent versions of the story, Pandora is explicitly discussed as the actual bearer of evils—there is no reference to a container from which she releases those evils—and as the first woman. Resultantly, she directly assumes the archetypes of both evil and of the feminine.

The second account of Pandora, in Hesiod's *Works and Days* is, likewise, a negative account of women and their relationships to mortal men. In the *Works and Days*, we are reminded that prior to the deceptions of Prometheus men lived an idyllic life. While that life was not as easy as the one enjoyed by the *anthropoi*, the suffering of the race of iron was not such that it significantly affected their leisure. There was no need for strenuous labor; the earth was said to have produced enough in one day to last men an entire year. This is not Hesiod's first mention of the life of ease that mortals led. As previously noted, the *Theogony* suggests that mankind lived an idyllic life before the

[48] While I use the term "race" in regard to women, I only do so to contrast the earlier declaration of a race of men being created.

introduction of the first woman. Bulfinch also tells us that "the earth brought forth all things necessary for man, without his labor in ploughing or sowing" (Bulfinch 1990, 26). As the *Works and Days* seems to suggest that the suffering of mankind began before the introduction of Pandora—a suffering that might have been the result of an earlier punishment by Zeus—Prometheus' gift of fire might be construed as an act of kindness toward mankind. Prometheus' act of kindness was, however, still an act that angered Zeus, the patriarch of Olympus. Zeus punished Prometheus for the theft of fire, and for the earlier deception at Mekone, by chaining him to a rock where an eagle daily consumed his liver.

In order to cause additional suffering to mankind as a punishment for their possessing fire, Zeus orders Hephaestus to mix earth and water in creating a woman whom men would "embrace and delight in to their own ruin" (Gantz 1993, 156). She is described by Hesiod as a woman of beauty and a woman of cunning.[49] This order by Zeus might be theorized as having been a retaliation against Hephaestus as well; a retaliation for allowing the fire of the forge—the "know-how" of craftsmanship—to be acquired by humans. In the *Works and Days*, Zeus then has other gods contribute to the creation of this first woman. Athena is tasked with providing her with clothing—representational of weaving—and with other skills associated with the hands. Aphrodite—the goddess of love, beauty, and fertility—is to ensure that this woman is desirable to men and able to bear children. Hermes, messenger of Olympus and a god associated with trade, husbandry, language and thievery, is to give her a wicked and

[49] The use of the term "cunning" here has two interesting associations with the feminine. The first is its association with witchcraft; with *cunning women* who possessed the skills to heal and to curse. The second association is with craftsmanship; with the cunning of the hand. In both instances "cunning," at least in the contemporary sense of the word, is seen as a liability.

thievish character and to fill her with lies and flattering words. Hermes also gives this first mortal woman the name Pandora as she is a gift to man from all of the Olympian gods. As related earlier in the *Theogony*, Pandora is then given to Epimetheus who takes her as a bride. Hesiod makes it clear that Epimetheus had been warned not to accept gifts from Zeus.

In the *Works and Days*, Hesiod goes on to relate to us the story of the jar. While the origin of the *pithos* is not clear—it may have been a part of Pandora's dowry or it may have already been in the care of Epimetheus—Hesiod tells us that Pandora opened the *pithos* and, in doing so, allowed evils to escape into the world. Rather than Pandora herself being the source of the evils released upon men, she is now cast as the one who knowingly removes the lid of the *pithos* "with her own hands and scattered into the world evils, and sickness, and painful labor" (Gantz 1993, 156). In either telling; however, Pandora is inextricably associated with the fall of man; with the ruin of an idyllic life and the origination of evil, of sickness, of suffering, and of labor. All of these conditions are bound to the feminine binary and, as such, provide a foundational justification for the oppression associated with the patriarchal assumption. The subjugation of women by men is positioned as an appropriate response to the degradation of mortal men through the creation of women. Pandora's story constitutes another of the "rock bottom" of our Western beliefs—it is the foundation of an oppressive conceptual framework of beliefs that continue to influence Western thought. This oppressive framework—the basis of the patriarchal assumption—privileges the masculine binary and vilifies the feminine. While the archaic myth of Pandora is the first instance of this framework that we see in recorded

history, it appears to recur in other allegorical stories that we hold as equally essential to Western beliefs.

An interesting parallel to the story of Pandora that may further clarify my assertion that Pandora is an allegorical story that explains humankind's differentiation from and subsequent relationship with the world can be found in the Biblical account of the Garden of Eden. In the second chapter of Genesis, we are told that God created the heavens and the earth. He then formed a man from the dust and breathed life into him. Upon creating this first man,

> the Lord God planted a garden in Eden, in the east, and placed there the man whom he had formed. Out of the ground the Lord God made grow every tree that was delightful to look at and good for food, with the tree of life in the middle of the garden and the tree of the knowledge of good and evil (NABRE, Gen. 2. 8,9).

God then placed this man, Adam, into the garden and told him that he could eat of the fruit of any tree except that of the tree of the knowledge of good and evil; to eat from this tree would result in death. Chapter Two concludes with the creation of the first woman; a woman created as a companion and helper to man (NABRE, Gen. 2. 18-25). This account provides us with the origins of the masculine/feminine binary; however, it has not established the conceptual framework that privileges the masculine over the feminine. The origins of the privileging of the masculine comes with the story of Eve and the Serpent. In Chapter Three, paralleling the story of Pandora, we find that Eve, in consorting with the Serpent and taking the forbidden fruit, gives knowledge to humankind. God, like Zeus, is angered by this attainment of knowledge and in retribution He punishes humanity:

> To the woman he said:
> I will intensify your toil in childbearing; in pain you shall bring forth children. Yet your urge shall be for your husband, and he shall rule over you.

> To the man he said:
> Because you listened to your wife and ate from the tree about which I commanded you, You shall not eat from it, Cursed is the ground because of you! In toil you shall eat its yield all the days of your life. Thorns and thistles it shall bear for you, and you shall eat the grass of the field. By the sweat of your brow you shall eat bread, Until you return to the ground, from which you were taken; For you are dust, and to dust you shall return (NABRE, Gen. 3. 6-19).

God then banishes Adam and Eve from the Garden of Eden; their newfound knowledge creating a rift separating humankind from an idyllic life in the garden and exposing them to a difficult existence in the world.

Being removed from the abundance provided in the Garden required the need for the "know-how" associated with craftsmanship to ensure humanity's survival. In the biblical account, this "know-how" is the acquisition of the skills associated with weaving, with agriculture, and with architecture—those practices of craftsmanship that define our relationship with the world outside the Garden. The "know-how" associated with weaving, agriculture, and architecture can also be thought of as those skills that distinguish humankind as different than nature; they are the skills that allow for civilization and culture. The biblical accounts do not tell us how these skills were acquired by humans, but we can assume that Eve's disobedience is the allegorical equivalent of the Greek myths concerning Prometheus and Pandora. Further, the banishment from the Garden is equivalent to Martin's nature/culture split; humankind is removed from the idyllic and placed into an antagonistic relationship with the world. The shame that comes with knowledge—as related by Adams response to God; "I heard you in the garden, but I was afraid, because I was naked, so I hid" (NABRE, Gen. 3. 10) and the creation of clothing for man and woman—might also be considered as representational of the origin of the separation of the public and private spheres. These biblical accounts, the expulsion and the awareness of shame, can be theorized as "rock bottom" beliefs and assumptions that

support the patriarchal assumption. They also establish the binary pairings of masculine and feminine, sacred and profane, and culture and nature; binaries that, as a result of the patriarchal assumption, privilege the masculine and denigrate the feminine.

The oppressive conceptual frameworks established in the biblical account of the creation and population of the world are further reinforced throughout the Bible. Of particular importance is the account of proper beliefs and customs offered in the *Wisdom of Ben Sira*. This account is critically important to the maintenance of the patriarchal assumption as it has been extensively used in presenting moral truths to the Christian faithful.[50] As such, the title has been appended with the classification *Liber Ecclesiasticus*; a "church book" that represents beliefs that are necessary to the maintenance of doctrine. The scribe and sage Ben Sira gives us an account of the differences between day and night, between humanity and the world, and between good and evil:

> 7 Why is one day more important than another,
> when the same sun lights up every day of the year?
> 8 By the Lord's knowledge they are kept distinct;
> and he designates the seasons and feasts.
> 9 Some he exalts and sanctifies,
> and others he lists as ordinary days.
> 10 Likewise, all people are of clay,
> and from earth humankind was formed;
> 11 In the fullness of his knowledge the Lord distinguished them,
> and he designated their different ways.
> 12 Some he blessed and exalted,
> and some he sanctified and drew to himself.
> Others he cursed and brought low,
> and expelled them from their place.
> 13 Like clay in the hands of a potter,
> to be molded according to his pleasure,
> So are people in the hands of their Maker,
> to be dealt with as he decides.

[50] The Catholic Church, particularly, has used this text in teaching the moral philosophy of the church to its catechists.

14 As evil contrasts with good, and death with life,
so are sinners in contrast with the godly.
15 See now all the works of the Most High:
they come in pairs, one the opposite of the other
(NABRE, Ben Sira. 33. 7-15).

These contrasting pairings mirror and reinforce the Genesis account of the establishment of binary relationships and oppressive conceptual frameworks. In the teachings of the Bible we have another historical document that echoes and reinforces the "rock bottom" assumptions of early Western thought. While both the Greek myths and the Bible establish the foundations of the deep structure of Western thought, there are divergent accounts—at least in primitive Greek theology—that might act to destabilize the conceptual frameworks associated with the oppression present in binary distinctions. In exploring these destabilizing accounts—in this case an alternative account of the role of Pandora—there is the possibility of theorizing alternatives to the concepts that support contemporary thought in regard to the oppression of the feminine and that maintain Western privilege of epistemic knowledge over the "know-how" associated with craftsmanship.

While Hesiod's works—the *Theogony* and *Works and Days*—establish the "rock bottom" structure of thought that can be theorized as having established the patriarchal assumption, there are earlier references to Pandora that may be useful in re-visioning her story in a way that might be of benefit to feminist educational theory and to the educational value of craftsmanship. In feminist and classical scholar Jane Ellen Harrison's *Prolegomena to the Study of Greek Religion*, we find a different explanation of Pandora and of Hesiod's works in relation to her. In opposition to Hesiod's treatment of Pandora as first emerging as a punishment ordered by Zeus, Harrison tells us that "to the primitive matriarchal Greek Pandora was then a real goddess, in form and name, of

the Earth, and men did sacrifice to her" (Harrison 1908, 283). As a goddess representational of the Earth, Pandora was revered for giving humanity everything necessary to life. She represents a symbiotic relationship of humankind and nature; a relationship without the toil and hardship decreed by Zeus. In the matriarchal theology of the primitive Greeks, Pandora was presented as a maiden, as a pure representation of the bounty of the earth. However, the image and role of Pandora are changed in the archaic period; "in the patriarchal mythology of Hesiod her great figure is strangely changed and [di]minished. She is no longer Earth-born, but the creature, the handiwork of Olympian Zeus" (Harrison 1908, 284).

Harrison suggests that this retelling is the result of a shift in Greek thought—a shift from matriarchal beliefs to a patriarchal assumption of the world. Resultantly, she suggests that Hesiod's reshaping of Pandora is in keeping with changing political views in Greece and, further, in support of "his own *bourgeois*, pessimistic ends" (Harrison 1908, 284). Harrison, in criticizing this shift, notes:

> Through all the magic of a poet, caught and enchanted himself by the vision of a lovely woman, there gleams the ugly malice of theological animus. Zeus the Father will have no great Earth-goddess, Mother and Maid in one, in his man-fashioned Olympus, but her figure *is* from the beginning, so he re-makes it; woman, who was the inspirer, becomes the temptress; she who made all things, gods and mortals alike, is become their plaything, their slave, dowered only with physical beauty, and with a slave's tricks and blandishments. To Zeus, the archpatriarchal *bourgeois*, the birth of the first woman is but a huge Olympian jest (Harrison 1908, 285).

In a world associated with the matriarchal Earth-goddess, a world where humanity existed in concert with the world, there is an implication that the skills of craftsmanship were an integral part of living. The hubris associated with knowledge was not conceivable; humanity and nature were completely interrelated—acts of making just were acts of living in the world. With the introduction of a patriarchal pantheon, humanity was

marginalized; the divine and the earth were privileged over humankind and the masculine was privileged over the feminine.

It is Harrison's early feminist account of Greek matriarchal theology that inspires me to attempt a re-visioning of the myth of Pandora. Through a re-visioning of the story of Pandora and the allegorical evils that she released on humankind, there appears to be a way to approach a pre-rational explanation of both the end of an idyllic life and the need for and development of the "know-how" necessary to survival. Pandora, rather that burdening mankind with evils, can be re-visioned as gifting humanity with the practices of craftsmanship. She, in this retelling, provides humankind with the "know-how" necessary to survive in a hostile world. Further, this re-visioning suggests the formation of a system of beliefs and assumptions that do not support the oppressive cultural frameworks that marginalize the feminine, the domestic, and the knowledge found in making. My re-visioning does not revert to a matriarchal theology; I accept the archaic shift to a patriarchal theology and, therefore, maintain the archaic Greek patriarchal pantheon. This re-visioning, like Hesiod's original, begins with Prometheus.

Prometheus, in conjunction with his brother Epimetheus, created animals, birds, fish, and, finally, the race of men. In this creation, Epimetheus attempted to give each of these creations the skills necessary to ensure their continued existence in a world created from Chaos. As some renditions suggest, Epimetheus was not prudent in his bestowing of skills and, resultantly, mankind was left weak in relation to the world and the other creations. In an attempt to mitigate this weakness, Prometheus deceived Zeus at the feast of Mekone and, in doing so, allowed men the greater portion of sacrifices to the gods. This deception allowed mankind to survive in the world more easily; however, this

survival did not guarantee man's continued existence. Resultantly, Prometheus stole fire from Olympus and gave it to mankind. This fire, which allegorically represents the gifts of culture and civilization, allowed men to create place and to settle on the earth. Like Hesiod's account, this theft of fire and its gift to men angered Zeus such that he resolved to punish both Prometheus and men. In punishing mankind, it can be theorized that he made them to struggle upon the earth—to endure the evils of sickness, suffering, and labor. If we consider Hesiod's account as one biased by the patriarchal assumption, we might think of the additional gift of Pandora as a punishment—the necessity of women being a degradation of mankind in that humanity must now rely upon childbearing as a means of insuring their survival.[51]

However, we can also think of Zeus' gift of Pandora as generous rather than malicious. In this way, Pandora can be theorized as an expression of Olympian benevolence; a noble concession that provided a means for humankind to survive. Pandora, in being created by Hephaestus, the god of craftsmanship, can be seen as a means of providing humanity with skills necessary to survival—the "know-how" to create the physical artifacts needed to mediate human relationships with and in the world. This interpretation is further borne out by the name Pandora—she is a gift from the gods and has been imbued with positive benefits, with assets worth fostering, by the other Olympians. Athena, particularly, gives her the skills of the hand—skills that include weaving and other domestic arts. The skills of the hand might also be representational of cunning; the "know-how" associated with the medicinal properties of plants and healing. Pandora, as a manifestation of the domestic and in conjunction with Prometheus' gift of

[51] I consider Pandora as an "additional" gift in that she was a later addition to the patriarchally influenced myths of the archaic period and was, quite possibly, a political addition by Hesiod.

fire, allows humankind to establish culture, civilization, and the skills of craftsmanship. Further, the "know-how" of craftsmanship—problem seeking and problem solving—is essential in helping to alleviate the physical suffering of humankind; it allows humans to thrive in a hostile environment. While this re-visioning does not directly resolve the nature/culture split or the public/private divide, it does minimize the privileging of one over the other—it begins to counteract the oppressive conceptual frameworks associated with the patriarchal assumption.

In recalling Cohen's assertion that myth anchors the present in the past, we might think of this re-visioned story of Pandora as a means of allowing the Greeks an understanding of how humankind formed civilizations and gained the abilities and aptitudes necessary to modify the physical environment to their needs. As such, this story can be seen as an explanation of the transition from a non-temporal and idyllic lifestyle within an idealized world to a temporal struggle to survive and thrive within an oftentimes hostile environment; a transition that requires the skill of craftsmanship and, resultantly, allows for the formation of civilization and culture. In contrast to Hesiod's politically motivated stories, this re-visioning establishes a non-privileged expression of binary conditions; it denies an oppressive conceptual framework. In re-visioning Pandora as an allegorical message explaining the shift from idyll to struggle and the transition from natural to political suggests that the Pandoran story arc provides a way of understanding and a means of mediating the physical environment. It provides for a way of understanding the world that is unbiased in differentiating humankind from nature and that, additionally, explains the possibility of human progress. In both instances, the

"know-how" of craftsmanship appears to be this necessary means and, concurrently, to be thought of as a necessary evil.

This explanation for the necessity of craftsmanship further acts to support an even more fundamental issue in regard to humankind's quest for identity; for an etiological understanding of humankind's relationships with and in the world; a causal explanation of the human condition. It has been theorized that the defining characteristic of *Homo Habilis* (skillful one)—that portion of the fossil record that establishes the genus *Homo* and, therefore, the most significant ancestor of *Homo Sapien* (wise one)—was *Homo Habilis'* ability to manipulate the environment; to create physical artifacts that were useful in living their daily lives.[52] As etiological narratives, the stories of both Pandora and Eve are meant to provide us with explanations of humankind's place within and relationship to the world.

Pandora and Eve, two women who have become synonymous with evil and the forbidden, are deeply embedded in Western consciousness. They are both associated with the loss of an idyllic relationship with the world and, as such, created the necessity for humankind to labor in order to survive. It can be argued that their stories exist at the "rock bottom" of Western thought and, resultantly are at the foundation of the patriarchal assumption. They are responsible for the marginalization and subjugation of all people and all ways of knowing that do not readily fit the ideal of the privileged—an ideal founded in both our early equality with the gods and our first relation with the Garden; with a romanticized relationship with an ideal world. In re-visioning their stories, they

[52] See Jamie Shreeve's National Geographic article, "Mystery Man" (October 2015) for more on the story of *Homo Habilis.* In addition, Tony Fry's *Becoming Human by Design* provides an excellent discussion of evolution in relation to our relationships with artifacts.

can be associated with providing humanity with the skills of craftsmanship. These mytho-poetic stories establish the etiological explanation of craftsmanship—now design—as the creation of useful physical artifacts that mediate human relationships with and in the world. Additionally, these stories allow educational theorists to name those foundational assumptions as liabilities—oppressions that are a result of the patriarchal assumption—and to employ race, class, and gender critiques to contemporary practices in design education. In such critiques, we can explore how an acceptance of these stories as the "rock bottom" of Western thought have led to false assumptions about, and the marginalization of, the race, class, and gender identities of designers and to a disregard of the veracity of knowledge in design. These stories allow theorists to address more fully the privilege, and exclusion, associated with design as both an educational activity and as a professional practice.

The Roman Development of Design and Design Education

When we seek to discover the deep structure of thought that supports our contemporary beliefs and assumptions in regard to craftsmanship—one that, resultantly, supports and defines the contemporary practices of the disciplines that constitute the broader field of design—we are faced with two distinct areas of exploration. The deep structure of thought that grounds any traditional conception of craftsmanship can be thought of as having its origins in both the mythological and historical records of the Western world. The Greek myths provide us with a means of theorizing the relationship between craftsmanship and those beliefs and assumptions that predate, and act as a foundation to, the patriarchal assumption. It is in this relationship that we find the

marginalization of craftsmanship. In its domesticity, craftsmanship was subjugated to the privilege of public life; craftsmanship and the "know-how" associated with it were devalued by an oppressive conceptual framework.

This exploration into the mythical, into allegorical stories that explain how humans understand the world, exposes us to the "rock bottom" beliefs and assumptions that have shaped Western thought. The historical record, on the other hand, exposes us to the ideas and concepts of those thinkers and practitioners who are generally held to be the intellectual foundations of the Western cultural tradition.[53] A philosophical exploration beyond the mythological and into the historical origins of craftsmanship therefore appears necessary in an effort to continue the conversation about those beliefs and assumptions that anchor the deep structure of thought regarding the practices associated with contemporary design education.

While the age of mythology sets the scene for basic Western beliefs and assumptions that underlie those practices that constitute design, it is not until the era of Roman Imperialism that we find the first written treatise that can be considered a professional guide to design practice and design education. Marcus Vitruvius Pollio authored the first known treatise on design education to have survived the ancient world. Written in homage to the emperor Augustus, the *de Architectura* was composed in order both to educate Augustus about the buildings, devices, and machines known to the Roman Empire and to provide the foundational structure of the discipline of architecture. While Vitruvius called himself an architect and discussed architectural education, I argue that

[53] While there are critical issues of patriarchy embedded within any exploration of the historical record, I must ask that one accept such an assertion and temporarily withhold any such critical judgments. A critical assessment of the damages of patriarchal systems will follow and becomes a part of the larger project at hand.

he should be more accurately thought of as a designer, a craftsperson creating useful artifacts that were intended to mediate human experience with and in the world. Likewise, the *de Architectura* should be read more broadly as an introduction to the disciplinary fields of design and the education necessary to produce capable and competent designers.

Chapter Four: A Vitruvian Educational Philosophy

The Historical Origins of Craftsmanship

The allegorical stories of early Greek mythology can be viewed as a means of explaining the complex dimensions of human relationships with and understandings of the world. They can be read as both descriptions of natural phenomena—a sort of pre-scientific knowledge of the physical world—and as explanations of the origins of human beliefs and assumptions about our place in the world. The Greek myths provide explanations of the origins of our cultural and technological practices and distinguish those practices as different than the practices of the gods, of nature, and of non-human animals in their relationships with the world. Understood in this way—as a means of explaining human relationships with and in the world—the interrelated stories of Pandora, Prometheus, and Hephaestus can be read as providing one possible explanation regarding these relationships. Further, these stories suggest that practices of craftsmanship are practices arising in response to "rock bottom" beliefs and assumptions that support the patriarchal assumption. The myths of Pandora, Prometheus, and Hephaestus are allegorical stories that provide us with the origins of the skill of *technê*. Further, they inform us that these skills are necessary in order to ensure that human beings survive in the world. Addressing craftsmanship in an allegorical form allowed the Greeks to avoid the pitfalls of hubris. The Greek myths tell us that humankind's ability to survive in the world was not of human origin but, rather, a gift from the Gods. These stories also offer a means of naming and understanding the "know-how" of craftsmanship; they provide a way of explaining the origins of innovative practices which produce physical artifacts that assist in mediating human relationships with and in the world.

In their capacity to provide an understanding of the origins of, and the skills associated with, craftspeople, I have suggested that the Greek myths established the underlying structure for contemporary Western conceptions of the practices of craftsmanship and, relatedly, of design. Craftsmanship—as a representation of that form of making that produces useful physical artifacts—enacts a system of beliefs about the world, a technological bias, that differentiates human striving from the forces of nature. As historian of technology George Basalla has noted; "Humans have a different relationship with the natural world than do animals. Nature simply and directly sustains animal life. For humans, nature serves as the source of materials and forces that can be utilized in pursuit of what they choose to call for the moment their well-being" (Basalla 1988, 14). The necessity of craftsmanship implies that human beings are weak in the face of the nature and, as such, require technological innovations—useful physical artifacts—that allow us to exist in a tenuous relationship with and in the world. Because the mythological accounts of craftsmanship should be thought of as representing the deep structure of thought that has influenced the contemporary professions associated with design, they should be thought of as having the potential to influence practices related to design education.

While the age of myth establishes an allegorical foundation for the practices of craftsmanship as necessary to human survival, there is no explicit reference as to how contemporary design disciplines might respond to those practices; how contemporary designers might benefit from the "know-how" associated with practices of craftsmanship. Further, there is no point of reference as to how a philosophy of design education might engage and respond to a foundation of craftsmanship grounded in the Greek myths.

Through an exploration of etymological relationships and a reflection upon how the concepts of skill and knowledge were considered by the Greek philosophers, I will theorize that education in design—in response to contemporary criticisms—can benefit from a taking account of the assets and liabilities that exist at the foundations of Western thought. In taking account of these foundations, we can incorporate those assets and eliminate those liabilities that exist within the deep structure of thought that supports a history of design before the Industrial Age.

Beyond an exploration of these Greek works, it is not until the era of Roman imperialism that we find an additional historical source that further unites the practices of design with the practices of craftsmanship. In *de Architectura Libri Decem* (*On Architecture in Ten Books*), written by Marcus Vitruvius Pollio—commonly known as Vitruvius—we find a text that begins to unite our contemporary understanding of design with a Greek conception of the practices of craftsmanship. The *de Architectura* illuminates those practices, and the educational requirements necessitated by them, that we might think of as describing the skills and knowledge required of the contemporary practice of design. Because, in contemporary culture, the *de Architectura* has been narrowly associated with the educational and professional practices of architecture, it is essential to provide a means of bridging the conceptual gap between the Greek notion of craftsmanship, the Vitruvian term *architectura*, and the contemporary professions of design. In doing so, it becomes possible to view the *de Architectura* as a treatise on design education and design practice that is useful in theorizing how we might more productively think about and teach design. The *de Architectura*, understood in this way,

begins to reframe criticisms of design methodology and, resultantly, establishes the possibility for an educational approach to contemporary criticisms of education in design.

Etymological Considerations

In order to transition from the allegorical representations of domesticity and craftsmanship associated with Pandora, Prometheus, and Hephaestus, it is necessary to situate those stories within the larger context of Greek thought and its enduring influence upon Roman thought and culture. This is best accomplished by beginning with the Latin terms *architectus* and *architectura*, exploring their etymological origins, and then associating those primary terms with concepts of craftsmanship arising from Greek mythology and later characterized in Greek philosophical thought. In an attempt to understand how Vitruvius thought about the profession of the *architectus* and applied the term *architectura*, it is useful to explore the Greek *archetecton*, the roots associated with that term, and the ways those roots came to be understood in Greek philosophy. The Latin *architectura*, our architecture, is derived from the Greek *archetecton*—normally translated as "master builder"—which is constructed from the root words *arche* (ἀρχή) and *tecton* (τέκτων). It is generally accepted that *arche* primarily translates as beginning or origin; of being first in a sequence; of having primacy (Crane 2013). Additionally, it can be translated as ruler, as master, as one with dominion over another. In the context of its adjectival use as an inseparable prefix, i.e., *archi*tect and/or *archi*tecture; it predominantly refers to mastery in the sense of exceptional competency. *Arche*, then, as a prefix just means to be highly accomplished, to have mastery of a particular skill. *Archi*,

in the Latin usage of Vitruvius, simply implies one who is superior in—has mastery of—her trade.[54]

The Greek noun *tecton*, the root word modified by the inseparable prefix *arche*, is the more critical term in understanding Vitruvius' contextualized *architectus*. Early references suggest that *tecton* was a specific descriptor of the trade of carpentry, of builders, of those working in wood as opposed to those working in trades such as weaving, pottery, and metalsmithing (Liddell & Scott 1940). Since its use by Homer, however, *tecton* has more commonly referred to acts of fabrication, of making, in general. According to architectural theorist Kenneth Frampton, in the fifth century BCE the meaning of *tecton* further evolved to a more general notion of the making of any physical artifacts and was intimately tied to the innovation of *poesis* (Frampton 1996). *Poesis*, in the sense used by Plato and other early Greek philosophers roughly translates to "something where before there was nothing" (Sennett 2008, 70). *Poesis* is a bringing forth, a creation of something new. For Aristotle, *poesis* is represented as a form of "knowledge involved in the making, producing, or creating of some*thing*" (Risatti 2007, 162). The modification of meaning that *poesis* brings to *tecton* more readily aligns the term with contemporary ideas of craftsmanship as the creation of useful physical artifacts and of design as an innovative bringing forth. *Tecton*, in the Greek and, likewise, Roman understanding of the term evolved in meaning as representational of a particular form of knowledge and was firmly associated with the idea of creating as an innovative, deliberate, and critical act of production. This relation of *poesis* to the *tecton* also

[54] Trade is important here as it begins to allude to a hierarchal privilege that is prevalent in Greek (and thus Western) thought. A tradesman, and her associated skill—a practical knowledge—is viewed as somewhat lesser than one who is not required to practice a trade but, instead, is in possession of theoretical knowledge.

supplements the significance of the prefix *arche* in that it elevates the *tecton* from one who is merely a builder—a worker—to the status of a maker, one who has achieved mastery in deliberately bringing forth useful physical artifacts.[55]

The Greek noun *technê*—a term that I have associated with the "know-how" of making—is etymologically related to the acts of innovation and production associated with the *tecton*. While Frampton suggests that the terms are etymologically distinct—he suggests that *technê* is derived from the Greek verb *tikto,* meaning to produce (Frampton 1996, 23)—I argue that the relationship of *technê* to *tecton* remains significant to an understanding of the *archetecton* as representational of craftsmanship. Phenomenologist Martin Heidegger, in *Basic Writings,* states: "The word *technê,* technique, belongs to the verb's root *tec*. To the Greeks *technê* 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 conceived of *technê,* producing, in terms of letting appear" (Heidegger 2008, 337). Heidegger's explanation of *technê* as a bringing forth is consistent with the later Greek understanding of *technê* in its association with *poesis*. Further, as noted in my earlier discussion of workmanship, the term *technê* is a concept embodied in the Daimona Tekhne. In the Greek pantheon, Daimones are the personified spirits of the human condition and represent the abstract personal qualities that arise from human traits. Tekhne, in her association with Hephaestus and the Muses is the personified spirit of art,

[55] There is also a negative association when *tecton* is associated with *poesis*—a sense that cunning has been employed in that bringing forth. In this sense, cunning is a negative attribute in that it involves an act of hubris. We can see this understanding of cunning in literature when witches are referred to as "cunning women;" they have acted against the natural order—often in conjunction with the supernatural—in an attempt to impose their will upon that order. In instances such as this, the etymologically related *technê* can be further associated with the feminine and, as such, be seen as outside the hierarchy of privilege.

craft, and technical skill.[56] Tekhne is associated with those allegorical representations of craftsmanship; of the embodied knowledge of *technê* and its relationship to producing those physical artifacts necessary to human survival. Tekhne is also associated with the domestic sphere, with farming, with the enslaved, and with the manual arts (Atsma 2016). This association of *technê* with the domestic stands in opposition to the privilege bestowed upon Greek public life and, as such, established a subservient position to other ways of knowing—particularly to the related concept of *epistêmê*; to theoretical, or pure, knowledge. In establishing the relationship of *technê* to *tecton*, we can infer that the work of the *tecton* involved an engagement with *technê*; it involved the "know-how" of making in the production of physical artifacts. The *architecton*—Vitruvius' *architectus*—would, therefore, be an individual who had acquired mastery in the "know-how" of creating physical artifacts that were useful to humankind.

Philosophical Considerations

Another means of exploring the early Greek understanding of the term *technê*—and how it might relate to the Vitruvian *architectus*—is through its use by the Greek philosophers. While use of the term *technê* by these philosophers varies greatly, it is worth engaging as a means of gaining an understanding of its relationship to Greek conceptions of knowledge. *Technê*, in the context of the Greek philosophers is generally translated as craft; as a practice of skill. *Technê*, the practical knowledge associated with particular skills, is understood as contingent, as dependent upon particular circumstances.

[56] There is very little distinction between art and craft to the ancient Greek mind; however, *technê* in craft is more valued than in its artistic manifestations. See the works of Howard Rissati and Richard Sennett, among others, for a more thorough discussion of the distinctions made by the Greeks.

The knowledge associated with *technê* is a different way of knowing than that associated with theoretical knowledge—what we might think of as descriptive or factual knowledge. In the Greek, this descriptive knowledge is thought of as universal—as unchanging—and is referred to as *epistêmê*. While these distinctions more readily mirror our contemporary assumptions about theory and practice, the early Greek philosophers did not generally hold *epistêmê* and *technê* in strict opposition. These philosophers did recognize differences between the two terms; however, they also describe them as having positive relationships (Parry 2014). In the work of Vitruvius, practical knowledge is contrasted with theoretical knowledge; therefore, I will limit this exploration of Greek concepts of knowledge to the terms *technê* and *epistêmê*.[57]

In the Socratic works of Xenophon, particularly the *Memorabilia* and the *Oeconomicus*, we see that Socrates uses the knowledge terms *technê*—what we now associate with the contingent knowledge of "know-how"—and *epistêmê*—a universal and descriptive knowledge—almost interchangeably (Marchant 1979). As discussed by historian of ancient philosophy Richard Parry, the Socratic sense of knowledge is:

> intimately tied to knowing how to do things, especially the more organized kind of knowing-how designated by *technê*. There is no distinction between *epistêmê* as theoretical knowledge and *technê* as mere craft or skill. Socrates explicitly identifies as *technai* such activities as playing the harp, generalship, piloting a ship, cooking, medicine, managing an estate, smithing, and carpentry; by association with these *technai*, we can include housebuilding, mathematics, astronomy, making money, flute playing, and painting. Without marking any difference, he also calls many of these activities *epistêmai* (Parry 2014).

In the interchangeability of these two terms, Socrates collapses knowledge in a way that dismisses the abstractions of the physical philosophers who were interested in universal

[57] Aristotle actually makes a distinction between five concepts of knowledge of which *technê* and *epistêmê* comprise only two. See Aristotle's *Nicomachean Ethics*, particularly 1139b15, for a full accounting of these.

truths rather than the experiential truths of human relations with and in the world. In this interchangeability, Socrates seems to further suggest that practical knowledge, his *technê*, is of greater value than knowledge of theory. The value of t*echnê* is a result of its being productive; the practices of *technê* culminate in the production of physical artifacts. Resultantly, the artifacts produced assist in humankind's ability to survive and thrive in the world— *technê* generates knowledge that is innovative rather than descriptive.

The dialogs of Plato present understandings of *technê and epistêmê* in contradictory ways; their relationship is varied dependent upon the context and intent of the particular dialog. In general, most of the dialogs associate the following activities with *technê*:

> medicine, horsemanship, huntsmanship, oxherding, farming, calculation, geometry, generalship, piloting a ship, chariot-driving, political craft, prophecy, music, lyre-playing, flute-playing, painting, sculpture, housebuilding, shipbuilding, carpentry, weaving, pottery, smithing, and cookery (Parry 2014).

In this list of practices, we see Platonic *technê*—much like Socratic *technê*—as more representational of the skills associated with the domestic. However, as with the earlier philosophers, some of the activities mentioned might be more generally associated with *epistêmê* in that they are not considered as producing artifacts. Plato's confounding of productive and non-productive activities appears similar to the Socratic uses of *technê* and *epistêmê* interchangeably. Plato, in contrast to Socrates, begins to privilege *epistêmê*—in the way that scientific knowledge is seen as having privilege in the contemporary sense—when, in the *Republic* (477b), he asserts that *epistêmê* is the ability to know the real as it is; to know the forms. In the eternal nature of the forms we apprehend pure theory; this is in opposition to the sensory knowledge—the knowledge of contingent things—implied in *technê* (Bloom 1991). While this dialectic opposition

provides us with only one way of understanding Plato's perceived relationship between *technê* and *epistêmê*, it is the *Republic's* dialectic relationship that underpins contemporary understandings of these ways of knowing.

While at times, particularly in the *Republic*, Plato's *epistêmê* does represent a more dialectic interpretation of theoretical knowledge, in most instances it is generally thought of as expressing an understanding of when to apply *technê* to a particular situation. For Plato, *epistêmê* provides the craftsperson with the ability to explain why she does what she does. *Epistêmê* begins to provide the craftsperson with the ability to give account of the why of *technê*; this giving account is a form of knowledge that suggests mastery. This relationship, where *epistêmê* gives reasons for *technê*, provides a further characteristic that may be beneficial in distinguishing practices of *technê*. The practices of *technê* bring forth artifacts; artifacts that exist separate from the *technê* engaged.[58] *Epistêmê*, as descriptive or theoretical knowledge, does not produce artifacts. *Epistêmê* produces concepts; it produces conceptual knowledge and the ability to reason. It is in this way, as theoretical, that *epistêmê* allows for a giving account of the productive nature of *technê*. In employing the knowledge of *epistêmê* to give account of the "know-how" of *technê*, the craftsperson attains the wisdom of *phronesis*; the ability to make judgments in reference to the work at hand**.**

Building upon Plato's distinction, Aristotle provides us with the strongest differentiation between *technê* and *epistêmê* in his *Nicomachean Ethics* (Irwin 1999). In Book VI, Aristotle offers a clear distinction between the intellectual virtues of *technê* and

[58] The term "artifacts" is used here without any modifying adjective as the artifacts produced through *technê* can, in the Greek sense of art and craft being indistinguishable, be both physical artifacts and/or performative acts.

*epistêmê***.** Technê is associated with things that admit of change; with lived experience. *Epistêmê* is associated with that which does not change; with everlasting truths that are beyond question. *Technê* is associated with things that can be otherwise, with contingency, so includes the realm of what can be produced (1140a, 1). Aristotle goes on to say that *epistêmê*, as associated with the certainty of the everlasting, is teachable (1139b, 25). *Technê*, as contingent, is not necessarily teachable but is learned in practice; it is learned by making and doing. *Technê* is the contingent "know-how" gained through acts of making as opposed to the "knowing that" in the sense of certainty associated with *epistêmê*. This Aristotelian binary provides us with the classic division between the purely theoretical and the purely practical; a distinction that privileges the universal certainty of the theoretical. For Aristotle, the certainty associated with *epistêmê* is a result of his belief that the primary principle of those things that exist by nature is attained within the things themselves (1140a, 1-20). There is no additional information required to understand and explain the universal. By way of contrast, *technê* has the primary characteristic of producing something by way of utility; it is concerned with the bringing into existence of physical artifacts that serve a function. The primary existence of these physical things is attributable to the one who makes them; she possesses the "know-how" necessary to production.

In making these assertions, it appears that Aristotle is also distinguishing between actions, acts of virtue where the end is in itself, and acts of making, where the end is a physical product separate from the activity of making (Parry 2014). In making this distinction, Aristotle further privileges the universal character of *epistêmê* over the contingency of *technê*. In distinguishing *technê* as production rather than as an action of

virtue, the produced artifacts must give account of the action of production in a similar way to Plato's conception of the accounting nature of *epistêmê*. This giving account by the artifacts produced by craftspeople exists within the realm of *epistêmê* but is also necessary to attaining mastery in *technê*. In order to bring forth, to innovate, there is a required reciprocal relationship between *technê* and *epistêmê*. Frampton suggests that this creates a "state of affairs in which knowing and making are inextricably linked; to a condition in which *technê* reveals the ontological status of a thing through the disclosure of its epistemic value" (Frampton 1996, 23). Again, this linkage between knowing and making just is *phronesis*.

The Aristotelian concept of *technê* as "know-how" further strengthens the relationship of *technê* with Hephaestus, with Prometheus, and with Pandora—with allegorical tales that illustrate the acquisition of the "know-how" necessary to human survival. *Technê* just is those practices of technical innovation that produce useful physical artifacts. As such, *technê* can be seen as one of the primary traits describing the practices of the *tecton*; of the craftsperson. We might think of *technê* as representing the most essential skill of the *tecton*; the skill of deliberately bringing forth, of innovating, of creating physical artifacts that we can call technologies. This association of *technê* with technical innovation, with the creation of technology, allows us to think about craftsmanship as representational of a process of innovation that produces physical artifacts that assist in mediating human (and non-human) relationships with and in the world.

While I hold that technological innovation has, on the whole, had positive impacts upon human lived experience, some have had serious reservations concerning

technology. Heidegger has argued that technology can overwhelm and that it appears to be otherworldly. (Frampton 1996). J. Robert Oppenheimer, in his Reith Lectures for the BBC argued that we should not treat technology as an enemy; however, he could offer no suggestions as to how we might live with its often terrifying prospects (Sennett 2008). Regardless of these reservations—reservations that are echoes of the distant stories of Prometheus and Pandora—I suggest that technological innovation, as represented by its etymological relation to the *tecton*; to the craftsperson, is fundamentally necessary to any understanding of the relationship of humankind to the world. Craftsmanship—those practices representational of technological innovation—just is how humankind creates and uses physical artifacts to mediate its relationships with and in the world. It is a primary descriptor of human experience.

Craftsmanship and Design

While Vitruvius' *architectus*—the Greek *archetecton*—would have referred to an individual who had mastered her trade, it is not certain that this understanding of the term would have been equivalent in meaning to the way that we use the term architect today. In present usage, the term architect narrowly defines those licensed professionals who conceive of, develop, and create construction documents for buildings that will be built by others. Vitruvius' description of the *architectus* is of an individual who is concerned with the design and construction of buildings, of aqueducts, and of machines (Schofield 2009). In accepting this definition, it can be taken that Vitruvius' *architectus* was more broadly a master craftsperson in the Greek sense; one who possessed mastery over the creation of physical artifacts in response to the needs of humans in our relationships with

and in the world. This architect, Vitruvius' *architectus*, if thought of as a manifestation of the Greek *archetecton*, appears to be a craftsperson in the sense that both Howard Risatti and Richard Sennett describe.[59] It should be cautioned that in reading the *de Architectura* today, one should consider later translations of Vitruvius' use of the term *architectus* as transitional. This transitional usage begins to evolve the meaning of *architectus* from the more generalized Greek master craftsperson to the more specialized use related to the design and construction of buildings that is specific to the contemporary discipline of architecture.

In describing the craftsperson—the *tecton*—as one who brings forth innovative physical artifacts, one can say that Vitruvius' *architectus* is the ancient progenitor of the contemporary field of design. The concept of the *tecton*—and her *technê* as bringing forth—derives from the "rock bottom" of Western thought; it is a component of the foundation that supports the deep structure of our contemporary understanding of design. Resultantly, Vitruvius' *de Architectura* can be read as the first significant treatise regarding the broader concept of design professions and the related education of designers. It provides a first glimpse into a portion of the historical record that can link the innovative practices of craftsmanship to the innovative practices of design. As such, the text of the *de Architectura* can be interpreted as having the potential to support a philosophy of education in design; it can be thought of as the scaffolding—resting upon the foundation of Western thought—that might support educational beliefs and practices related to design. The *de Architectura* very clearly illuminates what Vitruvius considered to be the necessary components of the theoretical education of the *architectus*—an

[59] See Chapter 2 for this description and for a more complete discussion of craftsmanship as it is differentiated from both artistry and workmanship.

education based in Aristotelian *epistêmê*—but, also, provides fertile grounds for an interpretation of what might be thought of as the first text that suggests the additional necessity of the "know-how" associated with making. As such, the *de Architectura* can be read as providing an explanation of the need of designers to have an education in craftsmanship; an education in both the theoretical knowledge of *epistêmê* and the skill found in *technê*.

Vitruvius' Life and Work

Very little documentary evidence, outside the text of the *de Architectura* itself, exists concerning the life of Vitruvius. It is thought that the *de Architectura* was first published near the end of the first century BCE (Tavernor 2009, xiv). This estimation is based upon Vitruvius' references to known events in Roman history. Particularly, the text is dedicated to Augustus—a title granted to Octavian in 27 BCE. Vitruvius also refers to his field service to Augustus' father Julius Caesar where he served as a military architect and engineer in Gaul. This reference to the Gallic campaign would indicate that the majority of Vitruvius' military service would have occurred between the years of 58 and 50 BCE. He also mentions that he served in other, later, campaigns. Further, Vitruvius mentions that as a result of his military service to Rome, he was awarded a pension at the recommendation of Augustus' sister Octavia. Reconstructing his life based upon these known milestones, it is thought that Vitruvius would have been around sixty years old when the *de Architectura* was completed.

Vitruvius also provides some autobiographical information in the *de Architectura* that assists in defining his professional experience and lends credibility to his endeavor

to codify the disciplinary boundaries of design. Vitruvius tells us that during his campaigns in service to Julius Caesar, "with Marcus Aurelius, Publius Minidius, and Gnaeus Cornelius, I was put in charge of the supply and repair of *ballistae*, *scorpiones*, and other types of artillery" (Book I, Introduction, 2). During these campaigns, he would have been exposed to innovations in military hardware and to construction materials and methods employed in different provinces within the empire. Later, during the rule of Augustus, the city of Rome experienced a building boom and significant upgrades to its infrastructure.[60] Vitruvius was involved in this work; primarily lending his expertise to the redevelopment of the Roman water supply. As a result of this experience, he provides a thorough discussion of aqueducts in Book 8 of the *de Architectura* (Kruft 1994, 21). Interestingly, Vitruvius describes only one building that he designed, the Basilica at Fano, and then only in relation to a discussion of the concepts of proportion and modularity (Book V, Chapter I, 6).[61] Vitruvius' broad experience and his exposure to, and acquisition of, *technê*—of "know-how" in the techniques and materials associated with making—would have provided Vitruvius with an awareness of the educational requirements necessary to the craftsperson; to one whose knowledge results in innovative practices that result in the production of useful physical artifacts.

Other knowledge of Vitruvius can be assumed based upon interpretation of information implied by or provided within the text. Based upon his career as an *architectus* and his military service, Vitruvius was most likely a freeborn Roman citizen.

[60] Caesar Augustus, in order to maintain a positive relationship with the Senate and Citizens of Rome, launched an ambitious campaign to renovate, rebuild, and further develop the city and its public infrastructure. As such, the d*e Architectura* would have been a timely and appropriate addition to Augustus' knowledge of both design and construction.

[61] Again, this broad experience beyond the narrow specificity of buildings further suggests that in Vitruvius' text the practice of architecture was construed much more broadly than how we think of it in professional terms today.

In describing the pension awarded to him, there is the implication that he was not born of a wealthy family. He thanks Augustus for the pension and states that it "was such that I need have no financial anxieties for the rest of my life" (Book I, Introduction, 3). His familiarity with the natural materials and environments of Rome and Campania suggest that he was most likely raised and/or spent the greater portion of his life in those areas. Educationally, it can be assumed that Vitruvius received both a general education and served as an apprentice under practicing architects (Rowland and Howe 2001, 5). Throughout the text, he refers to the knowledge imparted by his teachers, *praeceptores*, as well as to his reliance upon knowledge gained from texts both general and discipline specific.[62]

It was near the end of his professional service that Vitruvius composed the *de Architectura*. Vitruvius devoted these practical volumes to Caesar Augustus and conceived of them as providing "recommendations so that by examining them, you yourself may become familiar with the characteristics of buildings already constructed and of those which will be built; in these books I have laid out all the principles of the discipline" (Book I, Introduction, 3). As this treatise also contains detailed accounts of technological devices and other complex machines, it can be assumed that, for Vitruvius, the term *architectura* included all design fields—those fields dealing with the practical and appropriate creation of an artefactual world. As such, the *de Architectura* can be positioned as the first text concerning the discipline of design; the first document that describes the knowledge and skills necessary to the practice of design and provides an understanding of the scope of design education.

[62] While Vitruvius refers to design texts that were essential to his education, none of those texts remain as part of the historical record.

Given what little we know of Vitruvius, it can be assumed that writing the *de Architectura* was probably the most significant achievement of his professional career and the culmination of his lived experience. Vitruvius intended that the *de Architectura* would serve as a guide for both the *architectus*—one who had gained mastery of those innovative practices that, through their association with craftsmanship, constitute the practices of design—and her patrons. Vitruvius also intended that the *de Architectura* would provide a foundation for future design education and design practice in the Roman Empire.[63] In his dedication of the *de Architectura* to Augustus, Vitruvius noted that he began writing the text so that Augustus might "ensure that both public and private buildings will so match the majesty of your achievements that they will be handed down in the memory of future generations" (Book I, Introduction, 3). The *de Architectura* was composed in order to educate Augustus about the buildings (cities and their civic and private buildings), devices (sundials, water screws, aqueducts), and machines (siege and other military weapons) of the Roman Empire and to provide the foundational structure of the disciplines that conceive of and produce these artifacts.

While portions of Vitruvius' work were mentioned by other ancient commentators—most significantly Pliny the Elder—the *de Architectura* as a whole likely had little impact upon the classical world. Like many other ancient texts, it was lost to history until its rediscovery in the Renaissance. The fifteenth century rediscovery of the *de Architectura,* and its extensive dissemination, ensured that Vitruvius' text would not remain an historical footnote. The Renaissance revival of Vitruvius ensured that the *de*

[63] Again, I suggest that the text is in a transitional period between the broader definition of the work of the *architectus* as representational of craftsmanship and the disciplinary specificity of those practices that we now associate with the design professions.

Architectura has been impactful upon subsequent conversations about design and the education of designers (Tavernor 2009, xiii). While most of Vitruvius' influence has been limited to the specialized practices of architecture and mechanical engineering—due to a narrow interpretation of the term *architectus*—it should; nonetheless, be considered the foundation for contemporary design education, for design practice, and for all subsequent discussions of design and its impact upon our relationships with and in the world.

Historical Impact of the *de Architectura*

As evidenced by the works that he references in relation to his own education, Vitruvius was not the first to write on those innovative practices that we now call design; however, all earlier works on the subject have been lost. As the only surviving treatise on design from the ancient world, the *de Architectura* has had a significant impact upon architectural theory and practice. As noted above; however, Vitruvius' work probably had little influence on the classical world. Pliney the Elder lists the *de Architectura* in his bibliographies of botany and mineralogy in *Natural History* and Sextus Julius Frontinus referenced Vitruvius in his *de Aquaeductu*. Other references to Vitruvius' work appear in texts concerning private houses, gardening, and agriculture. It was not until humanist scholar Poggio Bracciolini's rediscovery of the *de Architectura*—at the library of St. Gall—in the early fifteenth century that Vitruvius' ideas began to have any impact on architectural theory and practice (Tavernor 2009, xxvii).[64]

[64] Resultantly, by the time the term architect had come to have a different meaning than Vitruvius' *architectus*, the impact of the *de Architectura* has primarily been upon architectural education and practices. I argue that its influence should be more broadly accepted as representational of other designlike practices.

During the Renaissance, several prominent Italian scholars produced annotated editions of the *de Architectura*. The reputations of these scholars ensured the dissemination of Vitruvius' work and ideas throughout Italy. Leon Battista Alberti's *de re Aedificatoria* (*On the Art of Building*), published in the mid-fifteenth century, relied heavily upon Vitruvius and his explications of Greek and Roman building. Leonardo da Vinci's famous drawing, the *Vitruvian Man*—more correctly known as the *Canon of Proportions*—was inspired by Vitruvius' commentary on proportion and helped to reestablish the relation of the human body to design.[65] Later, in 1570, Andrea Palladio published his *I Quattro Libri Dell' Architettura—The Four Books on Architecture*—which relied heavily upon his knowledge of Vitruvius. It was Palladio's text, coupled with his renown as an architect, that led to a Vitruvian revival beyond Italian shores. Sebastiano Serlio, Inigo Jones, and Thomas Jefferson were among the more famous adherents of Vitruvian Classicism insuring that both European and American architectural practice and education were recognizable as being influenced by the *de Architectura*.

Vitruvius' text provides almost all of our contemporary knowledge of the language of building design and construction as practiced by the Greeks and the Romans. In the *de Architectura* we are given the terminology related to the types and elements of columns. It also provides commentary on the various components that made up the temples, houses, and civic buildings of Roman life. Additionally, Vitruvius' work provides an introduction to the principles of design in Book I, Chapter II, and a

[65] This use of Vitruvius by da Vinci furthers my argument for a broader interpretation of Vitruvius' work and firmly links it to the broader discipline of design. Vitruvian proportion is still taught in the curricula of design disciplines including architecture, interior design, industrial design, and many of the engineering fields. It is a staple of STEM education in relation to proportion and human scale.

commentary on aesthetics in Books III and IV. From the Renaissance until the age of industrialization, this Vitruvian knowledge of architecture manifest itself in a Classicist methodology of design practice and, likewise, provided a concise history of ancient architectural practices. The Classicist methodology handed down by the Renaissance, however, is no longer the predominant methodology of architectural practice. Resultantly, instruction in Classical design methodology and the history of the Classical tradition have been marginalized in contemporary educational practice. While the methodology of Classicism has been supplanted by successive methodologies influenced by both the continued development of technologies and by changing cultural practices, awareness of its history has been exiled in favor of preparation for professional employment. Interestingly, neither of these displacements has lessened the canonical status of Vitruvian Classicism. It is still the foundation of design to which we must continually respond. This response is both methodological—a response to the design methodologies of Classical practice—and a cultural response—a response to the impact that the deep structure of beliefs and practices associated with the Classical have had on contemporary practices; beliefs and practices that can be seen as liabilities to design education and to professional practice in the design disciplines.

Educational Influence of the *de Architectura*

As design—predominantly expressed in architectural form—became an academic discipline, it was Vitruvius' theories, terminology, and principles that acted as a foundation for all design curricula—a Classicist understanding of design that was held as canonical and, as such, emphasized the privilege of wealth and power associated with

acts of building.[66] In this sense, design became the visible manifestation of the state; and in practice and education it differentiated itself from any acts of making that were related to the daily life of the common people. Design became the realm of the privileged; the monarchy, the wealthy, and the powerful. It is at this time that we also see artifacts that were originally conceived of and produced for their utility embellished such that they too signify the privilege of the upper classes. This Classicist approach to design practice stood in opposition to the vernacular buildings and artifacts that supported everyday life—buildings that, later, Bernard Rudofsky would present in *Architecture without Architects*. Arguably, the most famous school of classical design was the École des Beaux-Arts established in Paris during the reign of Louis XIV. Students from across the globe attended the École des Beaux-Arts, spreading Vitruvius' influence far beyond Europe. As noted in Chapter One, the École des Beaux-Arts established a method of educational practice that espoused the preservation of tradition; the preservation of privilege established in monarchist beliefs and practices. It was not until the establishment of the École Polytechnique in 1794 that architectural education had any alternative to a Vitruvian inspired curriculum. The design curriculum at the École Polytechnique was developed to produce scientists and technically skilled specialists and tended to eschew the influence of the liberal arts, as presented by Vitruvius, in favor of design practices that favored rationality and scientific precision.

With the rise of the École Polytechnique and Enlightenment thinking, Vitruvian Classicism was almost completely abandoned as educationally relevant. The universality of reason and the rise of Modernity—both in relation to design and to intellectual

[66] The introduction of architectural education predates the Industrial Revolution and, as such, predates the separation of artistry, craftsmanship, and design.

pursuits—ensured that Classicism was relegated to courses in history and Vitruvius' work was seen only as an antiquated methodology of which contemporary design theory was critical. Ironically, the holistic curriculum proposed by Vitruvius—a curriculum that suggested the necessity of both the epistemic knowledge supplied in the liberal arts and the "know-how" of making—was virtually lost as a result of a call for rational approaches to knowledge and disciplinary specialization. While Vitruvius' Classicist influence still has a very limited relevance in contemporary architectural education, it does not exist in the totality that Vitruvius intended.

Vitruvian Education and *Epistêmê*

Vitruvius, in our contemporary usage of the terms, has been labeled an architect and, in some cases, an engineer. His *de Architectura* has predominantly influenced the professional practices and the education of architects and mechanical engineers; however, this impact has been primarily limited to the principles and methodologies of architectural Classicism and his writings on water and aqueducts and their associated machines. Though many—at least within the narrow fields of architectural theory and practice—consider Vitruvius an architect (in the sense that we use the term today), the *de Architectura* firmly positions him as a designer—a creative thinker involved in the development of technologies that support human beings' physical relationships with and in the world. These technologies, as manifestations of the practices of craftsmanship, predate the specializations of our contemporary era and span the fields of architecture, engineering, and all other fields associated with the practices of design—with practices that culminate in the creation of useful physical artifacts. Vitruvius' work has generally

been considered highly discipline specific and has not been viewed as having a significant impact on the broader category of design education. It has certainly not been explored in relation to more general theories of educational practice. While his work is not normally associated with either educational practice or the broader professions that make up the discipline of design, I will suggest that the *de Architectura* be considered a commentary on educational practice and that Vitruvius be thought of as a philosopher of education in design.

There has been a great deal of commentary concerning the impact of the *de Architectura* on architectural theory and practice as a traditional Classicist methodology. Vitruvian Classicism is foundational to the canon of architecture and, in that capacity, has been thought of as being of value to architectural education. The *de Architectura* has repeatedly had a place in dialog about design education, particularly in its relation to Classical methodology and architectural history; however, very little has been written concerning Vitruvius' commentary on educational philosophy as presented in Book I, Chapter I of the text. Because it is mainly viewed as a canonical document concerning the principles and practices of architectural Classicism, there has been very little dialog about it as a philosophy of education qua education; as an educational framework that might provide the deep structure of thought necessary to theorize appropriate responses to criticisms of contemporary practices in design education.

While Vitruvius called himself an *architectus* and discussed the education necessary to *architectura*, I have argued that he should be more accurately thought of as a designer, a technologist creating physical artifacts that mediate human experience with and in the world. Vitruvius suggests that "invention is the resolution of intricate problems

and the discovery of solutions thanks to intellectual versatility" (Book I, Chapter II, 2). In thinking of the *architectus* as a manifestation of craftsmanship—as the progenitor of design practices—the *de Architectura* can be read more broadly as an introduction to the disciplinary fields of design and to the education necessary to produce capable and competent designers. Vitruvius meant that the *de Architectura* not only be a compendium of methods and practices but, more significantly, be an educational treatise that decisively codified all of the essential subjects of study necessary to the disciplines of design; of the knowledge and practices that constitute the professions associated with design. For Vitruvius, *architectura*—the practices associated with design—necessitated both knowledge of *epistêmê* and the "know-how" of *technê*.[67] He states:

> So architects who have struggled to achieve practical proficiency without an education have not been able to achieve recognition commensurate with their efforts: by contrast, those who have relied only on theory and book-learning were evidently chasing shadows rather than reality. But those who have mastered both, like men [sic] supplied with all the necessary weapons, have achieved recognition and fulfilled their ambitions more quickly (Book I, Chapter I, 2).

This combined knowledge of both theory and material practice defines the knowledge necessary to the practice of the *architectus*—it suggests that this knowledge is the wisdom of *phronesis*—and, if we broaden the scope of what an *architectus* might be, it also encompasses the forms of knowledge necessary to the designer.

Book I, Chapter I of the *de Architectura*, titled "The Education of the Architect" begins to lay out Vitruvius' theory of design education. He explicitly identifies the educational subjects that one must master in order to hold the title *architectus*. In theorizing the education of the *architectus*—of one we might consider as practicing the

[67] Vitruvius actually uses the term *theoria* in reference to the educational elements of the liberal arts; however, this is just a finer parsing of Aristotle's *epistêmê*. Vitruvius appears to consider both *technê* and *theoria* as forms of *epistêmê*, thus, *theoria* is used as the more specific term in contrasting *technê*.

innovative disciplines of design—Vitruvius appears to have modeled his curriculum upon the Greek model of education described by Marcus Terentius Varro in his *Disciplinae Libre Novem* (Tavernor 2009, xvii). In the nine books of the *Disciplinae,* Varro describes education as consisting of the *trivium*—grammar, logic, and oratory—and the *quadrivium*—geometry, arithmetic, astronomy, and music. Varro additionally devotes two books to education in the subject areas of medicine and architecture.[68] It is from the *Disciplinae* that future educational theorists derived the seven classical liberal arts—medicine and architecture seen as practical specializations beyond a classical education in theory (Lindberg 2007).

Vitruvius builds upon Varro's work as he describes the specific disciplines and fields of knowledge in which the *architectus* must have competency. Vitruvius asserts that the *architectus*:

> should have a literary education, be skillful in drawing, knowledgeable about geometry, familiar with a great number of historical works and should have followed lectures in philosophy attentively; he should have a knowledge of music, should not be ignorant of medicine, should know the judgments of jurists and have a command of astronomy and of the celestial system (Book I, Chapter I, 3).

Vitruvius, in describing the subjects that provide knowledge in *epistêmê,* goes on to offer explanations as to why one must be proficient in these areas of knowledge in order to successfully practice in the disciplines that we associate with design. A literary education was necessary in order that the *architectus* might "leave a more dependable record when writing up his [sic] commentaries" (Book I, Chapter I, 4). The skills of drawing and geometry are described as allowing the *architectus* to represent more clearly the actual

[68] Varro's work on architecture is not considered to have been influential to classical audiences nor—since copies no longer exist—has it had an impact upon contemporary educational practice in the design fields.

appearance of the artifacts she designs. Talent in drawing allowed the *architectus* to produce prototypes of her designs more accurately and to communicate her intentions by producing plans of buildings and their sites. Geometry allowed her to solve problems of symmetry and modularity. A firm understanding of arithmetic assisted the *architectus* in calculating costs for construction and in more accurately measuring and understanding lengths, volumes, and areas (Book I, Chapter I, 4). Vitruvius spent a great deal of time in explaining why familiarity with history—a history that emphasized the Roman fondness for Greek culture—was of importance to the *architectus*. A knowledge of history ensured that the ornamentation of buildings and other artifacts would be appropriate to their context and could be explained to those who might inquire.[69] Study of history also provided examples of how the design of buildings could express the glory and power of the state (Book I, Chapter I, 5 and 6).

For Vitruvius, a study of philosophy both ensured that the *architectus* would maintain her moral integrity and that she would have an understanding of what we would now term the natural sciences (Book I, Chapter I, 7). An understanding of music assisted the *architectus* in creating harmonic relationships in the artifacts of her design, in understanding balance, and in understanding acoustics as a necessary component in designing theaters (Book I, Chapter I, 8 and 9). Knowledge of medicine, much like knowledge of philosophy, related to an understanding of the natural sciences. Such knowledge allowed the *architectus* to determine the siting of buildings, to understand the properties of air and water, and to understand the properties of materials used in the

[69] Some of this history might be the allegorical explanation of mythology which just is understanding and stating a worldview. In regard to ornamentation, see George Hersey's *The Lost Meaning of Classical Architecture* (1988) for further information on the meaning that the Greeks and Romans associated with ornamentation.

creation of machines and other physical artifacts. In order for the *architectus* to ensure that all legal requirements related to sites and buildings were met and in order to possess the ability to understand and execute contracts, she was required to study the knowledge of jurists. Knowledge of the celestial systems allowed the *architectus* to make favorable judgments about building orientation and the placement of fenestration. This knowledge also allowed her to understand the principles of sundials (Book I, Chapter I, 10).

Vitruvius concluded his discussion of the specific subject matter necessary to an epistemic foundation for design education by asserting that because the *architectus* required an understanding of so many disciplines that people could not claim to practice *architectura* without "having climbed the steps of these disciplines from their youth" (Book I, Chapter I, 11). He also noted that acquiring proficiency in such a broad range of subjects would likely never allow the *architectus* to be a specialist in any one particular subject. "For, given the vast variety of these subjects, nobody can attain mastery in each because it is hardly possible for anyone to absorb and assimilate their theoretical principles" (Book I, Chapter I, 13). Vitruvius does, however, suggest that even though there exists this "vast variety" the *architectus* can manage her generalist knowledge of all of these disciplines as they are interrelated and necessary to each other.

Vitruvius' educational subjects, in echoing Varro, basically cohere to the two culture binary—elucidated by C.P. Snow—of education in the humanities (the *trivium*) and education in the physical sciences (the *quadrivium*). While these subjects describe an education in the knowledge of *epistêmê*, they offer no meaningful assistance in establishing the educational concepts that would allow for an education in *technê*. The Seven Liberal Arts alone are not effective in creating an educational philosophy that

addresses the "know-how" associated with making and, resultantly, cannot be thought of as a comprehensive body of knowledge that might establish the educational practices in design that would allow for the attainment of the wisdom of *phronesis*. Without the attainment of *phronesis*—the ability to make judgements in regard to acts of making—educational practices in design cannot hope to produce capable and competent designers.

It is from this point that Vitruvius' text delves into the practical aspects of design; the principles and divisions of architecture as a tradition of building. His writing in Book I, Chapter I is generally thought of as concluding Vitruvius' discussion of the proposed subject matter necessary to the study of design; however, I suggest that it does not necessarily conclude his commentary on design education. Vitruvius clearly furthers Varro's model of education by insisting that the *architectus*—or, by extension, any disciplinary specialist—combine the knowledge of theory (*epistêmê*) with knowledge grounded in practice (*technê*). He asserts that every discipline consists of two distinct aspects—the theory that is implicit in the work and the practical skills needed to produce the work (Book I, Chapter I, 15). Theory, according to Vitruvius is common to all cultivated individuals in that all theoretical knowledge is interrelated and all disciplines build upon the knowledge of theory. It is the continued practice of a specific discipline that refines and validates the theoretical understanding. As a result, the substance of any specific discipline cannot be found in theory alone, but must be fleshed out in practice; in *technê*. In this way, the liberal education—adopted from the work of Varro—in the *de Architectura* must be seen only as the initial starting point for a design education. The *architectus* must gain experience through the practice of *technê* if she is to "reach the highest sanctuary of architecture" (Book I, Chapter I, 11).

Technê and the Wisdom of *Phronesis*

While the remainder of the *de Architectura* catalogs design practices associated with knowledge in *epistêmê*, the educational practices that lead to knowledge in *technê* are not clearly articulated. Vitruvius did define *technê* as consisting of "the ceaseless and repeated use of a skill by which any work to be produced is completed by working manually with the appropriate materials according to a predetermined design" (Book I, Chapter I, 1). This definition of *technê*, while suggesting that it is learned, does not explain how we might view *technê* as knowledge that could be perceived of as possessing educational value. Without an articulated educational theory of this second realm of knowledge in *technê*, Vitruvius' educational practices—practices that parallel Snow's two cultures—can be read as privileging theoretical knowledge; as privileging *epistêmê*. This educational prioritization of the theoretical, in relation to Aristotelian certainty, over the contingency of *technê* can be seen as the establishment of a dominant/subordinate relationship that, at least in the contemporary era, privileges theory—and epistemic ways of knowing—over practice and the knowledge associated with making.[70] Sennett has suggested that "this view, in which the educated generalist dominates the craftsman [sic] specialist, reflected a clear hierarchal structure in the Roman state" (Sennett 2008, 133). This privilege of the epistemic; however, may prove inconsequential if Vitruvius' educational philosophy can be thought of as also relying upon contingent forms of knowledge associated with *technê*—with the "know-how" of making—and, resultantly, with the wisdom of *phronesis*.

[70] I do not know that Vitruvius knowingly privileged the theoretical, as he was writing in a time when that distinction had not been fully realized. What I am most interested in suggesting here is that since ancient times there have been different ways of knowing and that at some point these ways of knowing were—either explicitly or implicitly—given hierarchal status.

Vitruvius' educational philosophy remains incomplete without a theory of the educational concepts that validate *technê*; concepts that provide educational value to the *architectus*. These concepts that provide the educational value of *technê* are what I want to think of as practices of craftsmanship that can only be gained through the creating of physical artifacts and then making judgments about the effectiveness of those artifacts. This ability to engage in *technê* in order to create physical artifacts and to apply the knowledge of *epistêmê* in order to make judgments about those artifacts parallels Aristotelian thought and provides the practical wisdom of *phronesis*. In Book I, Chapter III, Vitruvius provides a means of interpreting his educational philosophy as including an education in *technê*. Resultantly, this knowledge of the material properties of things and the skills of artefactual innovation, coupled with a foundation in the knowledge of *epistêmê*, leads to the practical wisdom associated with *phronesis*. It is from Vitruvius' coupling of knowledge in *epistêmê* and knowledge in *technê* that we might find a complete educational philosophy beneficial to education in design.

While Vitruvius' *de Architectura* does not hold the influence that he intended, a re-visioning of its most famous passage may provide a means of reasserting Vitruvian thought in contemporary design education. This re-visioning may provide a philosophical framework for practical wisdom, the *phronesis* attained by master craftspeople, that eclipses the methodological differences at the heart of contemporary criticisms of design education and addresses the race, class, and gender hierarchies that are liabilities to design education—differences and liabilities that prevent design education from producing capable and competent designers and from participating in the creation and maintenance of culture. It is within the text concerning the divisions of

architecture—Book I, Chapter III—that we come to the most noteworthy of Vitruvius' assertions. After subdividing *architectura* into the practices associated with buildings, with sundials, and with machines, Vitruvius states that "all these buildings must be executed in such a way as to take account of durability, utility, and beauty" (Book I, Chapter III, 2).[71] While this assertion appears particular to buildings—what we might narrowly define as architecture—in the context of the remainder of the chapter it suggests a more general statement of the necessity of making judgments; of employing knowledge in *epistêmê* to evaluate material knowledge and the "know-how" associated with craftsmanship in order to ensure that artifacts produced are appropriate to their desired function—that artifacts have functional value in relation to their desired durability, utility, and beauty.

The functionalist nature of Vitruvian *phronesis* allows for practical, material, and aesthetic judgments that are a product of both knowledge in *epistêmê* and knowledge gained in the practice of *technê*. As it is a result of the necessary combination of both these forms of knowledge, *phronesis* can be seen as embodying a form of relativism. This relativism, however, cannot be considered a pure relativism but, rather, a mitigated form of relativism that has taken account of both these ways of knowing. This claim of relativism results from the relationship of the craftsperson to the artifact produced; the craftsperson makes individual judgments that determine use, materials, and aesthetic value—these choices are contingent upon the intentions of the craftsperson. This

[71] In the text I have used, Schofield interprets the Latin *firmitas*, *utilitas*, and *venustas* as durability, utility, and beauty. Others—particularly older editions of the *de Architectura*—have interpreted these terms as firmness, commodity, and delight. I think that either works well; however, I have chosen to maintain Schofield's translation as the other terms seem antiquated and do not cohere to contemporary usage.

relativism of choice is mitigated by the requirement of making judgments, by engaging knowledge and experience in order to evaluate the durability, utility, and beauty of the artifact produced. The mitigated relativism of phronesis might be best understood in relation to philosopher of feminist epistemology Lorraine Code's claim—in relation to moral systems—that "the values and regulative principles invoked are appropriately responsive to the context" (Code 1991, 108). This suggests, in the context of Vitruvius, that decisions regarding the production (*technê*) of artifacts must be tempered by evaluation (*phronesis*) that is not limited to universal principles (*epistêmê*) but must also address the functional reality of the durability, utility, and beauty of those artifacts being held in judgment. In this way, knowledge claims find space within the subtleties of experienced life—they are not relegated to the exclusion required of the universal character of epistemic forms of knowledge; forms of knowledge that exist in and perpetuate oppressive conceptual binaries. In the context of craftsmanship, *phronesis* just is a mitigated relativism that guides the experiential expertise of the craftsperson in creating useful artifacts that assist in mediating our relationships with and in the world. In durability, utility, and beauty, we can find the foundation of a pragmatic and non-hierarchal educational philosophy that can address the liabilities that exist at the "rock bottom" of the deep structure of Western beliefs and assumptions about design and, more generally, address issues of the veracity of multiple forms of knowledge and that address race, class, and gender marginalization in a variety of educational environments.

Vitruvius' assertion that all buildings—what textual context suggests should be thought of as all of those activities that produce useful physical artifacts—must take account of utility, durability, and beauty places them as educational topics outside of the

Classicist and historical contexts of the epistemic knowledge presented in the *de Architectura* and firmly associates them with both the *technê* and the *phronesis* necessary to the craftsperson. As such, Vitruvius' call for a taking account of durability, utility, and beauty establishes a practical knowledge that exists outside the canonical educational binary established by both Varro and, later, Snow. It is from this practical knowledge that material judgments can be made; utility, durability, and beauty provide access to a mitigated relativism that allows a practical means of taking account of the artifacts that result from the disciplinary practices of *technê*.

Utility, durability, and beauty—as appropriate means of making judgements concerning the physical artifacts produced by craftspeople—can, therefore, be seen as the virtues of craftsmanship. These Vitruvian Virtues—virtues that arise out of the wisdom of *phronesis*—should be considered as informing the practical knowledge that is required of the designer. The implications of the Vitruvian Virtues of durability, utility, and beauty, in some way, act to re-establish a direct relationship between design practice, as mediating and innovative, the messy vitality of lived experience, and the physical attributes of a material world. They suggest that design, at its most fundamental level, is intimately tied to the contingencies of function; that design must be concerned with producing physical artifacts that are useful to humans (and non-human animals) in our relationships with and in the world. The Vitruvian Virtues, when understood as providing access to a form of mitigated relativism, ground the technical knowledge of craftsmanship within a physical world where the pragmatic awareness of the appropriateness of particular materials defines the durability of design artifacts; the function of those artifacts—how they are appropriately used by humans—is a condition of their utility; and

the particular aesthetic value we place on those materials defines their beauty. Durability and utility can easily be recognized as pragmatic concerns related to the physical properties of artifacts and to the engaged practices of making and making judgments—the reciprocal practices of craftsmanship. Likewise, beauty acts to emphasize our aesthetic relations—psychological, emotional, and physical—to the artifacts of our design. Beauty, might also be explained as elegance, a term employed in engineering fields to denote simplicity of design. Elegance is achieved when an artifact is executed such that it serves its purpose and could serve no other with the same ease. Antoine de Saint-Exupéry, the French aviator and author—probably best known for his classic children's book *The Little Prince*—poetically suggests the achievement of elegance when he states that "a designer knows he has achieved perfection not when there is nothing left to add, but when there is nothing left to take away" (de Saint-Exupéry 1939, 9).

Durability, utility, and beauty, questions of judgment, represent an Aristotelian taking account of what is produced. These judgments provide a conceptual vocabulary to the designer that reconciles most contemporary critiques of design education. Questions of utility, durability, and beauty represent the wisdom necessary to the fulfilment of mastery in any particular trade. From Aristotle we learn that the craftsperson who attains *phronesis* in regard to her trade is wiser than the person of experience because she knows the causes of her making; she has knowledge of the reasons that things are done. The artisan, on the other hand, acts without this knowledge (981a30-b5).[72] Aristotle goes on to suggest that the distinction between the attainment of *phronesis* and non-critical acts of making is the ability to teach. The craftsperson who possesses *technê*

[72] Aristotle's use of the term artisan here is probably more accurately a representation of the worker that I have discussed earlier—one whose only intention is in production.

is able to teach only if she has knowledge (*epistêmê*) of the reasons why things are done in her *technê* and, resultantly, has attained the wisdom of *phronesis*. In this way, it can be concluded that the craftsperson who has attained *phronesis* possesses both knowledge in *epistêmê* and the "know-how" associated with her *technê*; she has attained the heights of the profession of the *architectus.* Proficiency in both forms of knowledge, in attaining *phronesis*, allows its possessors to make judgments—judgments that give designers the ability to know the causes of their decisions—and to teach those skills as a means of perpetuating their professional practices.

In this Vitruvian triad of durability, utility, and beauty one can theorize a practical and mitigated relativism; production is not solely a product of the desire of the maker but a reciprocal bringing forth of physical artifacts that the craftsperson intends to meet particular needs in relation to human interactions with and in the world. These technical virtues, coupled with the theoretical, complete the educational needs of the designer and, as such, can provide for a renewal of practices in design education that reunite the designer with the world of lived experience and with the physical properties of materials that exist in the world. The Vitruvian Virtues, the virtues of craftsmanship, are the deliberate and normative standards that describe a particular way of being in the world and act to populate the knowledge that should be at the core of design education; they enact the knowing that—*epistêmê*—and knowing how—*technê*—that can ground the deep structure of thought that supports education in design. In supporting education in design from such a structure, as a form of mitigated relativism, we might be more readily positioned to address those liabilities to education in design that arise as the result of the patriarchal assumption; liabilities of race, class, and gender subordination. In asserting

that Vitruvius' de *Architectura* is describing the practices of what we would now call a designer and that these practices are related to the practices of craftsmanship—practices in technological innovation—an adoption of the knowledge available in the practices of craftsmanship provides the basis for an educational philosophy of design; it provides a historical and philosophical framework upon which design curricula can construct and evaluate themselves.

Conclusion: The Educational Value of Craftsmanship

An Educational Theory

As a design educator, I have found that my students begin their design educations with imperfect expectations as to what design education might be; expectations that seem antithetical to the exploration and discovery that I associate with design practices. I have also found that while there have been calls to address the lack of diversity in both the professions and in educational institutions, educators have not been able to articulate how this might effectively happen in educational settings. Design educators have not yet begun to address issues of race, class, and gender disparity beyond shallow attempts at inclusion. These issues—misguided educational expectations and a lack of significantly addressing diversity—are, at their deepest levels, liabilities to educational practice that have led me to begin this inquiry into the structure and practices associated with education in design.

When I began this project, I began with two questions. First, I wanted to know how I might respond to criticisms that, at first glance, suggested there were problems related to pedagogical practices and curricular content in design and to the identity of design as an academic discipline; problems that were responsible for generating a state of crisis in design education. These criticisms manifest themselves in claims that education in design did not have the ability to produce capable and competent designers and, concurrently, was unable to participate in the creation and maintenance of culture. The second, and more personal, question concerned how I might think of myself as a designer and as a design educator; how I might be able to understand and explain how I think about and teach design. In a very tangible way, I have a responsibility for insuring

that the things I teach work to positively impact education in design. I expect that it makes me a better educator to reflect upon those concepts that are at the foundation of my beliefs and assumptions about design and how, as an educator, those beliefs and assumptions have an impact upon my students. My need for reflection upon my beliefs and assumptions takes seriously Jane Roland Martin's claim that the primary role of education is "to form the best individuals and cultures it can" (Martin 2011, 204).

These questions—how I might respond to criticisms of design and how I might conceive of myself as a designer—are critical to me. They are critical to my career as a design educator and in my role as a student of the philosophy of education. Upon reflection, I have come to understand that these questions are interrelated. For me to be an effective educator, I have to scrutinize and address criticisms of design practice and design education in order to come to terms with what I believe about design, how I practice design, and how I teach others design. These questions are also related such that in order to conceptualize my role as a designer—and what that might mean to my educational practices—I have to have a fundamental idea about what design is; a way of positioning myself in a field that seemingly does not have a significant history of foundational beliefs and assumptions that might influence how it is understood in its contemporary manifestations. In the Introduction, I suggested that theorizing and exploring a more significant history and philosophy of design, and its impact upon the education of designers, might allow me to come to terms with both of my questions. In exploring these questions, in coming to terms with how I might understand design, I have come to several significant conclusions. First, in attempting to understand the underlying structure of the various criticisms of design education, I realized that the criticisms voiced

by design theorists and design educators were not necessarily criticisms of educational practices but, rather, criticisms related to design methodology. The second conclusion that has come to influence my thought is that it is beliefs and assumptions that exist at the "rock bottom" of Western thought in general—not specific to the practices associated with artistry, workmanship, and craftsmanship—that are the most detrimental to educational practices in design. Both of these conclusions have led me to seek an educational philosophy that might be applied to education in design; have led me to engage the crisis of design education from the standpoint of educational philosophy.

Criticisms of Design Methodology

In re-conceptualizing criticisms of design education as methodological, it became important to explore the methodologies that were at the heart of those criticisms; to find the root causes that initiated those criticisms of design education. Christian Norberg-Schulz dissatisfaction with young architects was a dissatisfaction with the universalization of Modernism. Bernard Rudofsky's reaction to architectural practice was, similarly, a reaction against the system of beliefs that support the intellectual agenda associated with Modernity. The criticisms presented by Norberg-Schulz and Rudofsky, as design phenomenologists, can be thought of as expressions of their beliefs in the significance of human experience. They held that communicating the variety of our human experiences was more appropriate to design than expressions of the dream of a universal narrative. The criticisms of Monica Ponce de Leon and Don Norman—criticisms of design's reliance upon a Euro-centric canon—are, likewise, not criticisms of particular educational practices but, rather, of methodologies of thought that have

resulted in educational inertia that has, resultantly, led to an elitism that prevents the practice of design and education in design from participating in an ever evolving culture.

Generally, these methodological criticisms are not criticisms of educational philosophy; they are criticisms of more deeply held beliefs that illustrate how designers perceive of their work. These criticisms have been grounded in their authors beliefs and opinions about what might count as design. For the most part, methodological criticisms can be considered responses to architectural historian and theorist Sigfried Giedion's suggestion that the role of design, particularly architecture, is in providing "the interpretation of a way of life valid for our period" (Giedion 1974, xxxiii). For Giedion, and our other critics, the project of Modernity has not been an appropriate interpretation. Modernist thought in relation to design, and the last several decades of responses to the Modernist agenda, has led to confusion in design practice and in design education. Unfortunately, the confusion of responses has only produced further methodological criticisms. In remaining methodological, these responses have not engaged educational theory. They have certainly dealt in subtleties concerning theories of the role of design but they have not addressed theories of education in design that might assist in redressing some of the deeply held beliefs that are the root of those criticisms. As such, it appears productive to address these criticisms from the standpoint of educational theory in order to find clarity in response to my first question.

Understanding Design

To answer the first question—how I might respond to contemporary criticisms of design and design education—I had to come to terms with the second. How did I think

of myself as a designer; as a design educator? I realized that being "a maker of everythings" was not a helpful way to describe what I thought it meant to be a designer. In order to be able to think about what it meant to be a designer—especially in regard to educational philosophy—I thought it beneficial to engage the history and philosophy of design. As a relatively new term describing a profession that arose concurrent to the Industrial Revolution, design did not appear to have a history robust enough to help me understand, at a fundamental level, what it might mean to be a designer. Similarly, design did not appear to have a philosophical stance that was not tied to methodological positions. Because the practices that we call design are recent, and because the artefactual record would suggest that something like design has been occurring throughout human history, I began to explore ways of making—ways of producing physical artifacts—that might conceptually extend the history and philosophy of design and design education. As "a maker of everythings," I found it reasonable to engage the ways of making that are employed by artists, by workers, and by craftspeople in order to find a more comprehensive accounting of design.

Taking Account of Design Education

To examine the histories and philosophies associated with artistry, with workmanship, and with craftsmanship in search of an educational philosophy that would assist me in clarifying what it meant to be a designer and a design educator, and in addressing criticisms of design, I needed to employ some method of educational critique. I needed educational criteria, an educational theory, that might allow me both to reframe and respond to the criticisms of design educators and to begin to search for educational

value that would assist me in understanding and enacting my role as a design educator. As the framework for an educational critique of ways of making that might be beneficial to education in design I turned to what I call taking account of the beliefs and assumptions that influence those ways of making that might have an impact upon practices in design education. This taking account is based upon and employs Martin's concept of cultural bookkeeping. Her bookkeeping project, in engaging "fundamental beliefs about the social order" (Martin 2011, 26) offers a feminist methodology that is supported by the works of Karen Warren, Carolyn Korsmeyer, and Lorraine Code. Resultantly, my intention was to integrate this feminist critique in order to take account of the assets and liabilities that lie at the "rock bottom" of our beliefs and assumptions about the ways of making associated with artists, with workers, and with craftspeople. Taking account of those beliefs and assumptions provides a framework for examining how they might influence education in design. The goal of this exploration has been to identify and cultivate assets and eliminate liabilities in order to ensure that education in design can produce capable and competent designers and participate in the creation and maintenance of culture.

In order to identify the assets and liabilities that conceptually extend the history and philosophy of design and, resultantly, influence how we think about and teach design, it was necessary for me to engage the beliefs and assumptions that support the deep structure of thought that influences the practices of artistry, of workmanship, and of craftsmanship. On the surface of each of these ways of making, floating well above the deep structure of each, are similarities that can be thought of as assets to educational practices associated with design. In a general sense, these surface assets are not thought

of as impacting educational theory. They do, however, impact educational practices. Artists, workers, and craftspeople are engaged in processes that are productive. All three of these ways of making produce artifacts—either physical or not—as a result of those processes. An engagement with the production of artifacts and the skills necessary to that production are indispensable to the education of designers. Further, the communicative skills necessary to the artist and the productive skills of the worker and the craftsperson are equally necessary to the education of designers. The skills associated with the productivity of making and with visual communication are assets associated with educational practices that should continue to be cultivated by design educators. Explorations beneath the similarities that exist at the surface, however, expose liabilities inherent in each of these ways of making. Engagement with the deep structure of thought associated with artistry, workmanship, and craftsmanship predominantly expose liabilities that must be addressed if we are to hope for an educational philosophy that might address criticisms of education in design and be beneficial in how we think about and teach design. In engaging these ways of making, I have found that the beliefs and assumptions that we hold in relation to artistry, workmanship, and craftsmanship are built upon even more fundamental beliefs and assumptions that exist at the foundation of Western thought. Resultantly, it becomes imperative to engage the foundations of Western thought in order to identify liabilities to education in design. Taking account of the deep structure of Western thought exposes us to the "rock bottom" beliefs and assumptions that influence how we understand the world and how we think about design.

The Educational Liabilities of Artistry

Taking account of the deep structure of thought associated with education in artistry began with a realization that Martin's two primary dichotomies—a nature/culture split and a distinction between public and private life—represented oppressive cultural frameworks that were the result of gendered assumptions. Korsmeyer's concept of deep gender allows us to become aware of those basic beliefs and assumptions that are the result of the privileging of the masculine and the marginalization of the feminine in their binary relationship. In associating the masculine/feminine binary with other binary systems; i.e., mind and body, culture and nature, public and private, and any other number of seemingly neutral ideas and beliefs; we find a representation of oppression. This oppression—the privilege associated with the masculine and the marginalization of the feminine—is fully embedded in Western culture and, resultantly, influences all of our subsequent beliefs and practices. The privileging of the masculine is a fundamental assumption in Western thought. The influence of this bias—the oppression associated with the privileging of the masculine binary—upon all subsequent thought is what I have called the patriarchal assumption.

Recognizing the oppressive nature of gender asymmetry as a cultural liability, Korsmeyer theorizes ways that deep gender analysis might begin to address the oppression associated with the canon of fine arts. Identifying the canon of fine arts as gendered, as maintaining its authority as a result of its association with the privilege of the masculine binary, allows others to begin to challenge that authority. In the case of the fine arts, Korsmeyer's theory and the works produced by feminist artists are responding to a privilege that they find unacceptable. Their challenges to the authority

of the canon have begun to modify that canon radically; they have begun to interrogate the deeply held beliefs and assumptions about what it means to make art and what things we might call art. These challenges are, in effect, criticisms of our cultural beliefs about what counts as art. While these criticisms have begun to destabilize the canon of fine arts, they can be further thought of as implying the need to transform the foundational beliefs and assumptions that give any oppressive systems their authority. Identifying the patriarchal assumption as a liability to educational practices in artistry can, by extension, name it as a liability to educational practices in design. Further, it can be held that the patriarchal assumption—an assumption at the "rock bottom" of Western thought—is a liability to all educational practices that do not attempt to address its oppression.

Like the patriarchal assumption, education in artistry also exposes the liability of a monarchist sensibility. This monarchist privilege arises from an acceptance of the infallibility of a monarch as a result of his having been divinely sanctioned. In practices associated with artistry, monarchist privilege manifests itself as an unquestioning acceptance of those institutions that privilege canonical ways of knowing and that privilege precedents that were established in the past. In discussing educational practices in artistry that were founded on, and acted to perpetuate, monarchist privilege, I explored educational practices at the *École des Beaux-Arts*. The *École des Beaux-Arts* also provides us with an example of how issues of diversity have been addressed in response to social pressures designed to ensure inclusion. In 1899, Julia Morgan, after completing an engineering degree at the University of California – Berkeley, became one of the first women allowed to enroll in the architecture program at the *École des Beaux-Arts*. In 1902, she became that institutions first female graduate (Wilson 2007). While this may

seem like a victory in gender equity, I hold that it was only a shallow victory at the surface of issues that have continued to perpetuate the deep structure of Western thought; her victory did little to change either the patriarchal privilege or the monarchist privilege associated with the *École des Beaux-Arts*; associated with education in design. When she returned to California and was employed as an architect, her employer, the architect John Galen Howard, suggested that Morgan was "an excellent draftsman [sic] whom I have to pay almost nothing, as it [sic] is a woman" (Boutelle 1996). Later, when she began her own design practice, Morgan became the primary architect of the American newspaper magnate William Randolph Hearst. Her most famous work for Hearst was *La Cuesta Encantada*, perhaps better known as Hearst Castle. In this relationship between American royalty and design, we can see the deep structure of monarchist privilege; while Morgan was, at least marginally, included within the male dominated discipline of Architecture, she was obligated to remain beholden to manifestations of monarchist beliefs and assumptions.

The Educational Liabilities of Workmanship

Attempting to extend the history and philosophy of education in design, I theorized taking account of the assets and liabilities associated with the deep structure of thought related to the ways of making associated with artists, with workers, and with craftspeople. In realizing that this deep structure of educational thought was built upon a foundation of deeply held beliefs and assumptions supporting Western thought, I began to engage liabilities associated with that foundation. In the case of education in artistry, I identified the patriarchal assumption as one such foundational belief. In exploring the

deep structure of thought related to workmanship, I identified a bias against labor; a bias toward expressions of theory over expressions of production. In identifying this bias as having a binary relationship, it can be related to the oppressive binaries associated with feminist critique. As such, labor can be associated with the subordination of the domestic, with the work of those who are not perceived of as being active participants in public life. In design education, this bias is so prevalent that one must turn to vocational education in order to fully theorize its effect upon educational practices.

In discussing the advent of vocational education, Theodore Lewis suggested that vocational education arose as a result of class distinctions. The elite of society were above the need to possess the "know-how" associated with making; with the work of workers. Resultantly, vocational education became the province of those who were othered by privilege. This privilege, associated with wealthy white men, acted to subordinate those who were not of the dominant class, the dominant race, or the dominant gender. James Anderson's work on the Hampton-Tuskegee model of education reinforces the racial marginalization associated with education in workmanship. These models of education—vocational in conception—were intended to maintain the privilege of white males and ensure that the education of previously enslaved Black people forced them to remain in positions of servitude. Even though Anderson's work illustrates an attempt at maintaining a privileged social order, the educational model proposed at Tuskegee can be seen as a challenge to the marginalization of the vocational; a challenge to systems that are based upon race and class subjugation.

Booker T. Washington's *Up from Slav*ery presents a philosophy of education that attempts to redress the bias associated with the vocational. Washington's educational

philosophy—in establishing dignity in labor—challenged the marginalization associated with the vocational arts. In elevating labor beyond drudgery and toil, in dignifying the practices of workers as agential, Washington's educational philosophy would allow the previously enslaved to begin to affect changes in cultural practices; it would allow them to begin to participate in the creation and maintenance of culture. This philosophy would allow newly emancipated Black people to take part in a culture that had previously excluded their voices; would allow them to become recognized participants in the broader American culture not through confrontation but through economic cooperation. In his proposal that making things well would lead to the cultural inclusion of the previously enslaved, we see a challenge to the race and class privilege of the antebellum United States. This challenge, like challenges to the patriarchal assumption, is one means of exposing and eliminating the liabilities of these beliefs from Western thought. Challenges to established cultural practices through critical exposure of their "rock bottom" beliefs and assumptions is at least one possible way of mitigating their effects upon educational thought and educational practice.

The Educational Liabilities of Craftsmanship

Engaging the history and philosophy of craftsmanship completed my examination of the ways of making that I thought might provide a foundation for educational practices in design. Like artistry and workmanship, it appeared productive to engage the beliefs and assumptions that support the practices of craftsmanship; to take account of the assets and liabilities at the "rock bottom" of thought that—either explicitly or implicitly—influence how we think about craftsmanship. Having found that the most worrisome

liabilities to educational practices arose from the foundational beliefs and assumptions of Western thought, I began my exploration of craftsmanship in the stories of Greek mythology. In the Western context, it is the Greek myths that have been most influential upon our beliefs and assumptions about the world. In the allegorical stories of Pandora, Prometheus, and Hephaestus, there are explanations for the necessity of craftsmanship and for the skills that are associated with practices of craftsmanship. In those stories, and in the Biblical account of Genesis, we can understand craftsmanship arising out of a need for human beings to create physical artifacts that would mediate their relationships with and within a seemingly hostile world; the physical world that mortals found themselves in after defying the gods. While the stories of the fall of humankind may have resulted from political and theological shifts that ushered in a patriarchal worldview, they are, simultaneously, the first stories that provide an explanation of the relationship of craftsmanship to the experiential world of human life.

In their relation to the rise of patriarchal systems, we see the practices of craftsmanship marginalized through an association with the domestic; with practices that are beneath the dignity of public life. Greek philosophy, in attempting to intellectualize the allegorical stories expressed in their myths, reinforced the marginalization of the "know-how," the *technê*, associated with craftspeople. At the "rock bottom" of our Western worldview, the practices of craftsmanship are relegated to the lesser of those binary pairings that we associate with being oppressed—with the feminine, with the domestic realm, with race and class marginalization, and with the productive nature of labor. The patriarchal assumption, the marginalization of the domestic, the politics of

race and class, and the marginalization of labor are liabilities that negatively influence education in design.

The Educational Value of Craftsmanship

While examining the Greek myths, and subsequent Greek philosophy, has exposed cultural and educational liabilities in the history and philosophy of craftsmanship—liabilities that still influence how we understand the world and how we think about craftsmanship—there is a historical text that discusses design education and that, subsequently, provides the possibility of theorizing a significant asset to educational practice. In the *de Architectura*, and following the work of Aristotle, Vitruvius theorizes that the *architectus*—the predecessor of what we would now call a designer—required an education in both *epistêmê* and *technê* in order to reach the height of her profession, to achieve mastery of her trade. While he clearly defines the education necessary to *epistêmê*, and suggests that it is in practice that one attains the "know-how" of *technê*, he does not clearly articulate how these lead to mastery. He does not suggest how we might delineate the achievement of mastery. Aristotle, as noted earlier, suggested that this mastery—his *phronesis*—comes in the ability to make judgments.

In attempting to maintain some continuity of thought I theorized that while Vitruvius is not explicit in defining mastery of a trade as the attainment of *phronesis*, his claim that all constructions must "take account of durability, utility, and beauty" (Book I, Chapter III, 2) is an expression of judgment; an expression of the practical wisdom that just is *phronesis*. These judgments of durability, utility, and beauty are what counts as mastery—they are a result of the application of knowledge in *epistêmê* and the "know-

how" of *technê* in attaining the highest levels of craftsmanship. Further, these questions of judgment can be seen as offering a form of mitigated relativism; a relativism of choice that is moderated by the necessity of function. Mitigated relativism, the wisdom of *phronesis*, is necessary to craftspeople if they are to ensure that the artifacts they produce function in a way to take account of durability, utility, and beauty. Likewise, the artifacts conceived of by designers must be judged against their ability to act in support of mediating human (and non-human) relationships with and in the world. It is not in the skills of production, but in the judgment made regarding the artifacts produced, that we find craftsmanship's most valuable asset. Realizing that epistemic knowledge must be tempered with the experience of "know-how"—the attainment of the wisdom needed to make reasonable and informed judgments—is the educational value of craftsmanship.

The strength of mitigated relativism, as an asset to the education of designers, is in its ability to challenge the authenticity of design artifacts. It reminds us that judgments are necessary in acts of making—that the things we make must be the result of informed judgment. In this way, the attainment of *phronesis* is one means of alleviating the fears of technology expressed by Martin Heidegger and Robert Oppenheimer. In an educational context, the educational value of craftsmanship is in attaining the wisdom to take account of the assets and liabilities that exist at the "rock bottom" of the beliefs and assumptions that influence how we think about and teach design. It is only through taking account that design educators can begin to foster assets appropriate to design education and eliminate liabilities—both cultural and educational—that prevent education in design from producing capable and competent designers and from participating in the creation and maintenance of culture.

A Neo-Vitruvian Philosophy of Education

Although it is primarily understood as a treatise on architecture and has been highly influential upon design education, the *de Architectura* has not been of direct consequence to general education. A neo-Vitruvian educational philosophy that establishes the educational necessity of the *technê* associated with craftsmanship can; however, be applied to general education. While based upon the work of Varro and the seven liberal arts, Vitruvius assertion that education must combine theory and practice elevates any educational practice beyond a purely intellectual endeavor and firmly situates it as a practical pursuit grounded in the realm of lived experience. His call for learning through doing—the practical knowledge of *technê*—foreshadows the later theories of Johann Pestalozzi, Friedrich Fröebel, Maria Montessori, John Dewey, and Jane Roland Martin. Additionally, a Vitruvian influence can be seen in educational activist Alice Waters' Edible Schoolyard, in Matthew Crawford's *Shop Class as Soulcraft*, and in the contemporary Maker and DIY movements. Certainly Pestalozzi's motto "learning by head, hand, and heart" (Brühlmeier 2010) aptly describes the educational practices encouraged by a neo-Vitruvian philosophy of education.

Further, this neo-Vitruvian philosophy acts to differentiate and legitimate knowledge in design from knowledge in the sciences and knowledge in the humanities. It dismantles the binary established by C.P. Snow and, possibly, begins to destabilize the hierarchy apparent in common perceptions of knowledge. Vitruvius' *de Architectura*, coupled with the Greek myths associated with Pandora, Prometheus, and Hephaestus that indicate a shift from an idyllic relation with the world, allows for a re-visioning of design education and design practice that places that education within a knowledge community

associated with creativity, with innovation, and with a pragmatic and engaged "know-how" that realizes a material knowledge that would suggest its inclusion in any conversation about STEM education. In its association with creativity and innovation, this neo-Vitruvian philosophy begins to respond to—and counter—the proceduralist expectations of beginning design students. Further, in applying a feminist critique both to the story of Pandora and to Vitruvius' *de Architectura*, my re-visioning opens up several questions about social equity in the design fields and may provide suggestions as to how we might begin to mitigate some of the gender, race, and class inequalities that have arisen in educational practices associated with both design and general education. While policies regarding social equity in design have been implemented in both professional and educational settings, they have not yet been successful in initiating inclusive and equitable environments and practices. An educational philosophy engaging the educational value of craftsmanship may be assistive in interrogating the gap that exists between policies and practices; a gap that demands further research on the part of both design and educational theorists.

The Future of Design Education

In his essay "The Future That is Now," design educator, practitioner, and theorist Stan Allen responds to the complex challenges associated with contemporary education by claiming;

> Clearly no single design direction dominates today, and while it is possible to map shifting intellectual agendas, the situation is not so much that one agenda supplants another as it is that one is layered over another, multiplying the possibilities and points of view (Allen 2015).

With this assertion—an encouraging claim that might be thought of as a denial of privilege—Allen reinforces the need to engage education in design from the viewpoint of educational philosophy. He suggests that conversations are necessary in order to make sense of these possibilities and points of view. Conversations are necessary in order to take account of the assets and liabilities associated with each of the multiple agendas that are influencing education in design. Consequently, these conversations may lead us to new ways of thinking about and teaching design.

As a student of philosophy of education and as a design educator, I believe that it is necessary to engage the voices of many different theorists—educational theorists, design theorists, feminist theorists, race theorists, class theorists, and other critical theorists who have begun to challenge the oppression inherent in Western culture. In having conversations that are critical of both our cultural and educational practices there is the opportunity to take account of the assets and liabilities that affect both. These conversations may lead us to think about, write about, and engage in teaching that addresses the educational value of craftsmanship and the theoretical constructs that form the deep structure of our beliefs and assumptions about design. Further, these conversations may be useful in applying the educational value of craftsmanship to practices in general education.

Design Education and Craftsmanship

Beyond conversational engagement with the educational value of craftsmanship, educational philosophers should begin to explore and engage existent professional and educational practices that appear to be teaching the ability to make judgments based upon

both epistemic knowledge and the practical "know-how" of making. As I noted earlier, most criticisms of design education have been methodological, they have not engaged educational philosophy. There are, however, design practices and design programs that have begun to address these criticisms from an educational perspective—perhaps not intentionally as educational philosophy but, rather, as identified gaps in the relationship between cultural and educational practices. In these gaps, there have been challenges that are attempting to question the privilege of design education and to ensure that designers act in support of human needs in regard to their relationships with and in the world. These challenges can be found in industrial design practices like Timothy Prestero's Design that Matters.[73] Design that Matters works to develop products and practices that improve the life expectancies of infants in developing nations and for all people marginalized by the liabilities of our most basic beliefs and assumptions. Challenges to educational practices in design can also be found in architectural Design-Build programs. These programs have begun to assert the value of making, of attaining the "know-how" of *technê*, as an integral part of the education of designers. One such challenge rose from the southern drawl of Samuel Mockbee.

In 1993, architectural educator Samuel Mockbee founded Auburn University's Rural Studio as an experimental method of teaching undergraduate architecture students the pragmatic skills of building construction as a means of teaching them to be better designers.[74] Mockbee chose to carry out this hands-on experiment in the deep poverty of Hale County Alabama; an area made famous through the writing of James Agee and the

[73] More information on Design that Matters can be found on their website at www.designthatmatters.org.
[74] Most of my knowledge of Auburn's Rural Studio is first-hand. For a comprehensive look at Mockbee's work, see Andrea Oppenheimer Dean's *Rural Studio: Samuel Mockbee and an Architecture of Decency* (2002).

photography of Walker Evans.[75] While Mockbee's experiment in addressing the "know-how" of *technê* did teach students the pragmatics of building, it more importantly taught them what Mockbee called an "architecture of decency." By working hand-in-hand with the poor and socially disenfranchised, Mockbee's students learned that design was not solely about making beautiful things but could be employed to provide human dignity and community pride. By living and working with people outside of their privileged middle-class existence, Mockbee's students gained an awareness of ways that they might harness their imaginative capabilities to make a world that supports the rights, the needs, and the dreams of all people.

More than twenty years after Mockbee founded the Rural Studio, design education is still struggling to overcome the liabilities that have arisen out of the bias of privilege. Design educators are still trying to find ways to make their fields culturally relevant in a time when our cultural practices continue to marginalize people based upon their race, their class, and their gender. Design-Build programs like the Rural Studio are still creating culturally sensitive and very capable designers; however, there are still many areas of struggle that must be addressed if design education is truly to create an "architecture of decency." The relationship between the educational value of craftsmanship and Design-Build education must be more thoroughly theorized—and further supported—through a continued interrogation of the underlying privilege expressed in how designers understand themselves and their professions.

While the relationship between the educational value of craftsmanship and Design-Build and other materially engaged educational practices does provide possible

[75] Particularly, see *Let Us Now Praise Famous Men* (1941) and *Cotton Tenants: Three Families* (2013).

areas for further interrogation that might begin to address criticisms of education in design, these practices are only one small component of most design programs. The predominant model of design education is studio based. Students typically spend twelve to fifteen hours of class time per week developing their work, discussing that work with their professors, and critiquing that work in group settings. Engaging educational practices—both pedagogical and curricular—that derive from the educational value of craftsmanship in regard to the studio model of design education can result in changes to that model that may more significantly respond to and transform the expectations of students and begin to address the race, class, and gender disparity in both educational and professional settings. Currently this educational philosophy only identifies assets and liabilities that must be addressed but does not offer a fully realized theory of implementation. My only attempts at application have occurred in beginning studios. While not fully fleshed out and, certainly, not fully tested, I have begun to implement practices that disrupt student expectations and address issues of race, class, and gender inequity. At the beginning level, I have begun to teach through projects that allow for exploration and personal empowerment rather than through the typical engagement with design principles and precedents. Students are encouraged to explore forms, materials, and their connections, prior to being challenged by defined programs that tend to lead them in prescribed directions. We engage with an immediacy that is antithetical to the abstraction of drawing; our encounters are direct and attempt to be fully immersive in a material and spatial world. In the studio, I try not to exert an impression of certainty and expertise but, rather, engage with students as a fellow explorer; as someone who is just as engaged as they must become. While this has been effective in the beginning studio it

requires more development, more exploration, and more critical analysis as to its effectiveness. Further, much more work needs to be done to devise ways that this theory might be included in the upper level—or professional—studios.

General Education and Craftsmanship

While conversations about the educational value of craftsmanship are applicable to all educational practices, I have predominantly thought about it in relation to design education. In regard to both design and general education, one area that might prove beneficial in further theorizing the educational value of craftsmanship is to engage Donald Schön's theory of reflective practice. While Schön's work is predominantly focused upon professional development, educational philosopher Leonard Waks has begun to theorize its educational value. Schön's assertion that all professional practices are 'designlike'—in that they cohere to problem solving models of practice based in the experiential world—led Waks to theorize that Schön's work "projected a new model for teaching and learning in the professions, and a new conception of the research university" (Waks 2001b, 37).

Schön's new model for teaching and learning constituted his theorizing a new epistemology of professional practice: an epistemology that can also be applied to practices in general education. Waks has theorized that this application would make "design know-how, as opposed to theoretical or applied scientific knowledge, the *core* knowledge transmitted in university-based education" (Waks 2001a, 2). Such a new model for teaching and learning is based upon what Schön called reflective practice. Reflective practice can be seen to parallel the making of judgments that results in the

attainment of *phronesis*. Reflective practice—the ability to solve designlike problems found in the messy complexity of human relationships with and in the world—is equivalent to the application of reasonable judgments that result from the practices associated with craftsmanship. Engaging in reflective practice—in making judgments—accepts the knowledge of "know-how" as valid. This validation of traditionally contingent ways of knowing is necessary to success in achieving the goals of education in design. Further, in allowing for contingent ways of knowing, reflective practice challenges the privilege of epistemic knowledge that permeates our beliefs about all forms of education. As such, it might also prove beneficial as educational philosophers continue to identify and address liabilities present in general education.

A Final Reflection

Philosopher Karsten Harries, in response to the contemporary criticisms of designers—predominantly architects—that their fields have failed to participate in the creation and maintenance of culture, suggested that design must have an ethical function. When he discusses designs function as ethical, he reminds us that the term derives from ethos, from the overarching character of a culture. In this sense, the ethical function of design is "to help articulate a common ethos" (Harries 1997, 4). In articulating a common ethos, Harries suggests that design artifacts must express the beliefs and assumptions that influence the practices of culture. In proposing a "common ethos" and that this ethos "names the way human beings exist in the world," (Harries 1997, 4) Harries almost slips into a Modernist dream of universality. The universal character of Modernity implies an acceptance of only one culture, it privileges one set of beliefs and assumptions over other

ways of being human in the world. While, as we will see later, this is not Harries position, it does begin to impact those earlier criticisms of design. Designers, in their criticisms—in their efforts to improve both design education and design practice—must make it clear that their call for participation in, and the maintenance of, culture is not representational of a single set of beliefs and assumptions about the world. Recognizing that design cannot respond to a single and common ethos does not, however, mean that design has no function; that design has lost its ability to articulate human being in the world. It does suggest that design professionals and design educators need to make room for other ways of being; that design artifacts must recognize and celebrate our differences.

Bernard Rudofsky's celebration of the vernacular—his recognition of those design artifacts that emerge from the daily lives of individuals in their attempts to mediate their relationships with and in the world—begins to reframe what we mean when we talk about culture. The culture of the vernacular is the culture of the contingent and it stands in opposition to the privileged culture that is structured upon the foundation of the patriarchal assumption. The culture of the vernacular is the culture of craftsmanship. Harries, ultimately, comes to the same conclusion. In reflecting upon the fall of Adam and humankind's expulsion from the Garden, Harries suggests that this story reminds us that we have, as rational beings, always been differentiated in our relationships with the world. The allegory of the fall is just an expression of our being; an expression recognizing that "human beings have always already been sent forth into insecurity and uncertainty" (Harries 1997, 365). As such, there is the suggestion that there has never been an Eden and that any Modernist dream for a return to the universal character implied in the Garden is, in the end, just a dream.

> And even if they cannot and should not try to force their way back into some dreamed-of paradise, they can and must keep themselves open to the always-mediated claim of a reason and a reality that they have not created, keep themselves open especially to the claims of the other, to the claims of the community, to the claims of coming generations (Harries 1997, 365).

An education theorized upon the educational value of craftsmanship may be able to allow this. Craftsmanship, as representational of those reflective practices that create physical artifacts that allow humans to mediate their relationships with and in the world, is an expression of inclusion, of acceptance, and of contingency. It is a refusal to be defined by what is already established. It is a refusal of canonical forms of knowledge that, as a result of the patriarchal assumption, privilege dominant binaries and dismiss other ways of knowing, of thinking, and of expressing the vernacular; of expressing the vitality of human life.

References

Adamson, Glenn, (ed.). 2010. *The Craft Reader*. New York: Bloomsbury Academic.

Aeschylus. 1990. *Prometheus Bound (Prometheus Desmotes)*. Translated by James Scully and John Harrington. New York: Oxford University Press.

Agee, James and Walker Evans. 2013. *Cotton Tenants: Three Families*. Edited by John Summers. New York: Houghton Melville House.

Agee, James and Walker Evans. 1941. *Let Us Now Praise Famous Men*. Boston: Houghton Mifflin.

Ahrentzen, Sherry. 1996. "The F Word in Architecture: Feminist Analyses in/of/for Architecture." In *Reconstructing Architecture: Critical Discourses and Social Practices* (pp. 71-118). Edited by Thomas A. Dutton and Lian Hurst Mann. Minneapolis: University of Minnesota Press.

Alberti, Leon Battista. 1991. *On the Art of Building in Ten Books*. Translated by Joseph Rykwert, Neil Leach, and Robert Tavernor. Cambridge, MA: MIT Press.

Alexander, Christopher. 1964. *Notes on the Synthesis of Form*. Quoted by Cross, Nigel. 2006. *Designerly Ways of Knowing*. London: Springer-Verlag.

Allen, Stan. 2012. "The Future That Is Now." In *Architecture School: Three Centuries of Educating Architects in North America* (pp. 203-229). Edited by Joan Ockman and Rebecca Williamson. Cambridge, MA: MIT Press.

Anderson, James D. 1988. *The Education of Blacks in the South, 1860-1935*. Chapel Hill, NC: The University of North Carolina Press.

Arendt, Hannah. 1958. *The Human Condition*. Chicago: The University of Chicago Press.

Aristotle. 2004. *The Metaphysics*. Translated with Introduction by Hugh Lawson-Tancred. New York: Penguin.

Aristotle. 1999. *Nicomachean Ethics*. Translated with Introduction, Notes, and Glossary by Terence Irwin. Indianapolis: Hackett.

Atsma, Aaron J. (ed.). 2000-2016. "Tekhne." In *The Theoi Project*. Retrieved from http://www.theoi.com/Daimon/Tekhne.html

Basalla, George. 1988. *The Evolution of Technology*. New York: Cambridge University Press.

Bloom, Allan David (trans.). 1991. *The Republic of Plato*. New York: Basic Books.

Boutelle, Sara Holmes. 1996. “Julia Morgan, Engineer and Architect”. *Old-House Journal*. 24 (2): 22.

Brühlmeier, Arthur. 2010. *Head, Heart and Hand: Education in the Spirit of Pestalozzi*. Cambridge, UK: Open Book Publishers.

Bulfinch, Thomas. 1990. *The Age of Fable*. Philadelphia: Courage Books.

Churchman, C. West. 1967. Wicked Problems. *Management Science*, 14, 4, B-141-B-142.

Code, Lorraine. 1991. *What Can She Know? Feminist Theory and the Construction of Knowledge*. Ithaca: Cornell University Press.

Coffey, David. 1992. *Schools and Work: Developments in Vocational Education*. London: Cassell.

Cohen, Perry. 1969. “Theories of Myths.” *Man*, (4), 337-353.

Collins, Patricia Hill. 2000. *Black Feminist Thought: Knowledge, Consciousness, and the Politics of Empowerment*. New York: Routledge.

Crane, Gregory R. (Editor in Chief). 2013. Perseus Digital Library. Retrieved from http://www.tufts.edu/hopper/text?doc=perseus:text:1999.04.0057:entry=a)rxh/

Crawford, Matthew B. 2010. *Shop Class as Soulcraft: An Inquiry into the Value of Work*. New York: Penguin Books.

Cross, Nigel. 2006. *Designerly Ways of Knowing*. London: Springer-Verlag.

Dean, Andrea Oppenheimer and Timothy Hursley. 2002. *Rural Studio: Samuel Mockbee and an Architecture of Decency*. Princeton, NJ: Princeton Architectural Press.

de Saint-Exupéry, Antoine. 1939. *Terre des Hommes*. Paris: Le Livre de Poche.

Dewey, John. 2005. *Art as Experience*. New York: Perigee Books.

Dewey, John. 1966. *Democracy and Educa*tion. New York: Macmillan.

Dewey, John. 1997. *Experience and Education*. New York: Simon & Schuster.

Du Bois, W.E.B. 2014. *The Souls of Black Folk*. Lexington, KY: Tribeca Books.

Dickenson, Elizabeth Evitts. 2014. The Missing 32% Project Survey Results Reveal Gender Inequity in Architecture. Now What? *Architect: The Journal of the American Institute of Architects*. Retrieved from http://www.architectmagazine.com/practice/the-missing-32-project-survey-results-reveal-gender-inequity-in-architecture-now-what_o

Durkheim, Émile. 1995. *The Elementary Forms of Religious Life*. Translated by Karen Fields. New York: The Free Press.

Equity by Design (EQxD). 2016. "*Equity in Architecture Survey 2016.*" Retrieved from eqxdesign.com/

Frampton, Kenneth. 1996. *Studies in Tectonic Culture: The Poetics of Construction in Nineteenth and Twentieth Century Architecture*. Edited by John Cava. Cambridge, MA: MIT Press.

Frontinus, Sextus Julius. 2004. *De Aquaeductu Urbis Romae*. Translated by R. H. Rodgers. New York: Cambridge University Press.

Fry, Tony. 2012. *Becoming Human by Design*. New York: Berg.

Gantz, Timothy. 1993. *Early Greek Myth: A Guide to Literary and Artistic Sources*. Baltimore: Johns Hopkins University Press.

Giedion, Sigfried. 1974. *Space, Time and Architecture*. Cambridge, MA: Harvard University Press.

Gregory, S.A. 1966. *The Design Method*. London: Butterworth.

Hager, Paul and Hyland, Terry. 2002. "Vocational Education and Training." In *The Blackwell Guide to the Philosophy of Education*. Edited by Nigel Blake, et al. Malden, MA: Blackwell.

Harding, Sandra. 1993. "Rethinking Standpoint Epistemology: What is "Strong Objectivity"?" In *Feminist Epistemologies*. Edited by Linda Alcoff and Elizabeth Potter. New York: Routledge.

Harries, Karsten. 1997. *The Ethical Function of Architecture*. Cambridge, MA: MIT Press.

Harrison, Jane Ellen. 1908. *Prolegomena to the Study of Greek Religion*. Cambridge, UK: Cambridge University Press.

Heidegger, Martin. 2008. *Basic Writings*. Edited by David Farrell Krell. New York: Harper Perennial Modern Thought.

Hersey, George L. 1988. *The Lost Meaning of Classical Architecture: Speculations on Ornament from Vitruvius to Venturi*. Cambridge, MA: MIT Press.

Hesiod. 2008. *Theogony* and *Works and Days*. Translated with an Introduction and Notes by M. L. West. New York: Oxford University Press.

hooks, bell. 2015. *Feminist Theory: From Margin to Center*. New York: Routledge.

Korsmeyer, Carolyn. 2004. *Gender and Aesthetics: An Introduction*. New York: Routledge.

Kruft, Hanno-Walter. 1994. *A History of Architectural Theory from Vitruvius to the Present*. Translated by Elsie Callander, Ronald Taylor, and Antony Wood. Princeton, NJ: Princeton Architectural Press.

Kuhn, Thomas S. 2012. *The Structure of Scientific Revolutions*. Introduction by Ian Hacking. Chicago: The University of Chicago Press.

Laird, Susan. 2014. *Mary Wollstonecraft: Philosophical Mother of Coeducation*. New York: Bloomsbury.

Le Corbusier. 1929. Address to the *CIAM 2nd Congress*. Quoted by Cross, Nigel. 2006. *Designerly Ways of Knowing*. London: Springer-Verlag.

Lewis, Theodore. 1991. "Difficulties Attending the New Vocationalism in the USA". *Journal of Philosophy of Education*, 25 (1), 95-108.

Liddell, Henry George and Scott, Robert. 1940. *A Greek-English Lexicon*. Revised and Augmented Throughout by Sir Henry Stuart Jones with the assistance of Roderick McKenzie. Oxford, UK: Clarendon Press.

Lindberg, David. 2007. *The Beginnings of Western Science*. Chicago: The University of Chicago Press.

Lugones, Maria. 1987. "Playfulness, 'World Travelling,' and Loving Perception." *Hypatia 2*, no. 2, Summer, 3-19.

Maffei, Grace Lee, and Houze, Rebecca (eds.). 2010. *The Design History Reader*. New York: Berg.

Martin, Jane Roland. 2011. *Education Reconfigured: Culture, Encounter, and Change*. New York: Routledge.

Morris, William. 2007. *The Ideal Book: Three Essays on Books and Printing*. Edited with an Introduction by Richard Mathews. Tampa, FL: University of Tampa Press.

Norberg-Schulz, Christian. 1979. *Genius Loci: Towards a Phenomenology of Architecture*. New York: Rizzoli.

Norberg-Schulz, Christian. 1965. *Intentions in Architecture*. Cambridge, MA: MIT Press.

Norman, Don. 2011. "Design Education: Brilliance Without Substance." Retrieved from http://www.jnd.org/dn.mss/design_education_br.html

Oguntoyinbo, Lekan. 2013. In Architecture, African-Americans Stuck on Ground Floor in Terms of Numbers. *Diverse Issues in Higher Education*. Retrieved from http://diverseeducation.com/article/55050/

Palladio, Andrea. 2002. *The Four Books on Architecture*. Translated by Robert Tavernor and Richard Schofield. Cambridge, MA: MIT Press.

Paradas, Carlos. 1997. "The Era of Zeus." Retrieved from http://www.maicar.com/GML/ZeusEra.html

Parry, Richard. 2014. "Epistêmê and Technê." *The Stanford Encyclopedia of Philosophy*, Fall 2014 Edition, Edward N. Zalta (ed.). Retrieved from http://plato.stanford.edu/archives/fall2014/entries/episteme-techne/

Plato. 2002. *Plato: Five Dialogues: Euthyphro, Apology, Crito, Meno, Phaedo*. Edited by John M. Cooper and translated by G.M.A. Grube. Indianapolis, IN: Hackett Publishing.

Plato. 1991. *The Republic of Plato*. Translated with Notes, an Interpretive Essay, and a New Introduction by Allan David Bloom. New York: Basic Books.

Pliny the Elder. 1991. *Natural History: A Selection*. Translated with an Introduction and Notes by John F. Healy. New York: Penguin Classics.

Ponce de Leon, Monica. 2010. "Dean's Message." Retrieved from http://www.tcaup.umich.edu/about/deansmessage

Prestero, Timothy. 2017. "Design that Matters." Retrieved from http://www.designthatmatters.org/

Pugin, A.W.N. 1973. *The True Principles of Pointed or Christian Architecture*. New York: Academy Editions.

Risatti, Howard. 2013. *Theory of Craft: Function and Aesthetic Expression.* Chapel Hill: The University of North Carolina Press.

Rowland, Ingrid D. and Howe, Thomas N. 2001. Introduction. In Vitruvius', *Ten Books on Architecture*. Cambridge, UK: Cambridge University Press.

Rudofsky, Bernard. 1987. *Architecture Without Architects: A Short Introduction to Non-Pedigreed Architecture*. Albuquerque, NM: University of New Mexico Press.

Ruskin, John. 2003. *The Stones of Venice*. Edited by J. G. Links. Cambridge, MA: Da Capo Press.

Schön, Donald A. 1983. *The Reflective Practitioner: How Professionals Think in Action*. New York: Basic Books.

Sennett, Richard. 2008. *The Craftsman*. New Haven, CT: Yale University Press.

Shreeve, Jamie. October 2015. "Mystery Man." *National Geographic*, 228(4), 30-57.

Simon, H.A. 1969. *The Sciences of the Artificial*. Quoted by Cross, Nigel. 2006. *Designerly Ways of Knowing*. London: Springer-Verlag.

Snow, C.P. 2012. *The Two Cultures*. Introduction by Stefan Collini. New York: Cambridge University Press.

Smith, Adam. 1904. *An Inquiry into the Nature and Causes of the Wealth of Nations*. Edited with an Introduction, Notes, and Marginal Summary by Edwin Cannan. London: Methuen. 2 vols. Retrieved from http://oll.libertyfund.org/titles/171

Stevens, Wallace. 1972. *The Palm at the End of the Mind*. Edited by Holly Stevens. New York: Vintage Books.

Tavernor, Robert. 2009. Introduction. In Vitruvius', *On Architecture* (pp. xiii-xliv). New York: Penguin Classics.

Terkel, Studs. 1989. *Working: People Talk About What They Do All Day and How They Feel About What They Do*. New York: Ballantine Books.

The Bible. 2010. The New American Bible Revised Edition (NABRE). The United States Conference of Catholic Bishops. Charlotte, NC: St. Benedict Press.

Varro, Marcus Terentius. *Disciplinae Libre Novem* (a lost text). Referenced in Robert Tavernor's Introduction to Vitruvius, *On Architecture*. New York: Penguin Classics.

van Doesberg, Theo. 1923. "Towards a Collective Construction." In *De Stijl*. Quoted by Cross, Nigel. 2006. *Designerly Ways of Knowing*. London: Springer-Verlag.

Vitruvius. 2009. *On Architecture*. Translated by Richard Schofield. New York: Penguin Classics.

Waks, Leonard. 2001a. “Philosophy of Design, Design Education, and Educational Design: Introduction to the Special Issue.” *International Journal of Technology and Design Education,* 11.

Waks, Leonard. 2001b. “Donald Schön’s Philosophy of Design and Design Education.” *International Journal of Technology and Design Education*, 11.

Warren, Karen J. 1990. “The Power and Promise of Ecological Feminism.” *Environmental Ethics*, Volume 12, Issue 2, Summer, 125-146.

Washington, Booker T. 1986. *Up from Slavery*. New York: Penguin Books.

Wilson, Mark. 2007. *Julia Morgan: Architect of Beauty*. Layton, Utah: Gibbs Smith.

Wirshbo, Eliot. 1982. “The Mekone Scene in the Theogony: Prometheus as Prankster.” Retrieved from http://grbs.library.duke.edu/article/viewFile/6241/5141

Woodham, Jonathan. 1997. *Twentieth-Century Design (Oxford History of Art)*. New York: Oxford University Press.

Xenophon. 1979. *Memorabilia and Oeconomicus*. Translated by E.C. Marchant. Loeb Classical Library. Cambridge, MA: Harvard University Press.