Designer as Cultivator

An Exploration in Critical Making for the

Care of Interdisciplinary Culture

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Table of Contents

LIST OF FIGURES ........................................................................................................... v

ACKNOWLEDGMENTS ....................................................................................................... vi

CHAPTER I: Introduction ............................................................................................... 1
    Methodology ............................................................................................................... 1

CHAPTER II: Identity by Comparison ........................................................................... 3
    On Hyperspecialization ............................................................................................... 4
    Design’s Interdisciplinary Role .................................................................................... 7
    Similarities with Rhetoric ........................................................................................... 9
    A Syllogism ................................................................................................................ 12

CHAPTER III: Research Environment .......................................................................... 15
    Critical Making .......................................................................................................... 16
    Speculative Design .................................................................................................... 18

CHAPTER IV: Primary Research .................................................................................... 19
    Phase 1: Directed Storytelling .................................................................................... 20
    Phase 2: Sound Generated .......................................................................................... 21
    Phase 3: Adding Effects ............................................................................................. 24
    Phase 4: Online Exhibition ......................................................................................... 26

CHAPTER V: Findings ................................................................................................. 38
    Exploration Participants ............................................................................................. 39
    Wider Audience ........................................................................................................ 40
    Implications ................................................................................................................ 41

APPENDICES .................................................................................................................. 42
    Appendix A: Participant Survey .................................................................................. 43
Appendix B: Group Discussion Questions ................................................................. 45
Appendix C: Multiple Intelligences ........................................................................ 47
Appendix D: Website Questionnaire ....................................................................... 53
Appendix E: Interface Designs ................................................................................ 56

REFERENCES ........................................................................................................... 61
List of Figures

Figure 1: Basic Histogram ........................................................................................................ 22

Figure 2: Segmented Histogram ............................................................................................. 23

Figure 3: Designer as Cultivator Sitemap .............................................................................. 30

Figure 4: Designer as Cultivator Standard View .................................................................... 32

Figure 5: Designer as Cultivator Immersive View ................................................................. 33

Figure 6: Designer as Cultivator Project Grid Open ............................................................... 34

Figure 7: Designer as Cultivator Artifact Page ...................................................................... 35

Figure 8: Designer as Cultivator Respond Page in Progress .................................................. 37

Figure 9: Designer as Cultivator Home Page ......................................................................... 57

Figure 10: Designer as Cultivator Immersive Page ............................................................... 58

Figure 11: Designer as Cultivator Artifact Full View ............................................................. 59

Figure 12: Designer as Cultivator About Page ..................................................................... 60
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CHAPTER I

Introduction

Alongside design’s growth as an interdisciplinary field of study and practice throughout the last century, debate has arisen as to its role in the cultivation of society. At a fundamental level, it can be considered a method of action that determines successful communication of an idea, whether that idea is forthright or implicit. As a multi-faceted field that encompasses several concentrations of specialized study, it has historically played the role of mediator between the arts and sciences—an interdisciplinary approach to communication that shares notable similarities with classical rhetoric. Because of this similarity, it has been considered a part of the new rhetoric movement that emerged in the middle of the 20th century. If designers are to be considered rhetors, they must comply with the implied responsibilities of authorship by producing work that edifies the culture in which they design.

This thesis asserts that design is the space between disciplines: an interdisciplinary connector within a society of disciplinary specializations. The designer must bear responsibility for care of the culture within which they work by nurturing these commonalities—even by making evident their existence. To explore this assumption, a framework is developed to be applied between multiple disciplines to locate commonalities in design thinking.

Methodology

The secondary research in this thesis presents a twofold foundational overview: firstly, of design studies as an interdisciplinary connector and the role that design has played in multidisciplinary environments; secondly, of the research areas of critical
making and speculative design, and their suitability for employment in investigating this assertion. In presenting the former, the similarities of design to classical rhetoric will be explored, illuminating inherent parallels made clear through the examination of essential tenets of successful communication. Furthermore, the duty of the designer to maintain authorship for their own work in pursuit of benefitting the culture within which they study and practice will be established. In presenting the latter, a case will be made for appropriate utilization of design research methods in critical making as a method for examination of this topic, along with establishing a context for these methods within the larger research environment of speculative design.

Thorough literature review of design’s interdisciplinary role, its similarities to classical rhetoric, the practice of critical making, and the arena of speculative design will be presented. In explaining design’s multifaceted dimension of practice and its capabilities for interdisciplinary connection, this investigation will focus particularly on the liberal arts institution as a multidisciplinary environment, and secondary sources referenced which highlight this specific placement within the realm of higher education.

Primary research in critical making lies squarely within the practice of prototyping formal artifacts, and will be outlined within this thesis as an overview of working methods. This exploration seeks to create a multisensory exhibition experience through audio-visual representation of the opinions and unique characteristics of its participants—data collected via focus groups, ethnographic research, observational research, and surveys will be outlined within their context as materials for formal production. The aim of these primary research methods is to make evident any recurring similarities between participants and communicate them in order to establish a common identity among the interdisciplinary culture.
In addition, the efficacy of employing methods of critical making within the broader arena of speculative design will be addressed, and success of these practices evaluated. As a speculative exploration, this thesis will examine the potential of a body of formal work to inspire a common identity within interdisciplinary culture and quantify any cultural impact through observational and collected data.

CHAPTER II

Identity by Comparison

Over the last three decades, an increasing number of design scholars have recognized the development of two notable disparities within and surrounding their discipline: firstly, overspecialization of multidisciplinary environments has drawn widening theoretical chasms between their constituent fields of study; secondly, the role of design studies within these diverse arenas has been oft misunderstood and their potential for collaborative connection overlooked. Thusly, the central attention of this investigation lies in the placement of design within a multidisciplinary environment; its hypothesis is that efforts to elucidate the nature of each of these issues could potentially give way to the suitable resolution of both.

Previous postulates on the nature of these apparent obstacles have suggested that further investigation in this research area would be most appropriately conducted through the context of comparison. Multidisciplinary environments—more specifically liberal arts institutions—have been built on ideological tenets that inaccurately denote the discipline of design as a disparate field of study; however, many have argued for design’s enthusiastic inclusion within these environments by outlining design’s similarities to classical rhetoric, an archetypal component of the “new learning” that
birthed liberal arts schools in the first place.

It seems that these two problem areas warrant a purely inquisitive investigation, in the same spirit that may identify an odd sound just out of sight or the sudden appearance of an irregular feeling in the air. Commentary on the nature of design in a multidisciplinary environment has continuously and characteristically delivered conjecture on how design might fit into a larger environment, yet without yielding the clear notion of active investigation into its accurate illumination. Comprehensive literature review in this area has provided a substantive foundation of secondary research while indicating the appropriate implementation of an investigation which might elucidate the nature of design's setting within a multidisciplinary environment. To provide context, the problem of hyperspecialization should be addressed.

**On Hyperspecialization**

Indeed, one of the most influential periods of human progress came at the end of the 19th century during the industrial revolution. Birthing new methods of production and modes of thought, fundamentally transforming the global economy, and introducing new economic and budgetary considerations to the manufacturing process, this period radically impacted the working methods of industrial professionals globally—certainly the vocation of design. Such a significant cultural event put forward philosophical ideals that soon moved beyond the production floor and into the collective mindset of a wider cultural environment. The result of this societal evolution gave way to reductionism: modern society started to ideologically connect progress with efficiency.

In *Culture Care*, Makoto Fujimura asserts that this adopted fixation with systematic production gradually grew into a contemporary mindset of
hyperspecialization, “where a person or firm focuses on increasingly narrow segments of a production process, a discipline, an artistic genre, or a market” (Fujimura, 2014, p. 15). A resulting example of this ideological approach enacted is the increasing prominence of the expert, an individual who has mastered one part of a field but not the whole, and may even lose sight of their personal context as part of the larger discipline within which they work—intentionally paring down the scope of their concern to delve deeper into one focused part of their field. In addressing this pattern Fujimura continues:

...Increased clarity on a narrow point usually comes at the price of blindness to context and to one’s working assumptions. It often brings Isolation from—and sometimes alienation or hostility to—those with differing expertise (p. 15)

In application, the contemporary expert avoids questions of meaningful interdisciplinary connection, preferring instead to leave such questions to those who “specialize” in meaning. This approach to vocational effectiveness is detrimental to the holistic well-being of a larger culture—efficiency should not be regarded as the benchmark of fulfillment. With this in mind, articulating viable alternatives to reductionism and hyperspecialization in professional spheres has become increasingly difficult as efficiency has become the hallmark of success and expected qualifier of value in contemporary society.

This commentary on the state of hyperspecialization in vocational spheres is reflected by Richard Buchanan in his article “Design Research and the New Learning,” wherein he outlines the development of modern pedagogy and posits that efficiency and specialization have presently arisen in academia as the de facto mark of a model
education (Buchanan, 2001a).

In the early fourteenth, fifteenth, and sixteenth centuries, the new liberal arts of western culture began to take form—during this time, an ideology developed that designated any traditional field of study as falling into one of two distinct schools of thought. An old English characterization titled *The Battle of the Books* by Jonathan Swift details this separation between what became known as the old learning and the new learning (p. 5). The old, or “paleoteric” learning classified design as we have understood it in the twentieth century as a “servile activity” which was practiced by craftspeople who possessed intuitive skill and practical knowledge, but lacked a broader awareness of the context within which they worked. Inversely, the new or “neoteric” learning was concerned with new problems in understanding the world, and shaped the conceptual and theoretical manner in which emerging universities addressed these problems. All that remained of methodical production as a subject of inquiry within universities were studies in literature and the fine arts, which were retained for their use in historical inquiry through examination of tangible objects (p. 5). Resultantly, the old learning was relegated to academies of art, which were established independently of universities.

Today, this legacy of design studies within the setting of an art school remains prevalent—Buchanan asserts that the effectiveness of this placement “grows fainter every year” (p. 6). Meanwhile, contemporary institutions of higher education travel further down the pathway of reductionism, an issue on which Buchanan comments in detail:

While we do not deny the value and the ongoing benefit of theoretical investigations of subject matters in the sciences and arts, we also recognize
that the powerful development of this learning has left us in a deeply troubling situation. We possess great knowledge, but the knowledge is fragmented into so great an array of specializations that we cannot find connections and integrations that serve human beings either in their desire to know and understand the world or in their ability to act knowledgeably and responsibly in practical life (p. 6).

In the presence of this increasing pattern toward disparate foci within multidisciplinary environments, contemporary design methods have emerged as an anomaly. Although design has traditionally resided within the realm of old learning, it has ironically moved into the academic arena of new learning as a conduit for interdisciplinary connection, necessary for the integration of knowledge from several focused disciplines into a productive outcome for the benefit of a wider culture. Unfortunately, in its introduction as a component of new learning, design's core tenets have oft been misunderstood by the multidisciplinary community at large.

**Design's Interdisciplinary Role**

In consideration of the ideological shift outlined above, design's anomalous disciplinary history of long-contended mislabelling is contextually clarified. Without entertaining the litany of semantic arguments introduced by its practitioners and scholars: design is simply hard to place. Natural progression of the paleoteric view of design has resulted in the discipline's mistaken identity as either an exclusive subset of the fine arts or simply a primary component of marketing and advertising, but neither of these designations are entirely accurate. Industrial design luminary Charles Eames defined design as “a plan for arranging elements to accomplish a particular purpose… a
method of action.” Similarly, esteemed cognitive psychologist and Nobel laureate Herbert Simon asserted that “everyone designs who devises courses of action aimed at changing existing situations into preferred ones.” (Neumeier, 2009, p. 32). Simon’s assertion that design as a discipline is primarily concerned with the metamorphosis of societal conventions—or the care of multidisciplinary culture, perhaps—aligns neatly with the acknowledgment of a “new learning,” a philosophical shift toward concern for addressing the new issues of a modern culture. In this sense, Buchanan concurs that design “has become the new learning of our time” (2001a, p.7), and has paved the way for connection to disciplines within a neoteric environment.

In an article titled “Declaration by Design,” Buchanan echos Eames and Simon in further defining the particular facets of what design as a discipline truly encompasses:

Design is what all forms of production for use have in common. It provides the intelligence, the thought or idea—of course, one of the meanings of the term design is a thought or plan—that organizes all level of production, whether in graphic design, engineering and industrial design, architecture, or the largest integrated systems found in urban planning (Buchanan, 1985, p. 21)

If the assumption rests that an intention central to design is to provide clear and intelligent organization of a concept, then clear similarities can be conclusively drawn to a major field of classic academia: rhetoric. Consequently, a comparison can be made for the sake of natural integration—rhetoric is intrinsically a product of the neoteric school of thought, and design therefore should be considered likewise.
**Similarities with Rhetoric**

The similarities between contemporary design and classical rhetoric are numerous and rich in common motivations. Most immediately, both are concerned with successful communication of a concept. When examined further, the parallels in each fields nuances become apparent. To begin, rhetoric and design are both concerned with how best to mediate between the arts and sciences. Each field is concerned at a core level with how best to appeal to the logical and emotional senses of an audience or user base, along with establishing credibility on behalf of the communicator.

Traditionally, classical rhetoric has been the connecting point between the fine arts and analytical sciences. When most effective, “rhetoric is an unusually clear example of a general tendency among the arts and sciences for doctrines and devices to move across disciplinary boundaries and stimulate innovation in new circumstances.” (Buchanan, 2001, p. 184) It has been represented since its basis in antiquity by its leading theorists as an art of invention and discovery. In the same way, designers of the contemporary era are charged with innovation between the technological developments of continually evolving digital platforms and the formal principles of successful visual communication.

Along with sharing commonality in interdisciplinary potential, rhetors and designers share the same goals in successful practice. The three classical pillars of rhetoric are logos, pathos, and ethos—universal principles of communication that determine successful appeal to an audience. Logos designates appeal to audience’s logical sense: successful communication on behalf of the rhetor lies in their ability to win the audience over with reason. In this sense, the designer considers “technological reasoning or the intelligent structure of the subject of their design” (Buchanan, 2001, p. 195). Pathos
designates appeal to the audience’s emotional and social sense: capturing the attention of the audience through sympathy, humor, or relatability. At times it can be solemn, in others, lighthearted. Designers relish this ability to capture the emotion of the audience perhaps more than anything else. For the designer, pathos comes in the concept of “fit,” that is the suitability of a product to the intended user or community of use, whether this involves physical, cognitive, emotional, or cultural features that resonate in special, particular ways (p. 195). Ethos represents the communicator’s ability to establish credibility with an audience. Designers accomplish this endeavor either on behalf of the client or their own practice by producing thoughtful work—an effort that concerns the implied character of personality of the manufacturer as it is represented in a product and as it creates a relationship of “identification” with those who use a product (p.195).

If, then, similarity can be drawn between rhetoric and design, there must be an element of authorship and accountability on behalf of the designer. As creators that introduce new products to the cultural spectrum of consumption and use, the names and reputations of those strategically developing the content that these design objects communicate must be held to a standard of ethical responsibility. De Almeida (2009) shares this viewpoint:

> If graphic design is to be accepted as a rhetorical practice, then by implication, the design act is subjected to social, moral, and political ramifications. It suggests a degree of authorship, bearing responsibilities extending beyond its professional sphere.

This necessary accountability is derived from Aristotle’s intent for more clear
communication—it was his intent “for the audience to see a situation more clearly and be able to make more judicious decisions as a result.” (Poggenpohl, 1998, p. 213)

The luminaries and guiding theorists of classical rhetoric believed that it was the responsibility of all those communicating from a position of influence to act justly on behalf of the audience, and transparency was a necessary part of that postulate. In today’s contemporary society, this call to the tenets of classical rhetoric may seem slightly out of place, even remote from the context in which we live. Poggenpohl (1998) outlines the impact of rhetoric in contemporary culture:

One might ask why the facts of a situation are not sufficient to guide human action. The very facts one considers are often subject to contingency. Many so-called facts remain open to interpretation depending on the viewpoint one brings to a situation. Which facts take priority, how compellingly they are presented, even the order of their presentation alters their perception. But it is the very scientific and technological context in which we live our lives that has created a resurgence of interest in the ethical issues that arise as a result of increasing human control.

In the midst of a society that seems only to become more focused on constant communication—wearables, tablets, home automation devices, and the digital advertisements that continue to be introduced to these objects and the phones that control them—designers must become intimately aware of the responsibility that comes with their multidisciplinary position.
A Syllogism

In the spirit of rhetorical models of communication, the conclusions to be drawn from the above points may be considered through their placement in a three-part logical syllogism—a classical method of deductive reasoning first introduced by Aristotle himself. Firstly, the major premise of this deduction asserts that rhetoric can be accurately deemed a part of the neoteric school of thought, and has historically acted as a facilitator for connection of multiple disciplines. Secondly, the minor premise to be considered in tandem assumes that design is similar to rhetoric for several reasons, specifically harkening to conceptual parallels of logos, pathos, and ethos as applied to communication. Finally, the deductive conclusion to this syllogism must then assume that if rhetoric is inherently suited to multidisciplinary environments, and design is akin to rhetoric, then design as a discipline must therefore be appropriate for study as an interdisciplinary connector.

This postulation introduces important implications. As designers are: firstly, multidisciplinary in practice; secondly, communicators and rhetors in essence; and thirdly, responsible for the culture in which they reside, they are ultimately responsible for the welfare of their multidisciplinary impact. In academic settings they should be aware of disciplinary connections and how best to foster them; in professional settings they should approach their practice eager to produce work that edifies contemporary society. Buchanan (2001) outlines this approach as follows:

Indeed, there is now discussion concerning whether design is emerging as a new liberal art of technological culture, manifested in many forms of professional practice but also providing a broad intellectual perspective on the human-made
world that all men and women may use in action or reflection (...) Whether design is a new liberal art in formation, the problem we face is how a rhetorical study of design may help to clarify the nature of design in the contemporary world and contribute to its continued formation along humanistic lines.

In academic environments, design has the potential to foster improved student experience through strategic thinking between disciplines. Its success or failure in education should be considered by the ability of its students to think critically and comprehensively. “Philosophy teachers, for example, do not measure their success based on whether the majority of their students become philosophers. Likewise, the goal in literature is not only to create producers of literature or literary critics, but to create literate people.” (Swanson, 1994) Traditionally, the difference in design lies in the perception of employment as the sole measure of success or failure.

Since designers are accountable for their unique multidisciplinary placement, they should more appropriately be given a contextual overview of their academic surroundings during the early stages of the programs in which they are enrolled. When comprehensive, liberal education is withheld from these undergraduates, their potential to affect multidisciplinary influence is stifled. Traditionally the extent of contextual expansion for these undergraduates has been carried out through analysis of art history or design criticism—“although there is a place for the history of design in and of itself, (just as in the histories of science and many other academic fields), it would be absurd to suggest that any field abandon itself wholly to the contemplation of its own past.” (Swanson, 1994) Design education must fully embrace its interdisciplinary potential by incorporation of expanded liberal arts tenets alongside technical proficiency in
vocational skills.

Design should be about meaning and how meaning can be created. Design should be about the relationship of form and communication. It is one of the fields where science and literature meet. It can shine a light on hidden corners of sociology and history. Design’s position as conduit for and shaper of popular values can be a path between anthropology and political science. Art and education can both benefit through the perspective of a field that is about expression and the mass dissemination of information. Designers, design educators, and design students are in a more important and interesting field than we seem to recognize. (Swanson, 1994)

Design education in a liberal arts setting would necessarily incorporate the foundational elements of disciplines in the social sciences, and provide contextual criticism of how design scholars and practitioners can aid these disciplines through formal application. One notable proposal for how this system could function comes from Salmon and Gritzer (1992): they advocate parallel content, where social science courses that correspond to the design curriculum are offered. For instance, interior design students would study courses on marriage and family, sociology, and occupations, while their design courses covered domestic design, office design, etc. Still relevant also is McDonald’s (2006) experimental course in interdisciplinary collaboration, in which students from several majors worked together to produce an immersive project, Trace, that joined specialized mediums under the umbrella of the creative arts. In this case, however, the extent of disciplinary diversity only expanded to the immediate vicinity of digital media production: “each
of the students were dual majors in multimedia studies, with primary majors in music technology, animation, and graphic design; some students also had programming and photography minors.” How might this exercise have benefitted from the input of students in the expanded social sciences?

Design educators and the students they foster must become acutely aware of their multidisciplinary role and their potential for collaboration alongside other specialized fields of study. Beginning with a clear understanding of the role that they play in the liberal arts arena, designers should move forward in their professional and academic pursuits confident in their ability to affect change for the wellbeing of the diverse culture in which they reside.

CHAPTER III
Research Environment

To be “critical” is to analyze and evaluate, examine the existence of something, and note points of success, failure, or shifts in perspective. “Making”, in contrast, indicates materialization or production, a means to determine the essential things needed to form, build, and create through a process of construction.

(Barness & Papaelias, 2015)

In his article “Design and the New Rhetoric,” Buchanan further expounds on the suitability of research on design’s role in a multidisciplinary environment (2001b). As part of a body of design authors who are calling for this kind of investigation, he asserts that “rhetorical and philosophical study into the pluralism of design thinking would be a significant contribution to further development of design and its understanding among
people outside the field” (p. 197).

To investigate the pluralism of design thinking and promote its understanding to people outside the field, an exploration in critical making was carried out within the realm of speculative design. As research methods uniquely positioned to investigate the unknown qualities of an abstract concept, their implementation was deemed especially appropriate.

**Critical Making**

Utilizing the term “critical making” to identify a certain method of design research indicates an intention to connect two modes of engagement with broader culture that are ordinarily mutually exclusive: firstly, critical thinking, typically understood as an area of conceptual analysis and linguistic synthesis; and secondly, the act of physical making, a goal-based and material method of work. Put into practice, this method enables design researchers to enact generative methods of prototyping in order to more clearly examine the inherent qualities of an area of interest. A succinct rationalization for the development of such a field may rely in the assumption—truly, a frank and candid presumption—that design researchers have arrived in their field because of a natural aptitude for creativity, divergence, and a skillful ability for prototyping. Though the sharp designer is characterized by a capacity for high-level analysis and conceptualization, they are in essence charged with developing a method of action. When a design researcher approaches an abstract problem—the type with a nebulous scope and multifaceted points of inquiry—the most natural manner of bringing the wide array of information into a digestible format may simply be to bring said information into a process of prototyping in order to find enlightenment along the
way. With this in mind, the intent of critical making put into practice is the edification of the designer, not the formal success or aesthetic quality of a created artifact. Matt Ratto unpacks this methodology in an article titled “Critical Making: Conceptual and Material Studies in Technology and Social Life”:

Rather than being purposive or fully functional devices, prototype development is used to extend knowledge and skills in relevant technical areas as well as to provide the means for conceptual exploration...This process involves wrestling with the technical prototypes, exploring the various configurations and alternative possibilities, and using them to express, critique, and extend relevant concepts, theories, and models. (2011, p. 253)

In essence, critical making can be ultimately regarded as a means to an end. Its focus on “the constructive process as the site for analysis” and emphasis on “the shared acts of making rather than the evocative object” designate it as a tool to be used in discovery (p. 253). The final prototypes born from this method of research are not ultimately intended for display as the final word in a one-way conversation, bestowed unilaterally to a broad audience by the designer; rather, their worth is found through the actions of shared construction, reflection, and joint conversation (p. 253). The convergence of a body of participants in evaluating critical making exercises results in a practice-based engagement with theoretical issues, allowing for new points of consideration to mature from previously unclear points of investigation.

Because of critical making’s fundamental principles of inclusion, feedback, and collective evaluation of a certain issue, the suitable prospect of interdisciplinary
connection within a specialized setting through an exercise in this arena comes naturally. As this method of research is employed, it can serve as an avenue for unifying the differing characteristics of specialized disciplines through fusion of both technical and social schools of thought. In doing so, it may disrupt conventional expectations of a disciplinary system and enter the sphere of critical production referred to as speculative design.

**Speculative Design**

Where critical making serves as a functional tool for interdisciplinary participation, illumination of an ambiguous issue, or method of evaluation, speculative design seeks mainly to provoke thought for the sake of questioning established conventions. In this aspect, speculative design should be considered a conceptual environment wherein critical making is employed, but not equated as a method of design research. Additionally central to the nature of speculative design is its allowance for irresolution in the consideration of cultural and societal conventions.

In their comprehensive work *Speculative Everything*, Dunne & Raby outline design’s potential use as means for “speculating how things could be” and to “create spaces for discussion and debate about alternative ways of being” (Dunne & Raby, 2013, p. 2). They employ the notion of probable, plausible and possible futures—a concept pioneered by futurist Stuart Candy—as a framework for evaluating the effect that altered conventions may have on the perceived merit of real objects. Dunne & Raby specifically provide examples of the manipulation or modification of physical objects as a means of designing possible futures, asserting that exercises in the realm of speculative design “often take the form of a what-if question, and are intended to open up spaces of debate and
discussion” (p. 3). Essentially, speculative design does not work toward a specific solution to a problem, but instead aims to facilitate an open-ended discussion without expecting a confirmed resolution.

Borrowing from and expanding on Dunne & Raby’s foundational digest of speculative design, Kim & DiSalvo hone in on the notion of speculative visualization in their work “Speculative Visualization: A New Rhetoric for Communicating Public Concerns” (2010). This subgenre of speculative design incorporates techniques from traditional data visualization in information graphics to provoke the audience’s interpretation of a topic and further elicit conversation through the representation of culturally meaningful data in a compelling aesthetic manner. In consideration of these facets, care should be taken not to mislabel an exercise in speculative visualization as simply a piece of art or informational public display. Rather, speculative visualization combines robust multidisciplinary qualities (Kim, 2013, p. 2), encompassing methods of study and practice in the arts, sciences, and humanities. Moreover, speculative visualization is quite suited for engagement with a wider participatory audience as a methodology concerned especially with the communication of societal statistics.

CHAPTER IV

Primary Research

The first section of this thesis introduced an investigative priority: to make evident any commonalities in thinking—specifically, design thinking—between individuals from various disciplinary backgrounds in order to explore the role of design as an interdisciplinary connector. Primary research thusly progressed by enlisting participants from a wide range of backgrounds in order to simply discuss with them the
qualities of their respective disciplines. The theoretical and highly conceptual nature of these discussions introduced an understandably nebulous array of nuanced input, and any similarities discussed between participants were prone to remain shrouded in a state of intangible association. Introduction of coded aesthetic parameters as a method of representing these commonalities catalyzed these ambiguous concepts into evident patterns of similar traits.

Primary research brought together participants in order to collect pertinent ethnographic data, then created multimedia artifacts representative of their individual input: first, their portrait was photographed; second, sound was generated from that photograph; third, effects were added to the photograph in order to convey codified qualities; and finally, the artifacts were exhibited online.

**Phase 1: Directed Storytelling**

For this exploration semi-structured interviews were conducted to examine similarities in thinking—specifically, design thinking—between sixteen individuals from varying professional and academic backgrounds. Each participant contributed to one of two focus group discussions and conversed with other participants about the unique qualities of their own discipline: nine participants comprised Group 1; seven comprised Group 2. Group sessions were audio recorded and transcribed to facilitate examination of similar patterns of thought. [A list of example discussion prompts can be found in Appendix B.]

Directed storytelling, a method of qualitative design research developed by Shelley Evenson (2006, p. 231), was used to guide group discussion in order to uncover any shared opinions or commonalities in participant responses. This approach to
participatory data collection draws on narrative and situational inquiry to facilitate effective research on a certain experience that participants may have shared, but without the necessity for long-term ethnographic research. Evenson asserts that it is a method that can quickly illuminate consistent or repeated patterns in the experiences of participants (p. 233). Her general rule? “If you cannot directly observe something, use directed storytelling” (p. 233).

As each group discussion session was held, participants were directed to respond to prompts that inquired about any notable personal experiences within their discipline, e.g. “What is your proudest accomplishment within your field?” This method of group interview encouraged participants to build off of the themes in each other’s responses as a method of illuminating interdisciplinary commonalities both to each other and the researcher.

An additional intent of prompting each participant to reflect on their own academic or professional experience within a field was to examine the effect of interdisciplinary discussion on their opinion of their personal vocational role—any subjective change in opinion was quantified by administering the same short three-question survey immediately preceding and following a participant’s involvement in a group discussion. [Survey questions can be found in Appendix A.]

**Phase 2: Sound Generated**

The crux of this exploration in critical making was found in one key functional goal: generating a collection of audio-visual artifacts representative of the individual qualities of a group of participants. Following each group discussion, participants sat to have their portrait photograph taken. Sound was then generated that photograph as the
foundational component of their respective artifact.

What defines the character of any given photograph are specific levels of light. A photograph is captured by a digital camera when light streams through its lens via an opened shutter and activates an exposed sensor within its chassis. When the shutter is open for too long a duration, the resulting photograph will be overexposed and appear bright; in the same way, a shutter open for too short a duration will result in an underexposed and dark photograph. The astute photographer may evaluate and address any recurring patterns of overexposure or underexposure in the field by quickly referencing its luminosity histogram, a visualization of these light levels delivered by the onboard display of high quality DSLR cameras. A histogram indicating darker light levels will skew left; inversely, a skew right indicates brighter levels of light. The histogram of a successful photograph typically features a balanced yet dynamic range of levels.

![Basic Histogram](image)

**Figure 1. Basic Histogram**

In considering this process, the unique qualities of each histogram become clear—because of the distinct levels of light that comprise any one photograph, the histogram of an image acts as a virtually unrepeatable identifying characteristic, akin to a “fingerprint” of sorts. Following this assumption, a sound generated from this histogram
would therefore be unique and distinct from the sound that other photographic histograms would generate.

In enacting this assumption, a system was designed to derive intelligible patterns of sound from a histogram by incorporating the standard musical major scale. Dividing the histogram into eight equal sections along its Y-axis introduced a segmented method of triggering respective musical tones. By following the rise and fall of the histogram along the X-axis, sound could be triggered as the line of data passed through each segment.

![Segmented Histogram](image)

**Figure 2. Segmented Histogram**

With this foundational method of generating sound determined, creation of each artifact commenced using a selection of design software applications. As each participant’s photo was brought into the prototyping process, its luminosity histogram was extracted using Adobe Photoshop via screen capture before being segmented into eight sections in Adobe Illustrator. This static graphic in turn was animated using Adobe After Effects to indicate a unique cadence of rise and fall—set initially to a low visual opacity as a default state, each segment was made to “light up” at full opacity when triggered as played left to right. Finally, the animated histogram was imported to Adobe Premiere Pro and paired with musical tones sampled from Garage Band for iOS. Each of
the initial sixteen artifacts created for this study were produced individually from this sequence without the aid of automation.

**Phase 3: Effects Applied**

Although each artifact generated as part of this exploration was derived from the same basic method of determining sound from a photograph, the unique qualities of each participant were conveyed through effects applied to that sound. Parameters considered included which group the participant had contributed to, a self-assessment of their type of aptitude, and their individual responses to a survey delivered immediately preceding and following their group session.

To account for the different dynamic that each discussion session may have embodied, and subsequently indicate if a group of participants had especially influenced each other’s opinions, different tones were selected to represent which group session a participant had been a part of. A participant who contributed to the first group was represented by the sound of a xylophone as sampled from Garageband for iOS. Inversely, a participant from the second group was represented by the sound of an electric piano—also sampled from Garageband.

Additional efforts were taken to imply shared characteristics of participants’ aptitudes, skills, beliefs, and professional ideology. Because of the virtually limitless gamut of disciplinary specialties [as lamented by Fujimura and Buchanan], participants were categorized by general areas of study as determined by luminary developmental psychologist Howard Gardner’s framework of Multiple Intelligences (Gardner, 1985). This framework asserts that individuals display certain qualities of intelligence that position them within a certain arena of mental comprehension or inclination, making
them especially apt to certain ways of learning. Gardner’s theoretical Musical, Linguistic, Visual-Spatial, Naturalist, Bodily-Kinesthetic, Interpersonal, Intrapersonal, and Logical-Mathematical intelligences [See Appendix C] were introduced to participants during the end of each session—participants read over a description of each intelligence and identified themselves as especially inclined toward one of them. These selections in turn were codified to indicate which color of backdrop should be used for the participant’s portrait. This method allowed for consolidation of disciplinary beliefs and inclinations and enforced similar luminosity histograms—and thusly, similar sound signals—for like-minded participants.

This addition of a uniform backdrop also accommodated a functional necessity for a limited control set of background images—without a standardized framework for capturing the portrait of each participant, the integrity of a codified sound signal representative of an individual could be altered by varying unrelated objects or scenes in the background of a photo.

Perhaps the most distinct facet of the sound alteration process was determined by a participant’s reconsidered opinion of their own work or disciplinary role. Prior to each discussion each participant was administered a short three-question survey [See Appendix A] in which they ranked the accuracy of statements concerning their own opinion of their field and its alignment with principles of design thinking. Following a discussion with participants from other fields they were readministered the same survey, and the consistency or influence of their opinions was recorded. This process indicated dynamic changes of opinion from some participants but complete consistency from others.

The survey questions administered are as follows: firstly, “the work that I
personally do directly affects other disciplines;” secondly, “the work that I personally do has the capacity to generate new results, content, or substance,” and finally, “the work that I personally do is solution-driven and seeks to find answers.” Each of these questions corresponded to sound effects of reverb, delay, and shifted pitch, respectively. Effects were added to indicate a change in the participant’s opinion of the accuracy of these statements—for example, if a participant ranked question #1 as a “3” on the first survey but a “4” on the second survey, reverb was positively added to the sound signal derived from their photograph to indicate that they had changed their mind. Inversely, in the case of one participant, their opinion of the accuracy of question #3 actually decreased, denoting that the pitch of their artifact’s sound signal be decreased.

The result of these added sound effects was a diverse collection of artifacts, each sounding unique as a representation of an individual yet elucidating the commonalities of interdisciplinary thinking. In this manner, the key objective of this exploration in making evident the abstract conceptual connections of a multidisciplinary group of participants was accomplished.

In accordance with the functional requirements of each prototype, final artifacts were created with Adobe After Effects and Adobe Premiere Pro as a method of visually indicating the sonic alterations of each participant’s contribution. Final audio-visual files were uploaded to Vimeo, a video hosting and embedding service, in order to prepare them for implementation in online exposition.

**Phase 4: Online Exposition**

Paramount to the successful execution of this exploration in critical making was the allowance for meaningful discourse on the qualities of the created artifacts to
be carried out as a method of examination. Rather than local display within a physical
gallery space, sharing the collection of artifacts in an online environment was deemed
the most appropriate method of exposition after considering several factors: namely,
that delivery to the study participants and collection of their feedback was more
easily facilitated via electronic correspondence; additionally, that the meticulously
codified nature of the artifacts was expressly suited for user interaction as a process
for comprehension; and finally, that an online context for the exploration encouraged
expanded opportunities for audience input from a larger multidisciplinary sphere. These
considerations informed the design and development of Designer as Cultivator: a web-
based venue for interaction with the artifacts, and namesake of this thesis.

As a widely acclaimed work regarded as a seminal tome within the web design
industry, Jesse James Garrett’s *The Elements of User Experience* (2011) was used as a
framework for the creation of Designer as Cultivator. Garrett outlines a five step process
for user experience design, sequentially describing strategy, scope, structure, skeleton,
and surface (Garrett, 2011, p. 20) — summarization of Designer as Cultivator’s development
will naturally follow this sequence.

Firstly and most importantly, the strategy of the website was defined in
accordance with the main objectives of the exploration and the user needs therein
implied. The foremost objective of Designer as Cultivator is to uncover evidence of any
significant similarity or dissonance between individual artifacts while allowing for
close inspection of the parameters that contribute to their specific sonic qualities; this

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1 Designer as Cultivator is an active subdomain of the author’s professional website and can be accessed at [http://www.designerascultivator.ryanhammond.co](http://www.designerascultivator.ryanhammond.co).
objective of actualizing the theoretical connections between participants as a method of clarifying their shared characteristics is the central intent of the exploration. Thusly, an additional imperative of the website is to thoroughly but succinctly introduce the context of this exploration to users who are interacting with it for the first time, and to collect from them responses on the nature and execution of this study as qualitative research. In this sense Designer as Cultivator can be considered at its essence a conversation piece, akin in spirit to a common coffee table book. Dialogue is the goal. The formal method of production—while not inconsequential—is of a secondary importance. With these aims in consideration, the employment of critical making as facilitated in a web-based format is truly a case of “using the right tool for the job.” Furthermore, widespread dialogue in a modern online environment is plainly understood as a matter of allowance for dissemination and feedback through social media, therefore a clear final main objective of the website is to encourage easy sharing via major online social networks, notably Facebook and Twitter. Numerous implied user needs are resultantly addressed in order to meet these objectives: care is taken to provide the user with a clear understanding of the exploration’s key intentions and procedures for the sake of facilitating meaningful feedback, of course also necessitating the inclusion of an easily understood method for providing said feedback.

After deliberating the strategy of Designer as Cultivator, the scope of the project’s content requirements and functional specifications was clarified. Site content patently encompasses the presentation of each individual artifact as an opportunity for user interaction: a digest of each artifact’s respective traits is provided to encourage comparison and contrast between them by the user. Per reference of established user needs, content is also included which provides an abbreviated overview of the
exploration’s context, a functional explanation of the prototyping methodology, and further information regarding the academic setting and research environment of the study.

To expedite development while accounting for modern standards of responsive web design, a robust content management system was integrated and adopted as the primary backend environment for development. Semplice², a supplementary CMS self-described as “the first fully responsive case study portfolio system based on WordPress… not a template but a powerful system,” is implemented for its powerful native features as applied to project-based designs delivered as a fully responsive website. These features ensure that a user accessing *Designer as Cultivator* receives the most appropriate delivery of the website for their device, i.e. mobile, tablet, or desktop. Also incorporated as a venue for feedback is an embedded interactive survey via Typeform³—this tool for qualitative research is implemented seamlessly as a native page of *Designer as Cultivator* without prompting users to navigate outside of the website.

Where the strategy portion of the UX design process outlines “what we want the product to accomplish... and what we want it to accomplish for users” (Garrett, 2011, p. 35), the scope portion of the process determines how to translate those objectives and user needs into “what content and functionality the product will offer” (p. 57); in turn, the structure portion of the process is concerned with how best to organize that information in conceptual delivery to the user (p. 79). It is primarily concerned with information architecture and interaction design.

Information architecture of *Designer as Cultivator* is arranged as an organic

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2  http://www.semplicelabs.com/
3  https://www.typeform.com/
conceptual model within a larger hierarchical structure: the collection of artifacts is constructed in a manner that encourages no particular sequence of interaction nor specific pattern of organization, though as one unified component sits within a broader global structure containing ancillary segments of information—the about page and survey are conveyed at this hierarchical conceptual tier.

**Figure 3. Designer as Cultivator Sitemap**

Within the organic structural model, a user may interact with the collection of artifacts in one of two distinct modes: firstly the “standard” mode which delivers a representative quality of interaction, providing the user with specific points of engagement that lead to comprehensive information on each respective artifact; secondly the “immersive” mode which allows the user to experience the full gamut of codified qualities of all of the artifacts engaged simultaneously as a collection, although without the robust explanation of codified elements that engaging with the artifacts via the standard mode allows. Because of functional limitations, these structural models are pared down when the website is accessed via phone or tablet—although desktop
browsers allow for multiple embedded videos to played simultaneously (a key component of the immersive method of interaction), mobile devices make playing multiple videos simultaneously at best an inelegant user experience and at worst functionally impossible. For this reason, browser viewports within a small enough “@media” query deliver only the standard mode of interaction.

Once the strategy, scope, and structure of the website were synthesized in order to dictate how the website should work, the skeleton and surface of the website could be approached to determine how it should look. Key concerns of Designer as Cultivator’s skeleton are the design of its interface and communicated information. Interface design of the website is reflective of its dual structure, and features both a fixed global navigation bar to suit the needs of a hierarchical model and supplementary modes of navigation for the structurally organic components. When a user first opens Designer as Cultivator, they arrive at the home page—a comprehensive grid view of the collected artifacts. From here, as with every page of the website, they may choose to interact with the fixed global navigation to navigate to either the “About” page to read about the project or the “Respond” page to take the survey. Should they choose to remain on the home page as a starting point for interaction with the artifacts, they may activate either the standard or immersive modes of interaction via action buttons at the top of the page. As each artifact thumbnail is hovered over within the standard view, opacity of the element is lowered to indicate interactivity. With this prompt the user may choose to navigate through to an individual artifact page which provides a comprehensive overview of the codified parameters pertaining to a certain participant as part of the study.
If instead the user should choose to interact with the artifacts via the immersive view, they are provided with a grid of small video players rather than static image thumbnails—in this case, clicking one of the video thumbnails will not take the user through to its respective artifact page, but instead engage the video player in a repeating playback loop. This interface encourages the user to experience a dynamic audio-visual environment as each artifact is activated: for example, they may choose to turn on every artifact at whim; perhaps instead they could choose only to activate artifacts from a certain discussion group or type of intelligence; maybe they could watch and listen methodically to the artifacts which convey strong change of opinion or alternatively those which communicate none; potentially still they may choose to activate each video at rhythmic intervals, investigate aesthetically pleasing combinations, or discover any

**FIGURE 4. DESIGNER AS CULTIVATOR STANDARD VIEW**
apparent similarities/disparities. To prompt the user to engage with this immersive interface, two of the artifacts play immediately on page load.

**FIGURE 5. DESIGNER AS CULTIVATOR IMMERSIVE VIEW**

Beyond the buttons indicating modes of interaction on the home page, additional supplemental navigation is found in the project grid menu. As the content of Designer as Cultivator is highly conceptual and meticulously codified in nature, this redundant mode of navigation introduces consistency to aid user comprehension. It is placed at the bottom of each artifact page and can be accessed by an icon in the global navigation bar.
Clear and comprehensive information design is especially imperative in developing the skeleton of this exploration in critical making, as the content communicated is highly technical and conceptually weighty. If a user cannot easily comprehend the subject matter of the project, contemplate its seeming worth or validity, and provide natural feedback, the intent of this exploration is all for naught. Therefore extreme judiciousness must be taken to guarantee that the key characteristics of this exploration are delivered in a meaningful manner. Main venues for important information are the individual artifact pages and the About page.

Each artifact page is designed to highlight the actual prototype itself while providing contextual information which illuminates the coding process that went into producing the particular artifact. Unique information about the participant is displayed at the top of the page, but information somewhat redundant to each artifact page is located at the bottom. A module of basic descriptors is located at the top left of the page design and communicates the participant’s academic discipline, which of the multiple
intelligences they ascribe to, their specialty or field of practice within their larger discipline, and the group in which they participated. Next to this module is an excerpt from the participant’s remarks as contributed to their respective group session—excerpts were identified and implemented for their seeming reflection of a participant’s key thought, tone, or unique perspective.

**FIGURE 7. DESIGNER AS CULTIVATOR ARTIFACT PAGE**

Following after the embedded artifact, a concise description of the production process is communicated in two parts. On the left, a panel explaining the three parameters that generate sound (color, signal, tone); on the right, a panel indicating
the effects applied to that sound (reverb, delay, pitch). While the first panel remains consistent in appearance from page-to-page due to the uniform method of production described above, the second panel indicates the addition or absence of specific effects respective to each particular artifact, and therefore changes in appearance between pages. The addition of a sound effect is indicated by a text description at full opacity—if an effect is absent, its text description is reduced in opacity to a light gray.

Since promotion of this exploration via social media is a key aim of its strategy, a set of icons with a call to action are set at the bottom of each artifact page along with the home page. Along with encouraging users to share Designer as Cultivator on Facebook, Twitter, and Google+, this element also includes a share image and description that are automatically previewed in each social network’s timeline.

The About page is segmented into five short separate subheads of information which aim to deliver content in a concise but comprehensive manner. Titled “About,” “Methodology,” “How does it work?,” “Info,” and “Guidance,” they contextualize Designer as Cultivator, outline primary research methods, explain the production methods of the artifacts, provide information about the author, and credit advising faculty members, respectively. Within this page the user is prompted to participate in the survey administered as a component of the exploration.

Upon navigating to the Respond page, users encounter a “splash” page meant to onboard them to the survey intent and duration. After acknowledging that they understand the nature of the survey they may begin to complete it with the aid of several positive UX features via Typeform, i.e. the active question is displayed at full opacity while subsequent questions are dimmed, a progress meter indicates how many remain, and navigational controls progress the survey incrementally.
The final portion of Garrett's design process is the surface, which attends to “a finished design that pleases the senses while fulfilling all the goals of the other four planes” (Garrett, 2011, p. 133). Concerned essentially with the color palatte, typographic system, and various aesthetic qualities utilized, designing the surface plane is a matter of brand identity.

Iteration of the online exposition of Designer as Cultivator took visual cue from the formal decisions made in production of the individual artifacts. Colors used as a highlight in each prototype as derived from their correspondence with one of Gardner's Multiple Intelligences follow through in each artifact page on the website. Brand identity for Designer as Cultivator is established through the adoption of the same bright red tone indicative of a Musical intelligence as a uniform accent throughout the website’s structural elements. Furthermore, web fonts as provided via Adobe Typekit⁴ were employed to reinforce a unified brand identity—display text and meta information are

⁴ http://typekit.com
set in Brandon Grotesque as an extension of the artifacts, and all body copy was set in Freight Text Pro.

CHAPTER V

Findings

Alongside design's growth as an interdisciplinary field of study and practice throughout the last century, debate has arisen as to its role in the cultivation of society. Over the last three decades in particular, an increasing number of design scholars have recognized the development of two notable disparities within and surrounding their discipline: firstly, overspecialization of multidisciplinary environments has drawn widening theoretical chasms between their constituent fields of study; secondly, the role of design studies within these diverse arenas has been oft misunderstood and their potential for collaborative connection overlooked. Those outside of the discipline and within institutions of “new learning” have not accurately understood its key qualities, nor have its proponents inside the discipline found notable success in clarifying this role to multidisciplinary practitioners who misunderstand it.

With these issues in consideration, the central attention of this investigation lies in the placement of design within a multidisciplinary environment; its hypothesis is that efforts to elucidate the nature of each of these issues could potentially give way to the suitable resolution of both.

*Designer as Cultivator* is an effort to draw attention to these interdisciplinary relationships through actively engaging a multidisciplinary audience in order to generate meaningful dialogue. Ultimately, it serves to investigate the role of design studies in interdisciplinary connection.
Exploration Participants

If generation of meaningful dialogue on the nature of interdisciplinary commonality is assumed to be a qualifier for success of this research, then success was certainly had. Along with meaningful contributions that arose during the primary research process as part of discussion groups, ongoing reflections on the topic were shared by study participants even in an unprompted setting.

Several notable patterns arose from the group discussion that could be thematically aligned with methods of design thinking as outlined by the literature review in the first section of this thesis. A clear area of commonality was focused on “helping other people,” and reflected the multidisciplinary nature of the groups in asserting this concept. Another pattern of thinking circled around the clear communication of ideas, with widespread agreement that comprehension of a particular topic means being able to explain to someone else. Perhaps most interesting was the contribution of a participant in the second group, who explained in detail concepts that are clearly recognized within the discipline of design as user experience and an iterative process. In reflecting on the philosophical theory of Heidegger, the participant explained that “he argues that you know certain things like doorknobs best by not really thinking about them, you just use them,” listing this concept as the moment of learning that made their discipline a personal passion.

Another participant took to writing to reflect on their experience as part of the study, detailing an overwhelmingly positive reaction to the exploration in an essay posted on their personal social media platforms and shared with the author:

...I got to sit down with a group from a variety of disciplines—Biology, Education,
Exercise Science, Marketing, Business, Biblical and Religious Studies, and Communication Studies—and have a conversation about our passions, interests, and how our chosen fields of study have influenced us (...) I had a chance to participate in a deeply important conversation, a conversation that helped me realize a lot of important things about what I love, about who I am, about what I want to do with my life.

The participant continues by highlighting what they assess as the positive qualities of multidisciplinary environment, saying that “a liberal arts education can be an active, collaborative, powerful, and exciting endeavor.”

**Wider Audience**

*Designer as Cultivator*’s online presence also engaged a wider audience and promoting interdisciplinary dialogue, receiving over 650 page hits from nearly 50 different countries over the course of three weeks—thanks to promotion from numerous peers along with the co-founder of the Semplice CMS. It additionally gathered over twenty survey responses from contributors in law enforcement, software engineering, counseling, music, biochemistry, ministry, education, and marketing. Feedback contributed during the online exposition ranged from confusion to enthusiasm. Notable examples of user engagement include praise for the manner in which the artifacts were delivered: “It was really to understand the connectivity between the disciplines;” “It provides a concise method of identifying a person’s priorities and values;” “The design of the site clearly communicated the design of the research, use of audio to communicate otherwise subtle differences in individuals was effective”—but alongside a few offerings
of bewilderment: “There was a connectedness that I can’t describe between sound and picture;” “Confused at first, but I get it now;” and finally, “I think I got confused about what I was supposed to walk away with.” An indicator of positive potential came from one user’s feedback which read “I love the experimental nature of it—I think that as a culture we need more exploration in multi sensory experiences as a way of knowing.”

**Implications**

As a method of audience engagement, this exploration in critical making exhibits potential for implementation in educational and organizational workshops—although could be continually expanded as a progressively growing exploration. Potential for interaction with a larger group of participants is evident, and with concern for enlistment of participants from even more disparate backgrounds and cultural contexts. Current evidence of audience engagement suggest that maintenance and expansion of the exploration is a perfectly suitable plan of action. Design’s role within an interdisciplinary environment is still in its early stages of exploration as a topic of research in critical making, and further investigation of how design may further appease the narrowness of hyperspecialization within a multidisciplinary environment appears promising. Audience engagement so far indicates that this is a perfectly worthwhile and necessary endeavor.
APPENDICES
Appendix A:

Participant Survey
Appendix A:

Participant Survey

The following questionnaire was delivered to exploration participants immediately preceding and following the one-hour focus group to which they respectively contributed. Intent was to examine a participant’s ideological and/or philosophical alignment with principles of design thinking. Survey results were examined to make evident any change in a participant’s opinion of their own disciplinary role following interdisciplinary interaction.

Participant Survey

Name:

Major:

*Please rank for accuracy, 1 being least accurate and 5 being most accurate.*

The work that I personally do directly affects other disciplines.

1 2 3 4 5

The work that I personally do has the capacity to generate new results, content, or substance.

1 2 3 4 5

The work that I personally do is solution-driven and seeks to find answers.

1 2 3 4 5
Appendix B:

Group Discussion Questions
Appendix B:

Group Discussion Questions

The following questions were implemented to prompt participants to consider their own work or field of study in order to contribute individually to group discussion.

- Why is your discipline important?
- What is your favorite thing about your field?
- What would you say is a pitfall of what you do?
- How do you want to use your skills in the future?
- Are you proud of a certain accomplishment in your field?
- What indicates to you that you know something well?
Appendix C:

Multiple Intelligences
Appendix C: Multiple Intelligences

Synopses of American developmental psychologist Howard Gardner’s theorized Multiple Intelligences were provided to each participant during their respective focus group session, who in turn self-identified one specific type of intelligence as most representative of their own disciplinary qualities. Each type of intelligence corresponded to a specific color respectively, which indicated the appropriate backdrop to use in capturing the participant’s portrait for use in the critical making component of this exploration; i.e. if a participant identified “Linguistic” as the type of intelligence that most accurately suited their disciplinary experience, an orange backdrop was used for their portrait.

Introduction
We often differentiate ourselves from other students by academic intelligences, e.g., someone may be a “words person” where another might be a “math person.” This discussion will cover eight different kind of aptitudes.

You may identify with more than one intelligence. Perhaps you’re a Math major and a passionate athlete—it’s not unreasonable to identify as Bodily-Kinesthetic and Mathematical-Logical. With this in mind, the group discussion will be primarily focused on the discipline that you’re pursuing, so deference will be given to the intelligence that best represents your academic or professional aspirations.

Musical Intelligence (Red)
This is the knowing that happens through sound and vibration. If you are strong in this intelligence area you likely have a love of music and rhythmic patterns. You are probably very sensitive to sounds in the environment; the chirp of cricket, rain on the roof, varying traffic patterns. You may study and work better with music in the background. You can often reproduce a melody or rhythmic pattern after hearing it only once.

Various sounds, tones, and rhythms may have a visible effect on you—others can often see a change in facial expressions, body movement, or emotional responses. You probably like to create music and you enjoy listening to a wide variety of music. You may be skilled at mimicking sounds, language accents, and
others’ speech patterns, and you can probably readily recognize different musical instruments in a composition.

**Linguistic Intelligence (Orange)**
This intelligence involves the knowing which comes through language; through reading, writing, and speaking. It involves understanding the order and meaning of words in both speech and writing and how to properly use the language. It involves understanding the sociocultural nuances of a language, including idioms, plays on words, and linguistically-based humor.

If this is a strong intelligence for you, you have highly developed skills for reading, speaking, and writing and you tend to think in words. You probably like various kinds of literature, playing word games, making up poetry and stories, engaging in involved discussions with other people, debating, formal speaking, creative writing, and telling jokes.

You are likely precise in expressing yourself and irritated when others are not! You love learning new words, you do well with written assignments, and your comprehension of anything you read is high.

**Visual-Spatial Intelligence (Yellow)**
This intelligence represents the knowing that occurs through the shapes, images, patterns, designs, and textures we see with our external eyes, but also includes all of the images we are able to conjure inside our heads.

If you are strong in this intelligence you tend to think in images and pictures. You are likely very aware of object, shapes, colors, textures, and patterns in the environment around you. You probably like to draw, paint, and make interesting designs and patterns, and work with clay, colored markers, paper, and fabric.

Many who are strong in visual-spatial intelligence love to work jigsaw puzzles, read maps and find their way around new places. You probably have definite opinions about colors that go together well, textures that are appropriate and pleasing, and how a room should be decorated. And, you are likely excellent at performing tasks that require “seeing with the mind’s eyes,” such as visualizing, imagining, and forming mental images.
Naturalist Intelligence (Green)
The naturalist intelligence involves the full range of knowing that occurs in and through our encounters with the natural world including our recognition, appreciation, and understanding of the natural environment. It involves such capacities as species discernment, communion with the natural world and its phenomena, and the ability to recognize and classify various flora and fauna.

If the naturalist intelligence is one of your strengths you have a profound love for the outdoors, animals, plants, and almost any natural object. You are probably fascinated by and noticeably affected by such things as the weather, changing leaves in the fall, the sound of the wind, the warm sun or lack thereof, or an insect in the room.

At a young age you were likely nature collectors, adding such things as bugs, rocks leaves, seashells, sticks, and so on to your collections. You probably brought home all manner and kinds of stray animals and today you may have several pets and want more. You tend to have an affinity with and respect for all living beings.

Bodily-Kinesthetic Intelligence (Blue)
This way of knowing happens through physical movement and through the knowing of our physical body. The body "knows" many things that are not necessarily known by the conscious, logical mind, such as how to ride a bike, how to parallel park a car, dance the waltz, catch a thrown object, maintain balance while walking, and where the keys are on a computer keyboard.

If you have strength in this intelligence area you tend to have a keen sense of body awareness. You like physical movement, dancing, making and inventing things with your hands, and roleplaying. You probably communicate well through body language and other physical gestures. You can often perform a task much better after seeing someone else do it first and then mimicking their actions.

You probably like physical games of all kinds and you like to demonstrate how to do something for someone else. You may find it difficult to sit still for long periods of time and are easily bored or distracted if you are not actively involved in what is going on around you.

Interpersonal Intelligence (Indigo)
This is the person-to-person way of knowing. It is the knowing that happens
when we work with and relate to other people, often as part of a team. This way of knowing also asks us to develop a whole range of social skills that are needed for effective person-to-person communication and relating.

If this person-to-person way of knowing is more developed in you, you learn through personal interactions. You probably have lots of friends, show a great deal of empathy for other people and exhibit a deep understanding of other points of view. You probably love team activities of all kinds and are a good team member—you “pull your own weight” and often much more!

You are sensitive to other people’s feelings and ideas, and are good at piggybacking your ideas on others’ thoughts. And you are likely skilled at drawing others out in a discussion. You are also probably skilled in conflict resolution, mediation, and finding compromise when people are in radical opposition to each other.

Intrapersonal Intelligence (Violet)
At the heart of this intelligence are our human self-reflective abilities by which we can step outside of ourselves and think about our own lives. This is the introspective intelligence.
It involves our uniquely human propensity to want to know the meaning, purpose, and significance of things. It involves our awareness of the inner world of the self, emotions, values, beliefs, and our various quests for genuine spirituality.
If this intelligence is one of your strong points you may like to work alone and sometimes you may shy away from others. You are probably self-reflective and self-aware and thus you tend to be in tune with your inner feelings, values, beliefs, and thinking processes.

You are frequently bearers of creative wisdom and insight, are highly intuitive, and you are inwardly motivated rather than needing external rewards to keep you going. You are often strong willed, self-confident, and have definite, well-thought out opinions on almost any issue. Other people will often come to you for advice and counsel.

Logical-Mathematical Intelligence (Black)
This intelligence uses numbers, math, and logic to find and understand the various patterns that occur in our lives: thought patterns, number patterns,
visual patterns, color patterns, and so on. It begins with concrete patterns in the real world but gets increasingly abstract as we try to understand relationships of the patterns we have seen.

If you happen to be a logical-mathematically inclined person you tend to think more conceptually and abstractly and are often able to see patterns and relationships that others miss. You probably like to conduct experiments, to solve puzzles and other problems, to ask cosmic questions, and analyze circumstances and people’s behavior.

You most likely enjoy working with numbers and mathematical formulas and operations, and you love the challenge of a complex problem to solve. You are probably systematic and organized, and you likely always have a logical rationale or argument for what you are doing or thinking at any given time.
Appendix D:

Website Questionnaire
Appendix D

The following questionnaire was delivered electronically to users of the Designer as Cultivator website. Twenty-two respondents accessed the questionnaire and their responses were analyzed in order to understand commonalities in interdisciplinary thinking.

Participant Survey

1. What’s your name?*

2. What do you do?*

3. The participants in this exploration originally considered these three short questions. What do you think?

   A. The work that I personally do directly affects other disciplines.*
      1 2 3 4 5

   B. The work that I personally do has the capacity to generate new results, content, or substance.*
      1 2 3 4 5

   C. The work that I personally do is solution-driven and seeks to find answers.*
      1 2 3 4 5

4. Just a couple questions about you:

   A. Do you like what you do? Why or why not?

   B. Is there a particular event or personal accomplishment that stands out to you as one of the proudest moments you’ve had in your own field?

5. Concerning this exploration:
A. Generally, what is your opinion of the content on this website?*

- “Mostly positive! This is worthwhile and understandable.”
- “Mostly confused?! This is just a bunch of nonsense.”
- Other

B. Did anything from the exploration stand out to you?
Commonality, separation, harmony, dissonance, sentiment, etc.

C. If you had participated, do you think you would have aligned with any individual or group in the collection?
Is there anything specific about them that makes you think so?
Appendix E:

Interface Designs
Appendix E
Interface Designs

**Figure 9. Designer as Cultivator Home Page**
FIGURE 10. DESIGNER AS CULTIVATOR “IMMERSIVE” PAGE
People are coming out of injuries, coming out of where they were in sports... they were at their prime, and now they're not at their prime, so you help them get back to being 100% or close to. There's a lot of satisfaction in that. Very satisfying.

**FIGURE 11. DESIGNER AS CULTIVATOR ARTIFACT (FULL VIEW)**
Designer as Cultivator

About

Designer as Cultivator is an exploration in critical making for the care of interdisciplinary culture.

Much has been written about the role of design in study and practice. It’s not unusual to find design—graphic design in particular—rigidly associated with either the fine arts or communications advertising. Design needs both of these arenas, it’s true, but that’s not where we should divide the field. Essentially, design can be defined as a means of communication and method of action. A case may be made that design resides mostly in the space between these disciplines, drawing conscious lines between them and acting as a facilitator for collaboration. I’d like to investigate that idea.

Methodology

To explore this exception, I met with people from various fields to discuss their academic backgrounds and professional experiences. At first, everyone took a survey to consider what qualities characterize their work. After an hour or so of speaking with people from other fields, a few of them had reconsidered the role of their own specialty—and indicated so on an identical survey taken at the end of our time together.

These meetings left me with an abundance of food for thought. In order to further evaluate the discussions and focus similarities in thinking—specifically, design thinking—I began this exploration in critical making as a way to facilitate conversations with a larger audience. These artifacts are a means for me to make vivid the abstract commonalities of study participants through sight and sound: What do they survey in your

How does it work?

The artifacts created for this exploration were generated through a series of ordinal parameters—color, signal, tone, and effects were used to symbolize the unique characteristics of each participant and their take on their own field.

Info

This exploration was initiated by me, Ryan Heslam, as a component of my MFA thesis research in the School of Visual Communication Design at Kent State University. Please feel free to get in touch about anything.

Guidance

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Note: This was an optional part of the assignment, but the participants who took the survey and presented in class were given a grade.

FIGURE 12. DESIGNER AS CULTIVATOR ABOUT PAGE
References


