ART AS COGNITION

by

RALPH WARREN HULLENDER, JR

(Under the Direction of TRACIE COSTANTINO)

ABSTRACT

The highly differentiated and culturally defined creative disciplines we call the arts are embodied processes of cognition metaphorically constructed over time from biological origins that serve to distinguish an understanding of self in relation to other, construct meaning, and elicit multiple possible solutions for future action. Put another way, art making is a natural, embodied engagement with the tools and materials in the immediate environment to create understanding and construct meaning for one's self in relation to one's world.

In this instrumental case study, interviews, artwork, artifacts, journals, participant websites, and professional reflection inform a phenomenological investigation into the purposes, cognitive processes, and constructed meanings evidenced in particular instances of art making over a three year period by one high school / college student. Implications from the data inform theories of learning, curricula in art and education, and pedagogy.

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DEDICATION

There is a recursive quality to teaching and learning in which student learning experiences act back upon the teacher, and the teacher, for having taught, grows. This dissertation is dedicated to the 4000-plus students both individually and collectively responsible for making a difference in who I am as an educator, today.

ACKNOWLEDGEMENTS

This dissertation represents a solo effort with little sustained interest or input outside of my own personal inquiry. Dr. Tracie Costantino, my major professor, and the rest of my committee, Dr Carole Henry, Dr. Richard Siegesmund, and Dr. Melisa Cahnmann-Taylor, are to be commended for permitting the exploration of non-traditional arts-based research methods and the open-ended direction of the study.

However, there are two people to whom I owe a special acknowledgement and expression of gratitude. The first is Mimi Chakravorty. Though most of the data analyzed and interpreted here were retrieved from publicly accessible websites, Mimi willingly discussed and allowed me to share her personal life experiences in order to explicate the cognitive nature of her art-making.

Second, I want to thank my wife, Tammy, who kept my research proclivities on a short tether so that I neither became too preoccupied in one area nor wandered too far off on tangential interests. She also graciously and patiently read and edited multiple iterations of each chapter. However, for any assumptions, gaps, misrepresentations, or errors inadvertently resident within this paper I am solely responsible and they in no way reflect on Mimi, my wife, nor my committee.

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INTRODUCTION

Art educators sense that beyond the scope of the curriculum and the completion of assignments art making affords significant experience in student learning, self-actualization, and motivation that seems to transfer into other life experiences. Educational research has questioned the traditional definition and nature of knowledge transfer (Bransford & Schwartz, 1999), suggested how learning in the arts outside of schooling might affect the classroom (Heath, 2000), and documented the ways of thinking that occur in art that might influence learning in other subjects (Burton, Horowitz & Abeles, 2000; Catterall, Chapleau & Iwanaga, 1999; Hetland, Winner, Veenema & Sheridan, 2007). Critical of advocacy studies in which researchers seek to prove a causal, uni-directional transfer of art learning on other subjects, Burton et al. (2000) sought to determine if certain dispositions or habits of mind would hierarchically align themselves in art making practice and how these might emerge in other subjects, anticipating a dialogical relationship between learning in different domains. However, the authors acknowledged that the broad net of research methodology employed "did not provide a deep, nuanced representation" of "compelling" (p. 235) effects of arts learning as described in interviews with the teachers. Teacher testimonies of increased self-expression, self-esteem, heightened focus, pride, expression of ideas, and self-confidence evidenced rich qualities of learning undetected by the research instruments.

As a secondary art educator in public schools for 30 years, I repeatedly observed these same or similar changes in student self-perception, motivation, and behavior as students engaged

with art making assignments in my classroom. Clearly, not every student, but many, exhibited a new self-confidence and expressiveness, took ownership of their work, went beyond the assignments to produce artwork on their own, demonstrated a new autonomous and responsible behavior, and registered improved attendance and better grades overall. For example, my memories of the introverted and somewhat subdued ninth grader, Caroline, hacking away at a block of plaster, is juxtaposed with an image of her as a quick-witted, effervescent thespian as a senior; Jeff, Eric, and many others found art a reason to get to school each day and finally graduate; at risk of failing in ninth grade, Bill found confidence through his successes in art to branch out into theatre and music and graduate with honors (25 years later, he is teaching art and performing on weekends in Boston); Manuel found art to be a way to learn English and a career in graphic design; Anthony returned to the art classroom from the alternative school to become a model student. Students, parents, colleagues, and administrators have all, at one time or another, recognized and attributed these transformations to student experience in art; and I have subsequently had the opportunity in two different schools to develop specific art courses for the explicit purpose of intervening with students identified as unsuccessful in other academic settings.

For the purposes of research, however, my observations of student transformation through art remain as testimonials. I have not gathered statistical data to show correlations. Like most practitioners, I closed my grade book at the end of each semester with an aggregated certainty of what my students had learned in relation to my curriculum and the state standards. Beyond that, I had simply been glad the class was rewarding or meaningful. After all, this kind of learning and change in students can occur as a natural part of human growth and development and may be influenced by many other factors, but the pervasiveness of the transformational

process occurring in an arts setting suggests a possible connection, and I share it hoping that other art educators recognize their own experience in the narrative, sense a ring of truth, and read further my investigation into the qualities of learning that occur in art making.

While the afore-mentioned body of research in art education also demonstrates strong correlations surrounding these assertions, the elusive proof of causality may have more to do with the kind of research questions asked or the type of research instruments used (Hetland & Winner, 2004). For the purposes of this study, rather than engage with the complex variables of multiple students in a classroom to attempt collecting data and documenting change, I chose an information-rich case in which dramatic transformations have already evinced in the life of a former student. The instrumental case study (Stake, 1995) isolated and examined the artwork of this student, Mimi Chakravorty, produced during her senior year of high school and the two years following graduation (2004-2007). Additional interviews, artifacts, journals, websites, and professional reflection as her high school photography teacher informed the investigation. Arts-based methods that were developed and successfully implemented in the pilot study to additionally collect, analyze, and represent the data are also referenced.

For clarity, a couple of definitions need to be inserted here. The use of the term *qualities* in this paper alludes to differing characteristics, not to a quantitative measure of high/low or a value judgment of good/bad. Thus, *qualities of learning* references the distinctive attributes of what is learned. *Cognition* is used as an umbrella term; it is learning broadly conceived and encompasses all that is involved in the process of acquiring knowledge, from awareness and perception to thinking processes, skills, and strategies, to expression and forms of representation, and from metacognitive attitudes, intentions, and dispositions to embodied extensions of thinking that impact or support learning. Chapter II defines and discusses the pertinence of each of these

aspects of cognition to art making in this study. The phrase, *cognitive qualities of art making*, then, comprises the aforementioned collective variables of thinking and learning as they are engaged in studio practice.

Initiating inquiry into the cognitive qualities of art making was not a direct process. Several experiences and subsequent literature reviews have focused my attention on an aspect of art making that I had assumed but never investigated. In spite of my years teaching and my experience as an artist and designer, I had never asked the questions I now pose in this research:

1. What is the nature of photography as embodied cognition exemplified in the artwork of this particular case?

2. What was Mimi learning beyond the given assignments or Mimi's overt intentions?

3. How was Mimi learning through the habits of mind and qualities of thinking evidenced in her photography?

Inspiration for the Research Topic

In the Spring of 2007, I ran into a former student (class of 1978). He not only recognized me, but also began relating the art activities and things he remembered learning in my class. I was stunned. Lance had only taken one year of art; he was a very serious trombone player in high school and far more interested in music. Now, he is a chiropractor in a small, south Georgia town. The encounter raised numerous questions: How did he remember all those art experiences, and why? What did the art experiences mean to him? In what way is art making a part of his life now? We shook hands, said it was nice to see each other again, and parted with our respective memories furtively engaged. I stood there in the coffee shop frozen somewhere between reflecting on 30 years of teaching and the 30 pre-service teachers I was preparing to teach later

that day. I had spent years writing and rewriting curriculum, perfecting delivery, and thoroughly assessing learning. But at that moment, I was totally undone; I had assumed a certain positive influence, but had never considered the actual impact of art lessons beyond the final exam. Were the clever strategies and pet projects actually meaningful? Was there anything life changing in what I taught? What do students remember years later and of what import are those memories? How have any of the techniques, history and appreciation lessons, and creativity exercises made a difference in their lives? And why have I not asked these questions before?

Now, how could I walk with confidence into a classroom of pre-service teachers? What should *they* be teaching? *How* should they be teaching it? I was suddenly not sure anymore, and decided to conduct a preliminary study to explore these questions.

Pilot Study

In August, 2007, I initiated a mixed methods pilot study examining what my former students remember over time. I set up a website with survey questions, hoping to engage as many of the 4000+ former students as possible. I also interviewed a convenience sample of five former students who have continued art making in some form. In the initial inquiry into post-high school experience, I explored the following questions:

What do students remember from their high school learning experiences?

What knowledge, skills, and attitudes from their high school art experiences do

students use in post high school learning experiences?

That's as far as the mixed methods study advanced. Other than testing the survey with a few students, it was never used. Access to the website, Hullendersurvey.com, was never opened up online. Commensurate literature reviews on learning theory and the nature of art making and the wealth of data collected from the convenience sampling of former students shifted the focus of

my research questions away from the assimilation and transfer of knowledge to a phenomenological investigation of the interview data. The interviews, examined under several different research lenses, afforded different findings that progressively centered my evolving research questions in the pilot study around the nature of art making and the qualities of learning associated with it:

What kind of learning occurs through art making?

How does learning occur through art making?

In what ways might art making experience influence or foster learning over time?

Every methodology has its strengths and weaknesses. Ontological and epistemological beliefs inform the kinds of questions we ask and dictate toward what methodologies we gravitate (Eisner, 1994; Van Manen, 1990). Commensurately, we choose the methods of inquiry that appropriately and adequately explore the research landscape (Ezzy, 2002; Riessman, 1993). The data from the initial pilot study interviews have been examined four ways, using thematic analysis, discourse analysis (Riessman, 1993), inductive analysis in a form of grounded theory (Strauss & Corbin, 1998), and arts-based methods (Cahnmann-Taylor, 2008). Each process has facilitated a better understanding of the data and progressively refined and narrowed what has been a very open-ended research direction. Preliminary results accorded by the respective constraints and affordances of each process from the pilot study are elaborated below.

In the original pilot study titled, The Longitudinal Impact of High School Art Experiences, the issue of what students remember over time was of central interest. An inductive thematic analysis organized the data from the interviews. During the initial set of interviews with two students, Amy and Chad, and a teacher colleague, Bonnie, the discussion did not seem to address my research questions. The open-ended, conversational style – even with probes directed

more at what was remembered or learned from high school – seemed to generate dialogue

around relationships, circumstances, and personal interests. Neither the questions nor the answers

satisfied my research goals. During the period of transcription, I reviewed literature on learning

theory for a general direction in which to examine the data. Contexts of learning and the nature

of informal learning over time (Falk & Derking, 2000) informed the simple thematic analysis.

Open-coding (Straus & Corbin, 1998) organized data according to topics discussed: "Sees art

knowledge/skills as setting apart from others," "Connections: new art learning experiences since

high school," and "Peers, family, and others." Codes coalesced into "Socio-cultural Context,"

"Physical Context," and "Personal Context" (Falk & Derking, 2000). The core code appeared to

be "Context." The socio-cultural category emerged as an axial code around which grouped sub-

categories of "Job," "Family," "Peers," and "General Population." The evidence was clear and

the argument solid, but the study seemed shallow. Although all of the students discussed their art

making in relation to the influences and responses of others, expectations of social feedback did

not seem to warrant the time, effort, and energy each assigned to art making. There were also

many references to personal enjoyment, inner satisfaction, and creative productivity that

indicated greater internal motivations. The data appeared too rich to reveal only superficial

findings, so I reconsidered how to re-mine the data for greater significance and deeper meaning

that might be found in the personal intentions of art making, using Narrative Analysis (Riessman,

1993).

Narrative Analysis

Narrative inquiry is uniquely positioned as a research method to gather

phenomenological data embedded in the complex constructs of lived lives (Barone, 2001),

probing deeply into the structure as well as the content of stories to excavate the subtext - the

complex framework with which we assign meaning to experience. Riessman (1993) warns against the dangers of superficial content analysis and examining narrative for evidence of a prior theory, explaining, "Narratives are interpretive and, in turn, require interpretation" (p. 22).

Narrative analysis, for the purposes of this research, disallowed prescribed themes and evidential inquiry. Inductive coding identified and categorized stories in the data. Stories found within the larger narrative that contain clear beginning, middle, and end segments with defined "entrance and exit talk" were reduced to "core narratives" (Riessman, 1993, p. 60) and compared in relation to their situatedness, and the teller-listener relationship (Clandinin & Connelly, 2000; Riessman, 2001). I adapted the Labov (1972; 1982) framework for examining discrete narrative structures demonstrated and cited in Riessman (2001; 1993) as an initial starting point for organizing and interpreting the stories.

I had the inadvertent opportunity to interview Mimi Chakravorty toward the end of the pilot study. On November 26, 2007, while analyzing the initial interviews, I received an email from Mimi, a former photography student from whom I had not seen or heard since her graduation in May 2005. In the email, Mimi stated:

> I realize it's been a long time since you have heard from me. I'm sorry I have done
> a poor job of keeping in touch. However I will be in Atlanta next month and I
> would like to see you. This will likely be the last time I'll be visiting in a long
> while since the week after my visit I am moving to California. So please let me
> know if/when you will be available between the 14th and the 18th of December.
> Take care, Mimi [email, November 26, 2007].

I felt that since she was moving to California to study photography at Brooks Institute of Photography, what she would have to say might support some of the themes emerging from data

collected so far, so when I left for our scheduled reunion at Jittery Joe's Coffee Shop in Buford, GA on December eighteenth, I took along my ipod recorder, consent forms, and protocol – just in case. During our visit, I asked Mimi if she would mind being interviewed as a part of my research.

What I Remember of Mimi

When Mimi entered my photography class in the fall of 2004, I was beginning my 29th year of teaching. I had been at North Gwinnett High School for three years and built the art program from eight art classes taught by 1.5 art teachers to 20 art classes taught by four art teachers. I stopped teaching beginning classes and only taught advanced art courses in Photography, Stagecraft, and Computer Art.

In the past, I knew advanced students coming into my photography class. I had either taught them before or was familiar with their work from the three other art teachers in the department. At least a year of 2D and 3D design was required to take an advanced course, and usually we recommended a year of drawing and painting as well before signing up for photography. In a school with over 3000 students and an art program with over 500 students, I no longer knew my class as well as I would like on the first day of school.

I did not know Mimi at all before she registered for my photography class, and she enrolled several days late. I remember handing her the syllabus and talking with her briefly about the requirements of the class: She had to have her own manually-operated 35 mm camera, buy her own film and photographic paper, and pay a $20 lab fee for chemicals and other miscellaneous materials supplied by the department; the course required a great deal of time outside of class – for both shooting assignments and working in the darkroom. Due to the size of

the class (27), the structure of the course, and the processes, time, and materials involved, students needed to be organized, responsible, and highly motivated to succeed.

Almost all the students had been in the department for a couple of years and understood the expectations, but I was a little concerned about how well Mimi would fare. She was very soft-spoken and timid; she had never taken pictures before, she did not own a camera, she was already behind, and again, I did not know her.

The Nature of the Course

I began teaching photography in 1983, using a college syllabus I had obtained from an instructor at the Art Institute of Atlanta who I had known since 1971 when we were students together at Guilford Community College in Jamestown, North Carolina. Every year I tweaked the syllabus, teaching more content more efficiently. During the 1980s and 1990s, photography was primarily a one-semester course, and during those 18 weeks the students needed to acquire a comprehensive working knowledge and be able to produce quality images. One, I had to answer to the parents who were supplying cameras and materials; they expected their children to be competent photographers. Two, my principal expected award-winning results from the school's financial subsidy of the program. Three, if I expected new students to sign up for the class, they needed to see impressive results displayed in the school, as well. Four, there was an unspoken competitive motivation to show well at the obligatory local, regional, and state juried exhibitions.

By 2004, students were shooting at least a roll of film a week, developing, printing, and mounting a photograph for a critique each Friday. Assignments led students to become progressively more visually aware of their environment, photographing shadows and reflections as subject matter, cropping extraneous objects, and capturing minute details. In the same assignments, they were developing technical skills, controlling depth of field and shutter speed to

compress space, stop time, or express movement. Prompts posed open-ended questions that required students to construct creative solutions of personal meaning. On a conceptual level, they were contemplating and writing each week about such things as the metaphoric meanings of shadow, illusions of reality depicted in reflections and refractions of light, and the relationship of time to three-dimensional space in a two-dimensional photographic image. Between critiques, I spent class time demonstrating new technical processes in lighting, shooting, developing, and printing, and covered the history of photography – especially the works of contemporary photographers.

Mimi kept coming to class without a camera and was behind in her assignments. I lent her my Canon AE-1 - the same camera that appears with her in many of her self-portraits. By the end of the first semester, she caught up with her work, though the quality was poor, mostly due to a lack of print quality – lack of contrast, out of focus, occasional scratches and chemical stains.

During the second semester, she became really excited about pinhole photography, Holga cameras, and alternative printing processes, such as cyanotype. I also taught a digital photography unit that included an introduction to Photoshop. Students created a story around a series of photographs that they made into books. Mimi's book, *Beanie Baby Suicides* (see Figure 16), was a memorable standout. The only other photograph of hers that I initially remembered from that class was the triptych, *Three Wise Monkeys* (see Figure 2) that she completed at the end of the year. I remember that Mimi worked really hard, spent many hours in the darkroom after school, and especially enjoyed the pinhole assignments.

There were a number of dynamic, extraverted seniors in that photography class who aggressively submitted their work to competitions and subsequently went on to study art and

design at various schools (West Georgia, Georgia Institute of Technology, Savannah College of Art and Design, The University of Georgia, and the School of the Art Institute of Chicago). Their interests and energies, quite frankly, occupied a disproportionate amount of my time. I had a brief conversation with Mimi a week before graduation in which she mentioned her deviantart.com website, and asked me to look at it sometime. In the same conversation, she first mentioned wanting to major in photography, but that her dad was making her major in economics at Emory University.

That was the first and last I really talked with Mimi about her photography outside of class assignments until she emailed in November 2007 - a year and a half later. She would be visiting friends in Atlanta for a few days on her way to Santa Barbara to study at Brooks Institute of Photography, and asked if I would like to meet for a cup of coffee before she left. During the course of looking at her photographs on her laptop and listening to her story that morning at Jittery Joe's, I realized something significant was taking place through her photography. I packed up my things and went home to transcribe her interview and take a look at the website I had neglected for a year and a half.

My ensuing preoccupation with the richness of data and variety of Mimi's compelling photographic images evolved into what can be described as an intrinsic case study (Stake, 1995) of Mimi's photography – although I never labeled it as such. The initial narrative analysis brings into focus the story of a creative photographer coming of age, establishing herself independent of caring but dominating parents, finding her footing across a cultural divide, and creating a sense of self.

In typing the subsequent transcription of our conversation, I found myself reading between the lines. Mimi was a very soft-spoken, shy Indian-American girl whose parents had

forbidden her to study art. In high school, she secretly took drawing, painting and photography courses and built her own website of alternative art. As an economics major at Emory University, where her father teaches, Mimi stopped attending most of her classes – except photography. Several statements about her art making clued me in to the motivation to resist her parents and continue with her photography. Isolating those comments from the transcription (Reissman, 1993) is illuminating:

> I take pictures of pretty mundane objects sometimes but I want to make them look interesting… there's just something about capturing reality and trying to maybe alter it. . . .or trying to show something else about it that's not, you know, visible to everyone at first… trying to express yourself even though you're not the subject, you know…(Mimi, Interview, December 18, 2007).

Mimi saw her reality as mundane and strove to alter it and make it interesting; she was trying to make the inner Mimi visible, to express herself – she was really the subject of her photography. Her passion with photography was about creating a sense of self, reordering her world, and sharing it with others. The epiphany prompted revisiting and recoding transcripts from other participants using grounded theory.

Grounded Theory

Rereading the original transcripts and reviewing the relevant literature, attention shifted from the people and their stories to the meaning of events and the intents of actions. This also represented a methods change from narrative analysis to grounded theory (Ezzy, 2002, p. 95). In her photography, Mimi cropped and highlighted segments of her life. Creatively arranged and collectively viewed, Mimi's photographs become a lens through which the audience glimpses the ineffable depth of her struggle, feels the heartache, and bristles with the chilling nature of her

despair. More than just expressing being "mentally and physically trapped," as she stated in her interview, Mimi's photographs reveal a complex, multi-layered perception of contained-ness. In constructing an initial relationship between most of Mimi's photographs, axial coding (Strauss & Corbin, 1998) revealed a range of issues connected around a central concept of being restrained or confined. First, her photographs conveyed a sense of both forced and sometimes self-imposed anonymity in *Your Silent Face* (see Appendix B1), and seven other photos of self and others wearing an expressionless white mask, all titled *Anonymous*. Second, Mimi's photographs explored the different limitations she perceived in her life, from cultural expectation in *Caged* (see Figure 3) to parental constraints in *Marionette* (see Appendix B2), *A Tangled Mess* (see Figure 13), *Sealed* (see Figure 6), and *Three Wise Monkeys* (see Figure 2). Third, her photographs explored the resulting range of despair and hopelessness from passive abdication in *Sofa* (see Appendix A3) to violent reaction in *Wrath* (see Figure 18), to darkly humorous introspection in *Beanie Baby Suicides* (see Figure 16), and *Beheaded Mannequins* (see Figure 4).

<p style="text-align:center;">*Arts-Based Inquiry*</p>

I felt like I had rich data that I approached from several different methods, but was never quite satisfied with the findings. Charmaz (2006) warned of trite categories and over-reliance on overt statements due to early theoretical sampling. The collusion of art making by Mimi and myself massaged out deeper levels of insight into the tensions within which she struggled to move her life forward, the nature of her hopeless feelings, and how she employed art making skills through photography to obtain mental and emotional purchase on new possibilities.

Clicking through digitally stored files of Mimi's photographs reminded me of looking at a filmstrip or a series of movie stills, so I experimented with the filmstrip motif (see Appendix A1) as a metaphor for Mimi's life. In an oil painting (see Appendix A2), I interpreted two of her

photographs (Appendix A3; Appendix A4) in heavy black framing to convey the boxed in, "trapped mentally and physically" (Mimi, Interview, December 18, 2007) feeling she described in the interview. I printed and glued small black and white versions of nine other Mimi photographs in a linear progression as sprocket holes across the bottom of the picture plane. The tumultuous qualities and the emerging sense of possibility evidenced in her photography - often contradictory or ambiguous – appeared to simultaneously move her life forward, albeit a frame at a time. The film motif also extended my poetic description of her negotiation of life events as a "dash through the split-second opening…/ Her escape parsed and framed each time/ By the click of the shutter."

The personal interpretation through arts-based inquiry in the pilot study connected me emotionally to the images and gave me greater insight into what Mimi was learning about her self and her world through her photography - and what she was learning had little or nothing to do with the lessons I assigned in the classroom. Art making through photography had afforded Mimi a means of personal study: an expressive venue of personal perspective and an exploration into new possibilities of self. Mimi and I both agreed that these findings, while significant, were yet rudimentary, represented only a curious glance below the surface, and suggested a need for further inquiry as a particular case of study.

Mimi's sudden dramatic obsession with photography, personality change, and the kind of images she was producing all connected to a much larger body of cognitive activity. In this dissertation, I examined subsequent conversations with Mimi and new writings and images from her websites as well as revisiting the pilot study data to isolate the cognitive qualities resident in Mimi's artwork. The instrumental case study of this dissertation (Stake, 1995) focuses on the following questions:

What is the nature of art as embodied cognition as exemplified in the artwork of this particular case?

What are the habits of mind – especially, qualities of thinking - evidenced in the artwork?

What are the qualities of learning that emerge beyond the given assignments or Mimi's overt intentions?

Ferreting out the nuances of thinking and learning – the nooks and crannies of Mimi's artistic acts of cognition – brings greater understanding in this instance, and forwards the question of what similar ruminations might reside below the surface of other impassioned student artistic endeavors. What might they be learning? How might teacher awareness of those conditions provide curricular and pedagogical support to guide their inquiry?

From a broader educational perspective, several larger questions looming on the horizon of this study warrant further inquiry into the nature of cognition in art making: How might an understanding of art making as embodied cognition support curricular agendas in other disciplines? How might the cognitive qualities of art making inspire change not only in the art classroom, but in the structure of schooling, itself? How might embodied cognition through the arts inform the re-envisioning of what 21st century education should look like in terms of purpose, time, space, technologies, and pedagogies?

Chapter Two

THEORETICAL FRAMEWORK AND REVIEW OF THE LITERATURE

In focusing the phenomenological lens on Mimi's photography, a number of different filters or perspectives could be applied. Each perspective, however, would portray the same scene remarkably different, much in the same way that – to continue the photography metaphor - color filters affect black and white photography. Imagine a pastoral landscape containing an apple tree and a stream photographed four times with black and white film, each with a different color contrast filter over the lens - red, green, yellow, and blue. The film contains no color properties, but the light-filtering properties of the respective colored filters radically alter the results. The red filter creates tremendous contrast and depth, darkening the sky, grass, leaves, and water while lightening clouds, tree trunks, and the apples. A green filter also darkens the sky and water, but conversely renders dark apples against much lighter trees and grass. Yellow creates contrast similar to the red filter, but to a much lesser degree. A blue filter, on the other hand, reduces contrast, diminishes depth, and emphasizes a hazy or misty quality against a white sky and water. Each color filter permits respective reflected color to pass through while blocking the other colors of the spectrum from exposing the film. The same scene, viewed through diverse filters, appears dramatically different. Similarly, each theoretical perspective potentially filters the research data in ways that heighten certain understandings and diminishes others.

Visual sociology might highlight how Mimi's photographs both aligned with and contested social mores and conventions as she crossed borders and reconfigured boundaries in

her life. Emmison and Smith (2003) view photographic images as visual narratives and a less invasive means to observe "the *process* of social life as it naturally unfolds" (p. 29).

A second option, the filter of visual anthropology, offers an ethnographic perspective of Mimi's cultural malaise and diasporic conflicts that morphed into the nomadic lifestyle she embraced more as a matter of principle than of practice. Sarah Pink (2003) advocates a visual anthropology that reveals "those visual and audible aspects of other people's lives and experiences that we cannot understand without some contextualizing knowledge about how meanings are made and lived out through social action in that specific cultural context" (p. 136). Such a perspective might render more explicit the contextual significance of how Mimi intuitively lived her life as evidenced in her imagery.

Third, the prevalence of Mimi's self-portraits (27) warrants a psychological examination of the self-perceptions that surfaced in her work - not unlike the reflective ruminations manifest in Vincent van Gogh's 30 or so self-portraits painted in the same approximate amount of time. The emotive nature of the photographic images also invites the possibility of a subsequent, deeper psycho-analysis of the apparent guilt, self-destructive patterns, and messages of self-abuse.

A fourth filter of formal art criticism would shed light on the design elements incorporated into Mimi's asymmetrical compositions. An understanding of her compositional devices such as the Rule of Thirds, shallow space, cropping, and contrast could assign academic importance and historical significance beyond the photographic moment. As both connoisseur and critic (Eisner, 1994), I can make expert judgments based on the execution of formal elements according to modernist and post-modernist conventions. In further critical analysis, Mimi's

choice and framing of images reveals her personal and political biases that could be taken up as a study in and of itself (Berger, 1972).

Additionally, photographic properties could be assessed to ascertain (a) the intent and effectiveness of the particular medium: pinhole, digital, black and white film, color transparency, or some alternative process, (b) Mimi's growing technical proficiency, and (c) her professional influents. Rose (2007), writing about visual methodologies, emphasizes examining the site of image production because all "visual representations are made in one way or another, and the circumstances of their production may contribute towards the effect they have" (p. 14).

I am not an anthropologist; neither am I a sociologist nor a psychoanalyst. I am not attempting to practice research in any of these fields. However, rudimentary understandings in each of these disciplines can inform aspects of my visual inquiry. Most visual research methodologies, especially visual anthropology, emphasize examining not only visual content, social context (who, when, and why), and the materiality of the image, but the relationships between those elements (Banks, 2007; Pink, 2006; Rose, 2007). Banks (2007) argues that while one must begin with the content, composition, and materiality of the image, the meaning of the image must be drawn from the social context and relationships. Art, as a product of situated human action, requires a broader study of the context in which it is embedded. Rose (2007) and Pink (2006) further insist that because art is made with a viewer in mind, audience responses to images also provide additional understanding and a richer perspective. There are other research orientations, I am sure, that might illuminate additional aspects of Mimi's photography, as well. All of these, while not the primary filter through which I examine her work, serve as corroborative factors in my research.

Several initial findings from the pilot study clearly suggest, however, an intensely

creative and highly thoughtful encounter with her world that compels further investigation into

Mimi's art making as cognitive. As demonstrated in the pilot study summary in the first chapter,

Mimi's photography and writing evidenced qualities of thinking in her work that were, first and

foremost, about her. Images and writings addressed *her* conflicting cultural values, *her* social

short-comings and desires, *her* Socialist political leanings that were inherently neither American

nor Indian, and *her* psychological angst and feelings of hopelessness. Although Mimi discussed

her photography in terminologies of formal design, technical processes, and historical

precedents, she never embraced those qualities for their own sake; their use in her work was in

service to personal meaning making. Mimi admitted that not only did she not remember much of

what was taught in high school regarding photographic history and processes, but she found the

technical and academic aspects of photography encountered at Brooks Institute of Photography

difficult and stressful. She frequently had to step outside the rigors of schooling and take pictures

for herself "to keep her sanity" (email, March 11, 2008).

For Mimi, photography creatively engaged the tools and materials of her immediate

environment to understand self in relation to other, construct meaning, and generate possibility in

her world. Although I am not a cognitive scientist, learning theory and art making as a cognitive

enterprise closely align with my sensibilities, knowledge, and experience as an artist and art

educator. For all these reasons, art making as an act of embodied cognition becomes the

appropriate primary lens through which to comprehend the significance of Mimi's photography.

An Understanding of Cognition

Cognition, for the initial purposes of this study, is broadly defined as our ability to

interact with and respond to conditions in our environment (Clark, 2008). Cognition involves a

complex, and often opaque confluence of factors that mitigate our response that can be conscious or unconscious, from proprioceptive awareness and sensorimotor perception to thinking processes, skills, and strategies to expression and representation; from metacognitive intentions and dispositions to embodied extensions such as tools and technologies; and from pre-natal body schemas to socially-distributed understandings and cultural artifacts. All of these factors, informed by prior experience and emotional prompts, interface in human cognitive response to the environment.

The theoretical framework around which I build a theory of art making as embodied cognition is primarily triangulated from theories put forth in psychology (Arnheim, 1967; Solso, 2003), philosophy (Dewey, 1934/1958; Johnson, 1987; 2007), education (Eisner, 2002), and cognitive neuro-science (Damasio, 1994; Tucker, 2007; Zeki, 1991; 2009). Obviously, numerous others contribute to understanding the particularities of learning such as social cognition (Tomasello, 1999), thinking processes (Costa, 2001), or technologies (Clark, 2008). Aspects immediately perceived as illuminating the cognitive nature of art making are introduced below. Specific factors will be discussed more in depth as they relate to specific conditions evidenced in the research.

The Embodied Nature of Cognition

Contrary to the Cartesian dualism of mind and body that has informed much of our understanding of learning and decisions for education during most of the 20th century, all thought and mental processes are first of all interactive processes that involve the body, the brain, and the environment (Johnson, 2007; Tucker, 2007). The mind is neither a nebulous entity nor an empty container; the mind does not consist of different interactive faculties or computer hardwiring.

While these metaphors may meet the needs of certain religious and socio-cultural agendas, they fail to accurately characterize the structure of the brain, the nature of thought, and the contingencies of learning that actually occur in daily experience. What has been conceptualized as mental is actually physical. Even in the same setting at the same time, no two people will walk away from an experience with the same perceptions because multiple complex factors that are rarely transparent mitigate the process of *what* we learn, *how* we learn, and *why* we learn. As if the flexible neural structure of the brain isn't enough, body structure and body function provide a foundational context for the social, cultural, and physical experiences that shape the emotions, intentions, and attentions of sensory perception in determining what we learn.

Body Schemas and Body Functions

Perceptions of our world are predicated upon a prenatal, non-conscious familiarity with the proportions and functions of our own physical body. Chemical states determine our intentions and attentions; physical proportions, modalities, and contexts serve as perspective. "[W]henever consciousness begins, it will already be informed by embodiment and the processes that involve motor schemas and proprioception" (Gallagher, 2005, p. 79) and is important for an intersubjective sense of self and perception of others. Gallagher identifies these body schemas as a complex system of "sensory motor functions that operate below the level of self-referential intentionality. It involves a set of tacit performances – preconscious, subpersonal processes that play a dynamic role in governing posture and movement" (p. 26). In addition to these proprioceptic sensibilities, for example: picking up a glass to take a drink or dodging a tree branch while walking and talking, body schemas provide a reference point and framework for constructing metaphoric understandings and potential actions that are both intentional and cognitive. Basic body schemas of *in* and *out*, for example, are metaphoric constructions based on

body function by which we conceptualize our world from simple relational positions of being *in* the forest or *out* of the wind to higher order concepts such as Boolean logic (Lakoff & Nunez, 2000). Gallagher (2005) argues that metaphoric understandings from body schemas and proprioceptive action constitute the foundation for understanding and ordering our world, and explains that:

> [B]odily movement is closely tied in various ways to perception and other forms of cognition and emotion. Indeed, there is now a large amount of evidence from a variety of studies and disciplines to show that the body, through its motor abilities, its actual movements, and its posture, informs and shapes cognition. (p. 8)

Awareness and Perception

Visual perception is a non-stop cognitive process. The brain requires variability to sustain conscious visual experience and function properly. Citing experiments based on arctic explorers' reports of "snow blindness," Edelman and Tononi (2000) suggest "Neural activity must exhibit sufficient *variance in time* to support conscious perception" (p. 74). Arnheim (1969), also noting that our eyes are never still, posits sensory perception as "an undisputable condition for the functioning of the mind in general. The continuous response to the environment is the foundation for the working of the nervous system" (p. 19). Referencing sensory deprivation experiments in which the lack of stimulus generates high levels of mental anxiety and frustration, Arnheim cites both the relentless unconscious tendency to scan the physical environment and the mental/emotional discomfort of sensory deprivation to forward his theory of perception as cognition, or "visual thinking" (p. 13). The constant flit-focus-attend activity operates as an unconscious monitor reading, learning, and maintaining relational harmony with

our immediate environment. Cognitive scientist Ralph Ellis (1999) reinforces Arnheim's assertions, pointing out that:

> …the eyes continually dance, with thousands of micromovements per second, and that without this active, self-generated movement, the eye could not see. These movements of the eye are not caused by the perceptual object, but by the organism's own self-directed activity in the interest of questioning, scanning, and testing the environment for clues that can put together into a coherent interpretation of what is there. (p. 164)

Sensory perception, especially vision, is a continuous and purposeful act of selecting and focusing attention for gathering information in interaction with one's surroundings. "The organism must *act* on its environment in order to be conscious of it" (Ellis, 1999, p. 167). Emotions, including curiosity, select from perceptual cues images for conscious attention based on the interests, intentions, and dispositions of the individual (Damasio, 1994; Ellis, 1999; LeDoux, 1996).

Neurologist Semir Zeki (1999) connects retinal activity with brain activity. Examining the visual cortex of the brain with functional magnetic resonance imaging (fMRI), Zeki identifies specific brain activity in response to certain isolated visual stimuli and asserts the function of the visual brain is "a search for essentials and constants" (p. 88) about our physical environment. Special perceptual acuities for vertical line, movement, shape, and color that precede conscious awareness are possibly rooted in ancient survival instincts and support the position that perception is a cognitive process of continuously gleaning and responding in the physical world. Zeki further postulates that the intuitive recognition and empathy with certain visual elements –

especially in configurations familiar from previous socio-cultural and environmental experience - constitute the common foundation of human aesthetic sensibilities.

Somatics

Humans are more than just perceptive, thinking beings and our negotiation of the physical world employs a range of embodied cognitive sensibilities. Nerve endings on the surface of our skin transmit information to the brain as we lean into a cool breeze, bask in the warm sun, or splash in a pond. Our body naturally builds muscle, develops coordination, and improves stamina as we move and interact with our environment. Oxygen levels and blood flow to the brain are enhanced by exercise. Physical activity aids memorization and recall. Health, rest, exercise, and diet can influence brain function and, consequently, one's ability to think and learn. Posture and movement express ideas, self-perceptions, and emotions. These are obvious learning conditions, as is the fact that the negotiation of our world is predicated as well upon our physical health and conditioning. Shusterman (2004) extends somatic awareness to a level of practical discipline, which he calls "somaesthetics" (p. 51). His aesthetics philosophy promotes heightened bodily awareness and control for improving health, moods, and attitudes while delimiting negative habits and behaviors.

However, there are other less conspicuous – and perhaps more significant -considerations of how somatic experience informs our thoughts and perspectives. Johnson (2006), in addition to perception, attributes object manipulation, body movement, and emotional response to the formation of our basic patterns of thought and language. "Body and mind are just different aspects of an ongoing interactional process of experience" (p. 51), which implicates reason, creativity, understanding, and memory as physical processes in the brain as well. Johnson references William James, who explains rational thought as the ordering of prior physical

experience. Logic is not pure reason, but the result of "reoccurring patterns of embodied inquiry… felt relations within bodily experience" (p. 52). Somatic experience supports physiological brain function, supplies data for meaning making, and mediates the physical world as both cognitive inquiry and expression. Both visceral and physical sensations that initiate automatic, gut-level decisions not only react to danger cues, but assist in expediting normal decision-making efforts as well, operating both consciously and unconsciously. Damasio (1994) refers to this intuitive option-elimination response as a "somatic marker" (p. 173) that is based on previous experience.

The Brain

Somatic experience is a "collection of changes in body state" (Damasio, 1994, p. 139) - an emotional response outward – that depends on the neural mechanisms of the brain to initiate appropriate action.

Neural Maps. All personal, subjective experience simultaneously activates neurons in multiple areas of the brain from the limbic system to the frontal lobes as well as the sensory-motor regions of the cerebral cortex, creating synaptic associations called neural mapping. Strong signals – or emotional tags – from the limbic system as well as frequency of firing strengthens a particular mapping, and Mylene sheaths appear around the axons to improve the firing efficiency in anticipated subsequent episodes (Damasio, 1994). We perceive a new event in relation to the existing neural structures; neural maps or patterns of body schemas and sensory-motor information provide conceptual understanding of experience. Lakoff and Johnson (1999), applying Hebb's (1949) oft-quoted hypothesis, "cells that fire together wire together" (p. 70), refer to these associations as primary metaphors that are unconsciously formed by simultaneous neural firing in different parts of the brain.

On the most basic level, then, embodied thought can be defined as neural firings across sensory-motor structures that connect brain processes to perceptions and sensations of physical experience. There are no special faculties in the brain for higher-level thinking. It is within those same sensory-motor structures that abstract thought occurs, drawing upon prior neural maps of physical experience as templates or metaphors for the realization of conceptual meaning and understanding (Tucker, 2007). Embodied thought generates non-linguistic understanding through the application of metaphor.

Memory and mental models. Bransford, Brown, and Cocking (2000) stated that *"*[m]emory is neither a single entity nor a phenomenon that occurs in a single area of the brain" (p. 124). Memory is the means by which we create a cohesive narrative of the disparate events in our lives to explain who we are. Memory is not necessarily accurate, or true in an empirical sense, but memory becomes an entity from which we make decisions. We act out of our beliefs, out of what we remember – even though the remembered "facts" may not be true.

Modell (2003) identifies five areas of memory that occur in different parts of the brain. Automatic memory controls involuntary body functions, regulating and coordinating heart contractions, lung expansion, blinking, swallowing, and other involuntary efforts. Often referred to as muscle memory, procedural memory operates in the most ancient region of the brain, involving the cerebellum, hippocampus, neostriatum, and basil ganglia. Unconscious physical movement and muscle coordination required to ride a bike, shoot a lay-up, or play a piano are committed through practice from a conscious deliberate act to procedural memory. Semantic memory refers to the storage and recall of trivia or language-based facts learned outside of experience.

Episodic memory is autobiographic and records experience not as a concrete, static representation of reality but as a contextual event based on prior knowledge. In fact, prior knowledge is the single greatest determinate of how and what we learn. "Every past experience in life is implicit in the occurrent state" (Brown, 1999, p. 146). Brain functions are based on structures created by previous experience. What we already know and believe colors our perception of what is important for commitment to memory. Memory selectively recalls and engenders purposed response based on recognition of similar previous experience. Thus, memory predisposes our attention, understanding, and response to an event, and is advantageous and efficient when emergency or danger situations require a quick response.

As an experience triggers prior knowledge of similar events, the situation is interpreted by the additional interplay of personal intentions, socio-cultural constructs, and physical context (Bransford et. al, 2000; Efland, 2002; Epstein, 2004). *Episodic memory* is a continuous, active learning process of storing, recalling, and reordering events encased and negotiated by emotional referents (Immordino-Yang & Damasio, 2007). Also of interest to note is that false memories and imaginings activate memory and emotion in the brain the same as true events (Bransford et. al, 2000).

Imagination. Egan (1992) cites Samuel Coleridge's *Biographia Literaria* in describing two types of imagination that perpetually work in concert to make sense of past, present, and future experience. Primary imagination operates as an unconscious cognitive mechanism for interacting with the world. Secondary imagination exercises conscious thought toward problem-solving according to purposes of human agency and manifests in high order creative acts of innovation or idea contributing to the overall quality of life. Don Tucker (2007), a neuroscientist studying neural structures and processes that we call the mind, described consciousness as "thin

ice on deep waters" (p. 146) and suggested that the divergent thought processes we think of as imagination operate continuously and primarily below conscious awareness. In explaining the neurological foundation of imagination, Tucker stated that the structure of neural connections in each of the frontal lobes determines the process of accessing information. The left hemisphere, known to structure thought concretely and analytically, contains tightly looped and systematically connected neurons. The right hemisphere, where the circuits are diffuse and diversely connected, provides holistic thought that searches more broadly for similar neural maps or patterns of thought. Lateral shifting between the two modes of thought is generally spontaneous and unconscious, but can be deliberately applied when there is an urgent or conscious need to solve a problem.

Imagination is the mechanism by which we initiate metaphor and recognize metonymy in consideration of possible alternative strategies by recalling and applying prior knowledge, skills, and experience in negotiating, learning, and adapting to new objects, events, or information. Imagination also serves to create meaning of existence within environment. "[T]he function of the imagination is such that it never merely copies the world or translates perceptions; it is a constantly active and creative faculty that shapes the world we perceive and that uses our hopes, fears, and other emotions in that shaping" (Egan, 1992, p. 24). The imagination, based on self-preserving instincts and self-promoting intentions of the individual, reconfigures memory to produce a unified life narrative, filling in gaps of understanding with reasonable explanations, incorporating acquired knowledge as experience, altering perceptions of the past to align with present circumstances, imagining future potentials, and constructing new possibilities (Egan, 1992; Murray, 1986; Schacter, 1999).

Emotion. Behaviorists examine the relationship of stimulus and response; what happens in between is parenthetically restricted from study. Cognitive scientists focus on what happens in the mind *between* stimulus and response. As cognitive science gained scholarly foothold in the 1950s, advocates clearly and repeatedly defined the field of study as *not* including emotion. Conceiving the brain as an information processor disallowed consideration of "illogical" emotive systems. Recent neurological inquiries, however, advance new understanding and renewed interest in emotion's role in cognition:

> Pattern recognition in the brain precedes logic, and early thought is creative in its pattern making through processes akin to metaphor. These processes are not free of feeling. Indeed, the constraints of value systems essential to the evolution of adaptive behavior make emotional experience a necessary accompaniment to the acquisition of knowledge even after logic and formal analysis supervene at later stages. (Edelman, 2006, p. 65)

Emotion is not a location-specific function in the brain. From base survival responses of fear, sexual arousal, and feeding, numerous emotional systems evolved with the brain, and encompass social and higher order thinking processes as well (LeDoux, 1996). Immordino-Yang and Damasio (2007) stated that:

> …emotions comprise cognitive as well as sensory processes. Furthermore, the aspects of cognition that are recruited most heavily in education, including learning, attention, memory, decision-making, motivation, and social functioning, are both profoundly affected by emotion and in fact subsumed within the processes of emotion. (p. 7)

Traumatic brain injured patients with damage to the prefrontal cortex fail to understand cause and effect, the emotions of others, or social conventions; they fail to express sympathy or embarrassment, or apply prior knowledge to new situations (Immordino-Yang & Damasio, 2007). Socio-cultural influences on learning and behavior as well as the ability to transfer knowledge and skills to new situations require an emotional connection.

Immordino-Yang and Damasio (2007) defined emotional thought as "the means by which bodily sensations come into our conscious awareness; the platform for learning, memory, decision-making, and creativity, both in social and non-social contexts" (p. 8). Additionally, the "brain does not usually function independently of the body" (LeDoux, 1996, p. 40; see also Damasio, 1994). The brain houses numerous pathways from sensory input to consciousness and memory, but provides few direct links from cognition to a physical response of the body except through emotion (Edelman & Tononi, 2000; LeDoux, 1996).

All memory has an emotional connection. The Limbic System is a filter for what is meaningful and relevant, and as sensory experience, thoughts, and imaginings pass through the Limbic System on their way to respective memory storage, emotional tags are applied for identification and recall. Thus, all learning involves emotion (Damasio, 1994; LeDoux, 1996).

Emotion provides the motivation for both memory and action. Human beings have an evolved system of subconscious mechanisms that assess and protect the internal well being and external safety of the organism. Metabolism, reflexes, the immune system, pain and pleasure, and basic drives and inhibitions serve to maintain health and safety toward homeostasis and preparedness for future events. Emotion is also an automatic, subconscious, response to conditions that require our attention, initiating chemical and neural action in regard for personal welfare (Damasio, 2003). Damasio stated "emotions provide a natural means for the brain and

mind to evaluate the environment within and around the organism, and respond accordingly and adaptively" (p. 54). Johnson (2007) suggests Damasio's description implies a cognitive function in that emotion is the initial and central process by which we read a given situation, ascribe meaning, and respond to it even before we are consciously aware. Without language or deliberation, we are able to "grasp the felt meaning of our current situation as it is unfolding, moment to moment" (p. 61) and to respond appropriately. Feelings – the conscious experience of emotions – further brings to our attention reflective dimensions of possible action. Not only does emotion precede abstract thinking, reasoning, and language, "[e]motion and feeling lie at the heart of our capacity to experience meaning" (Johnson, 2007, p. 53).

Socio-cultural Cognition

Johnson (2007) illuminates two strands of socio-cultural cognition: "[w]e must recognize that cognition does not take place only within the brain and body of a single individual but is instead partly constituted by social interactions, social relations, and cultural artifacts and practices" (p. 147). When an infant is born into the world, it is already educated to the movements, sounds, and dispositions of others (Gallagher, 2005). Intersubjective experience through facial expression, gesture, and touch constructs the initial sense of identity and origin of meaning (Johnson, 2007).

Learning, as a life-negotiating process, is socially mediated and culturally specific (Dewey, 1910; Lave & Wenger, 1991/2007; Vygotsky, 1978). Social interactions imbue structure and meaning to all of what we know and understand of the world around us. Understanding of a socially mediated learning experience is ensconced in the already assimilated attitudes, opinions, and values of the "expert" and are consequently and inherently communicated to the learner. Vygotsky (1978) described the context of play as a purposeful

activity for a child's formation of abstract thought and moral judgment. Accentuating the role of language and social interaction in learning, Vygotsky forwards that prior to the internalization of a concept, the idea is negotiated in interpersonal exchange and argues that the gap between inchoate proficiencies and potential mastery may be bridged through the assistance of more accomplished peers.

Dewey (1910) explains the importance of social mediation in schooling, citing the perpetual influence of the teacher on a child's attitude toward a particular subject and learning in general. *"Everything the teacher does, as well as the manner in which he does it, incites the child to respond in some way or other, and each response tends to set the child's attitude in some way or other.* Even the inattention of the child to the adult is often a mode of response which is the result of unconscious training" (p. 47).

Tomasello (1999) emphasizes the importance of context and points out that social cognition, whether imitative, instructive, or collaborative in nature, emanates from social practice within the existing context of cultural artifacts, institutions, and conventions (Tomasello, 1999). Thus, the "situated" relevance of the content effectuates an unconscious acquisition of understandings as well as the maintenance of social continuity in informal settings of the home, workplace, and community (Lave & Wenger, 1991/2007).

Technology as Extension of Embodied Cognition

Thinking is a physical process that extends beyond the brain, involving sensory and motor networks interacting with our world. From the time humans picked up a stick to increase torque in digging or a rock to apply force as weapon or hammer, external implements have supported and broadened thinking and acting potential. Tools and materials of our environment extend human thought and understanding, assisting cognitive as well as physical capabilities

(Johnson, 2007). Clark (2008) conceptualized embodied cognition as an interactive process with the environment and defined technological extensions and tools as "cognitive artifacts" (p. 41).

Technology affords a quality of thinking that is unattainable without it. Marshall McLuhan (1964), the first to describe technologies as extensions of the body, expressed concern that certain technological affordances (primarily advertising in print media and television) might have negative trade-offs, potentially diminishing other personal, social, and cultural capital. Meant to forewarn that unbridled technologies could detrimentally change thinking and acting in the world, his now-famous dictum, "The message is in the medium" (p. 7), became the herald of technological innovation. Elliot Eisner (2002) states that thinking occurs within a medium and that materials and technologies become media when they "mediate the aims and choices the individual makes" (p. 80). Eisner further explains that "[t]he characteristics of the materials call up different conceptions and skills that function within the limitations and possibilities of the material, and it is within the limits and possibilities of the material that cognition proceeds" (p. 80).

Art Making as Embodied Cognition

In one sense, art products are cultural artifacts that convey knowledge, understandings, values, and beliefs (Johnson, 2007). On another level, the highly differentiated and culturally defined creative disciplines we call the arts are embodied processes of cognition metaphorically constructed over time from biological origins that served to distinguish an understanding of self in relation to other, construct meaning, and elicit multiple possible solutions for future action. The arts are inherently acts of qualitative inquiry to both reinforce and advance a certain quality of life (Sullivan, 2005). Archaeological and anthropological research evince human efforts to understand, order, interpret, and restate experience through art, dance, drama, poetry, and music

(Eisner, 1998; Solso, 2006). From his research on the visual cortex, neurologist Semir Zeki (1999) posits visual elements manipulated by the artist are sensibilities derived from survival cues and constitute a biological foundation for aesthetics, explaining that "[t]he function of art is an extension of the major function of the visual brain – a search for constancies with the aim of obtaining knowledge about the world" (p. 79). Psychologist Robert Solso (2006) asserts that the arts mirror the human mind, how it works, how man thinks. Art making is an embodied cognitive act that naturally employs "all of our ordinary resources for meaning-making" (Johnson, 2007, p. xiii) to engage with the tools and materials of the immediate environment to create understanding, construct meaning, and generate possibilities for one's self in relation to one's physical and social world.

<div align="center">Habits of Mind</div>

In contemporary literature on cognition and thinking skills in education, "habits of mind" appears as an all-encompassing phrase that subsumes all conditions that affect the cognitive process and implies automatic or prevailing subconscious patterns of emotion, attitude, thought process, and action in response to a challenge (Costa, 2000). The term has been invoked to reference a general mind set (Gardner, 2007; Pink, 2006), personality or temperament (Csikszenmihalyi, 1996; Root-Bernstein & Root-Bernstein, 1999), and attitudes, motivations, and dispositions (Costa, 2001; Csikszenmihalyi, 1996; Efland, 2002; Eisner, 2002; Gardner, 2007; Hetland, Winner, Veneema & Sheridan, 2007; Root-Bernstein & Root-Bernstein, 1999), along with thinking processes, skills, and strategies (Costa, 2001; Marzano, Brandt, Hughes, Jones, Presseisen, Rankin, & Suhor, 1988). To further complicate an understanding of "habits of mind," recent research in philosophy, cognitive science, and neuro-science expand definitions of thinking and learning to incorporate sensory-motor processes (Gallagher, 2005; Johnson, 2007),

tools (Eisner, 2002), technologies (Clark, 2008), and social interactions (Tomasello, 1999) as extensions of the biological brain and forms of human cognition. Neurologist Semir Zeki (1999; 2009), psychologist Robert Solso (2003), and philosopher Mark Johnson (2007) also advance the arts as biologically rooted cognitive processes and a reflection of brain function. For the purposes of this study, *habits of mind* is used as a collective term to indicate the personality traits, attitudes, and dispositions that focus attention and motivate thinking processes.

Cognitive Research in Art Education

Sputnik-inspired school reform of the 1960s disaggregated content into disciplines (Bruner, 1961; Eisner, 1994). Art educators, pressed to restructure educational norms for professional viability, parsed art experiences into definable categories, which evolved into Discipline-Based Art Education in the 1980s. In response to the 1983 *Nation at Risk* and its sequel, the 1991 America 2000 report, *Goals 2000* emphasized the role of math and science in education, national standards, and academic accountability. Eisner (1991/1994) rebutted, revisiting the nature of cognition and the kind of curriculum that would more appropriately educate America's youth. However, much of the succeeding research in art education scrambled to justify art education in terms of its role as a vehicle for learning in other subject areas or as an integrative classroom strategy. This review of literature examines subsequent research in art education that focuses on the cognitive qualities of art making.

In 1999, sponsored by Harvard's Project Zero, Lois Hetland and Ellen Winner initiated REAP (Reviewing Education and the Arts Project), a meta-analysis of 188 published and unpublished quantitative research studies in the arts since 1950 concerning the impact of arts activities on learning in non-arts domains. More than a literature review, a meta-analysis compiles and re-analyzes data from like studies to obtain a broader picture and clearer results

than possible in a summary of individual studies. The comprehensive analysis confirmed findings of only a few studies, while contradicting others and rendering still others inconclusive due to poor design, weak analysis, or unclear reporting. While causal relationships were identified between drama and reading, music listening and spatial reasoning, and music instruction and spatial reasoning, no other studies indicate a causal relationship. This literature review is purposed to ascertain viable research in the visual arts, therefore, significant studies involving dance, drama, and music are not discussed.

Included in the Hetland and Winner (2004) meta-analysis are research studies initiated under *Champions of Change: The Impact of the Arts on Learning* (2000) project commissioned in 1995 by the President's Commission on the Arts and Humanities and the Goals 2000 Arts Education Partnership. The multi-faceted study of learning in the arts examined "why and how young people were changed through their arts experiences" and what is the "overall understanding of how the arts can impact learning" (Fiske, 2000, p. iv). In the visual arts, three studies confirmed correlational, though not causal effects of learning in the arts on non-arts activities. The Catterall, Chapleau, and Iwanaga (2000) comparison of academic test scores of middle and high school students highly involved in the arts versus students with minimal arts involvement demonstrated a correlation between high arts involvement and high test scores. High achieving students also watched less television and were less likely to drop out of school. Shirley Brice Heath's (2000) study of the effects of an after school arts program for at-risk students revealed a positive correlation with higher school attendance, the likelihood of reading, and winning academic awards.

Hetland and Winner (2004) also included the College Board data from 1987-1997 that indicates students who took four years of high school arts classes averaged higher SAT test

scores than students who took no high school arts classes. The absence of a control group or other means of isolating the mechanism by which the significant change occurred in each of these studies leaves to speculation a range of possibilities for accounting causal effect. While substantial statistical evidence demonstrates a high correlation, further research is required to establish the exact cause of the relationship.

Addressing methodological concerns, Hetland and Winner (2004) cite numerous weak studies due to poor planning and lack of rigor in design, conduct, analysis, and reporting. Recommendations appeal for appropriate choice of methods, clear description, use of longitudinal designs, and assessment that allows for conclusive results.

Longitudinal Studies

Eisner (2002) suggested three ways to best determine what someone has learned through art. The first is to interview them – to have them talk about their experience. In all likelihood, the student or participant will share things meaningful to them that were not anticipated by the inquirer. A second optimal form of assessment is to examine the artwork for the kinds of thinking and learning that the image might reveal. Third, Eisner recommended comparing the collective group of artwork over time, looking for changes and improvement. In my research, I am applying Eisner's methodology to an isolated set of 98 photographs taken over a three-year period. It may be informative to look at the set of photographs in a longitudinal context. Several longitudinal studies are examined in the literature review in consideration of the effectiveness of the design elements and the nature of the respective results.

In 1997, Cincinnati, Ohio's Association for the Advancement of Arts Education implemented an arts integration program called *Arts Connection* in the district's 196 schools. The Evaluation Services Center of the College of Education at the University of Cincinnati

initiated a five-year longitudinal study in 2000 in six of the schools to determine if the Arts Connection program was "making a difference in students' higher order thinking and learning to learn skills" (p. 1). The longitudinal design consisted of annual case studies of each of the six schools. However, the study was suspended at the end of year three. The lack of teacher training as research participants, student mobility, and the variance of students with one, two, and three years of program participation complicated assessment. While the results are inconclusive, teacher perceptions indicate students demonstrated higher level thinking and learning to learn skills, growth in creativity, willingness to take risks, higher motivation to turn in their best work, and an increased interest in the arts. According to teacher testimonials, side effects of the program occurred in teacher motivation and collaboration and in a more synergistic school culture.

In contrast, two additional, and very different, longitudinal studies are explored. The first contains no direct relationship to the arts and learning, but represents an exemplar of successful quantitative research that has subsequently effected policy and curriculum decisions in education. The *National Educational Longitudinal Study* of 1988, conducted by the U. S. Department of Education's National Center for Education Statistics, gathered baseline data from nearly 30,000 eighth graders representing 1200 schools plus principals, teachers, and parents. Follow-up studies every two years (1990, 1992, and 1994) addressed factors that influence academic growth, school experiences of disadvantaged and minority students, the characteristics of effective schools, and trends of transition from high school to post-secondary education or the job market. A sequel, *The National Educational Longitudinal Study* of 2002, also for the U. S. Department of Education's National Center for Education Statistics, sought to further previous research considerations, beginning with high school sophomores and following their progress

through high school and beyond. Follow-up studies occurred in 2004 and 2006, with a third follow-up in 2012. Prior concerns and findings of math and science achievement, minority education, and qualities of schooling are updated, but the most significant aspect of the 2002 study is the examination of how high school experiences prepare students for adult life. In 2012, the study will compare adult choices of education, jobs, and family life with perceptions, aspirations, experiences, and successes from high school. The results are expected to effectively identify general trends and the general impact of high school experiences on those trends. Not mentioned in the research is the possibility of the data to reveal the metacognitive habits of mind that inform decision-making over time.

The second form of longitudinal study is qualitative and specific, examining a small group of students of one teacher over a 15-year period. *Touching eternity: The enduring outcomes of teaching* (Barone, 2001), utilized narrative inquiry to conduct a longitudinal case study of teacher-student influences and their impact over time. Opening with an essay written in 1982, "Things of Use, Things of Beauty: The Swain County High School Art Program," Barone introduced his original positivist narrative: a warm, affirming tribute to the teacher-hero, Don Forrister. Re-interviewing Forrister and his students fifteen years later, Barone critically re-analyzes their stories and their perceptions. The case study is neither about Forrister nor his students, but the perceived influences that play out in their respective lives over time. Barone (2001) admitted mixed and inconclusive evidence of a pervasive and enduring impact of the teacher's charisma, and opined that the teacher's personality and pedagogy were mismatched against the "hegemony of a utilitarian culture" (p. 126). The study simultaneously gave voice to individual student experiences, examined the quality and degree of impact of particular student-teacher relationships, and questioned the nature of schooling.

In examining the qualities of learning evidenced in photographs produced over a three year period by one of my former students, I have similarly sought to defer authorial voice to her work. Findings in my research, like Barone's, indicate that many other conditions outside school principally impact education, and imply that classroom goals and strategies may often be incongruous with how and what students are primarily learning through their assignments.

The question of transfer. Transfer of knowledge has been a major tenant of our educational system. As teachers, we believe we are teaching in a manner so that students will learn, and what they learn will be used to successfully negotiate their lives in the future. The transfer of knowledge figures heavily into our philosophy and curricular planning. We believe transfer happens and hope that someone will convincingly prove it in their research.

However, numerous studies of knowledge transfer fail to produce strong evidence of success (Detterman & Sternberg, 1993). Repeated texts have subsequently stated transfer doesn't occur across disciplines unless it is explicitly taught (Bransford & Schwartz, 1999; Catterall, 1998; Eisner, 1998; 2002; Hetland & Winner, 2004; Winner & Cooper, 2000). Bransford and Schwartz (1999), however, suggested that the traditional definition of transfer, "the degree to which a behavior will be repeated in a new situation" (Detterman, 1993, p.4), is ill-fit in that it focuses on the integrity and the self-importance of the original content sought in a later learning context. A clearer picture of transfer may be found in examining how the learned information is adapted and implemented in different situations. Bransford and Schwartz (1999) surmised that perhaps the definition – and the data we're looking for – has been wrong. Broudy (1977) describes three types of knowing: (a) "replicative knowing" or "knowing that" – the ability to remember facts, (b) "applicable knowing" or "knowing how" – the ability to apply knowledge to solve new problems, and (c) preparation for future learning – "knowing with" previous

information that may or may not be explicitly remembered. We already know that people rarely remember facts from high school (Broudy, 1977) and that research has been less than successful thus far in demonstrating transfer to solve new problems (Detterman & Sternberg, 1993). A better question might ask: How does learning in one instance facilitate learning in the future? Rather than anticipate the resurfacing of old content in a new context, consideration of how prior learning prepares students to negotiate new situations may be a more appropriate and beneficial role of transfer.

Bransford and Schwartz (1999) enumerate several conditions that promote transfer: problem-solving activities, the introduction of multiple perspectives, personal agency, willingness and opportunity to consider other perspectives, critical examination of personal knowledge and understanding, awareness of tacit influences through reflective practice, and participation in the arts.

Transfer in the arts. The *Critical Links Compendium*, commissioned by the Arts Education Partnership in 1997, constitutes brief summary and commentary on 62 significant research studies selected from the REAP meta-analysis which examined the relationships of learning in the arts to student social and academic skills. The collective battery serves to advance learning in the arts as academic, basic, and comprehensive for use in advocacy, policy-making, and curricular decisions as well as for foundations of future research.

Only four studies are specifically listed under Visual Arts. Burger and Winner (2000) summarize two meta-analysis studies on the impact of art on reading that conclude marginal effect only in the area of reading readiness; DeJarette's (1997) doctoral dissertation confirms the potential of visual arts to assess learning in language minority students; Wilhelm (1995) establishes a correlation of using art activities to motivate reluctant readers; and Tishman,

MacGillivray, and Palmer (1999) demonstrate transfer of reasoning skills in 9-10 year olds in science after critically examining a famous painting using Visual Thinking Strategies.

Significant studies from *Champions of Change* are summed in the *Critical Links Compendium,* as well: Heath (2000), Catterall, Chapleau, and Iwanaga (2000), and Burton, Horowitz, and Adeles (2000) and are described below. Short's (1998) study of studio curriculum indicates that students require explicit training in writing and talking about works of art. Implicit meanings conveyed through studio experience alone fail to enhance understanding and appreciation of historical artwork.

Catterall (2002), in the overview essay of the *Compendium*, remarked that the nature and degree of transfer remained ill-defined in the *Compendium's* studies, and encouraged further study that re-characterizes the transfer process according to Bransford and Schwartz (1999) as mediating interactions or relationships that reveal new states of learning or new understandings.

Burton, Horowitz, and Abeles (2000) *Learning In and Through the Arts: The Question of Transfer*, is another significant study included in both the REAP meta-analysis and the *Critical Links Compendium* of exemplary research on the arts and learning. The study references Bransford and Schwartz (1999) to establish a definition of transfer that comprises dispositions or ways of thinking that occur across disciplines.

Critical of advocacy studies in which researchers seek to prove a causal, uni-directional transfer of art learning on other subjects, Burton et al. (2000) posited that perceptions of transfer are merely recognitions of the presence of inherent habits of mind operating to varying degrees in all disciplines. The purpose of the study was to determine if certain dispositions or ways of thinking would hierarchically align themselves in art making practice and how these might

emerge in other subjects, anticipating a dialogical relationship between learning in different domains.

In previous studies, failure to identify the mechanisms by which transfer occurs has allowed for the possibility of a multitude of mitigating factors to render causality. Consequently, Burton et al. (2000) "cast a broad net" of quantitative and qualitative methods to account for the multiple and complex variables in learning. Taxonomies of learning characteristics were developed according to socio-cultural, cognitive, and personal contexts. Commensurate characteristics of teaching were identified according to school climate, classroom structure, and the nature of the students' art experiences in school and out-of-school. Sampling consisted of over 2000 elementary and middle school students from 12 schools. In addition to field observations, numerous questionnaires and inventories examined teacher beliefs and teaching habits, student creativity, student self-perception, and school climate. Additional interviews were conducted at five of the schools (Burton et al., 2000).

Invoking Bruner's (1961) metaphor of cognitive constellations, findings demonstrate a "dynamic and interactive" (Burton et al., 2000, p. 235) range of cognitive abilities between art and other disciplines that are effectuated by variables of school climate and personnel, but no clear evidence of transfer. Burton, et al. acknowledged that the "selected instrumentation did not provide a deep, nuanced representation" of "compelling" (p. 235) effects of arts learning described by the teachers. Testimonies of increased self-expression, self-esteem, heightened focus, pride, expression of ideas, and self-confidence evidenced rich qualities of learning undetected by the research instruments.

The comprehensive nature of the research design is impressive. Given the elaborate battery of quantitative and qualitative tools collecting data in four phases from over 2000

student, teacher, administrator, and parent participants at 12 schools in four states, one would expect overwhelming results. However, the brief description of almost obvious findings disappointed. "Casting a broad net," administrative complexities, quantitative expectations, or maybe just over-confidence in the instruments seems to have disallowed more compelling results. So much more could have surfaced just by mining the deep, rich data from the teacher testimonies.

In 2000, the Dana Foundation, which traditionally funds philanthropic endeavors in neuroscience, immunology, and education, allocated funds for the "increased and improved teaching of the performing arts" (p. v). In response to the "weakness and spuriousness" (p. v) of previous research in arts and learning, the Dana Foundation recognized strong correlations which are often the beginnings of research in neuroscience. Consequently, the Dana Foundation formed the Dana Arts and Cognition Consortium in 2004 to study the "possible causal relationships between arts training and the ability of the brain to learn in other cognitive domains" (p. v). Most of the studies focused on music and dance. While none directly investigated learning in the visual arts, a particular study of interest to my research, *How arts training influences cognition* (Posner, Rothbart, Sheese, & Kieras, 2008), identified a neural network system of attention as a possible mechanism for learning in the arts that might transfer as improved cognition in other domains.

Erickson (2004) reviewed *Art Education, Studies in Art Education, Visual Arts Research*, and *The Journal of Multicultural and Cross-cultural Research in Art Education* from 1985 to 2001 for theory, significant research, and curricular influents in art education. For the purposes of this literature review, only research pertinent to art and learning is cited. Burton, Horowitz,

and Adeles (2000), Catterall, Chapleau, and Iwanaga (2000), Short (1998), and Winner and

Cooper (2000) – all previously mentioned – are referenced.

Hetland et.al. (2004) lamented that in spite of the numerous studies exploring the impact

of arts experiences on other disciplines and domains, there remains a paucity of research on

learning *in* the arts. Rather than propose what the arts teach, we must ask, what are students

learning in the arts? What transfers from art experiences to subsequent learning experiences?

What transfers beyond formal education that informs life-long learning?

In spite of the multitude of research articles advocating the transfer of learning facilitated

by art education from 1985 to 2001 (Erickson, 2004; Hetland, et al., 2004), very little has been

written since. Hope (2001) clarified and defended the REAP findings. Siedel (2001) and

Freedman (2004; 2005) explicated the need for more professional research in the art education

community. Erickson (2005) described a collective effort by a group of art education

practitioners to develop design-based research through a practice to theory to practice process

that continually refines practice within the evolving challenges of their respective classrooms

(Shavelson, Phillips, Towne, & Feurer, 2003). The article reported progress in terms of possible

transfer of knowledge between domains facilitated by the use of Internet technologies.

Testimonials from teachers and students indicated that the meaningfulness of learning activities

prompted students "to make an effort to use what they learn" (p. 180). I found no other new

research on transfer of learning through the arts published in *Art Education*, *Studies in Art

Education*, and *Arts Education Policy Review* from 2001 to 2010. Three possible reasons come

to mind. First, *Champions of Change*, REAP, and the commensurate *Compendium* publication

comprehensively summarized recent findings and expressed professional consternation at the

amount of inconsequential results. Learning in the arts is no longer virgin research landscape,

and a group of neuroscientists under the Dana Consortium on Arts and Cognition have taken up the task. Secondly, professional focus is shifting. A growing confluence of competing curricular elements redirects academic attention to the content and purpose of art education. Issues of gender, race, multiculturalism, technologies, and visual culture vie for curricular import and dominate the research, articles, and books from 2001 to 2010. Thirdly, an increasing postmodern perspective considers much of the former concerns obsolete.

Resisting instrumental trends, two books by leading scholars in art education sought to reposition art as a cognitive enterprise at the academic core of education. In *The Arts and the Creation of Mind,* Eisner (2002) presented participation in the arts as cognitive acts of qualitative reasoning, demonstrating how the arts serve both the intellectual and creative needs of the individual and as a model for education. In *Art and Cognition*, Efland (2002) expressed three primary concerns regarding the arts in general education. First, the arts are usually only appreciated for their entertainment value, and relegated to elective status in requirements for graduation. Second, the arts, while listed as academic, are rarely recognized for their role in cognitive development. Third, educators – even art educators – that purport the cognitive nature of the arts do not understand how to maximize its effectiveness. Thus, his stated mission in the book was to liberate the arts from prior biases, advocate arts studies for the development of higher order thinking, and ground the arts as key contributors to adolescent intellectual development.

Studio thinking. Several educators who had tremendous vested interest in research on learning in the arts revitalized their efforts. *Studio Thinking* (Hetland, Winner, Veenema, & Sheridan, 2007) examined the teaching practices of five outstanding art teachers in two schools in a qualitative study to identify student thinking processes in the art classroom. Based on their

previous findings and recommendations (Winner & Hetland, 2000), Hetland et al. (2007) presented their hermeneutically derived eight Studio Habits of Mind as the "real, if not sometimes hidden, curriculum" (p. 12) of the arts. The dispositions of "developing craft, engaging and persisting, envisioning, expressing, observing, reflecting, stretching and exploring, and understanding" (p. 6) are similar to Eisner's (2002) effort to make explicit the intrinsic dispositions of arts practice in his chapter on "what the arts teach" (p. 70). Catterall, Chapleau, and Iwanaga (2000) and Bransford and Schwartz (1999) redefined the nature of transfer, suggesting that dispositions of thinking or habits of mind are more likely than content to transfer from one learning experience to another. *Studio Thinking* attempted to build upon their research, refocusing questions around dispositions students learn in the art classroom based on what was observed being taught.

Two concerns warrant mentioning. Written for the practitioner, *Studio Thinking* presented a less than rigorous one page general discussion of the research process. The methodology was never clearly defined, although a phenomenological inquiry and coding toward a grounded theory was inferred. Interviews, videos, and observations with five teachers in two schools – even when they represent outstanding programs – hardly constitute substantive evidence for a grand theory of learning or a curricular framework. Findings more accurately represent dispositions employed by students during this specific study that may *possibly* transfer and benefit learning in other disciplines. Dispositions were defined as thinking skills and the awareness and motivation to use them from Perkins, Jay, and Tishman (1993). Nothing in this study proved to contradict Burton et al. (2000), concluding habits of mind naturally occur to varying degrees in all disciplines and the cross-disciplinary relationship is more interactive than unidirectional.

Secondly*, Studio Thinking* is ultimately about teaching, not about learning. Hetland et al. (2007) described what was observed being taught and what students were "meant to learn" (p. 1) and assumed that is what occurred. Although the purpose of the text is to elucidate what students learn in the arts that might be transferred to other learning environments, no data was collected, analyzed, or interpreted from student work; no evidences of learning were given. The text primarily described the teaching that occurred and why those strategies are important. Referring to the framework as a "set of lenses for thinking about teaching and learning" (p. 109) "guiding planning and teaching" (p. 110), the authors stop short of calling Studio Habits of Mind and Studio Structures a curricular framework, but the inference is there, and appears to be the real agenda of the research project.

Successive research is needed to examine the cognitive qualities of learning that occur in art making. Eisner (2002) states that students learn both more and less than what they are taught, and that "[i]t is an understanding of the student's experience that provides the most promising information for improving teaching and learning" (p. 190). What *is* learned, and not what *should* be implicitly learned in the arts, provides a much more persuasive argument – especially to those outside the field.

<center>*Implications for Current Research*</center>

Educational research on transfer to date has questioned the traditional definition of transfer, how learning in the arts might influence learning in other subjects, how learning in the arts outside of schooling might affect schooling (Heath, 2000), and how the ways of thinking that occur in art that might influence learning in other subjects (Catterall, Chapleau, & Iwanaga, 2000). Research has not fully considered the degree to which learning experiences might prepare students for future learning, how learners approach problematic situations, or the

possibility that learning in the arts may cultivate habits of mind and dispositions impacting future

problem-solving behavior. Catterall (2002) further suggested that transfer may not occur

immediately, but over time, and recommended that future research focus on the "long-term

impacts on thinking skills and problem-solving dispositions" (p. 167) as defined by Bransford

and Schwartz (1999).

As a result of their findings, Hetland and Winner (2004) recommended "a renewed focus

on teaching and learning *in* the arts" (p. 155). Further research on what the arts accomplish must

first identify what arts education achieves within its own domain of learning. What are the

"social, motivational, or dispositional effects" (p. 155) of art education? What other types of

transfer occur as a result of arts experience? What are the "bridges" between the arts and other

domains? What are the effects of explicitly teaching for transfer from the arts to other subjects?

The authors call for research that focuses on and emphasizes indigenous and unique

characteristics of the arts – "what the arts do well that other subjects cannot" (p. 155) – rather

than attempting to justify the arts in terms of instrumentality in other domains (Burton et al,

2000; Eisner, 1998; 2002; Winner & Cooper, 2000).

There is much that researchers sense as real and true and significant about the arts, but

they have difficulty accessing the data with traditional research methodologies (Erickson, 2005).

Catterall (2002) cautions that research may have "overlooked important evidence of transfer

from learning in the arts by searching at the wrong times and in the wrong places" (p. 168).

Hetland and Winner (2004) forwarded a reconsideration of methodology as well. To get the right

answers, maybe we need to change both the questions and the research tool. Baker (2002), in

summary of visual arts research in the *Compendium*, echoed a similar sentiment, "[r]esearchers

need to broaden their definitions of … legitimate and valid investigations or research to include

… more of the qualitative experience of the arts" (p. 149).

Winner and Cooper (2000), in dispelling the myths and understandings that researchers

and policy-makers claim about the impact of the arts on learning, were equally as compelling in

their assertion that the implications and correlations derived from the research, while not

empirically causal, certainly indicate there is more truth than we have found and more meaning

yet to be mined.

Harland, Kinder, Lord, Stott, Schagen, and Haynes (2000), *Arts Education in Secondary

Schools: Effects and effectiveness*, a case study of self-reporting students on what they perceive

as rewarding and valuable in art classes, offered insight. Even though art students in the case

study indicated no significant boost on academic performance, they stated that perceptions,

beliefs and ways of thinking developed during art making experiences continued to inform their

actions in life.

The collective research described here seems to have circumscribed a path around a pool

of untouched academia; a research landscape perhaps walked over but as yet unturned. Educators

have clearly articulated the general cognitive nature of the arts (Efland, 2002; Eisner, 2002),

identified various habits of mind and thinking that appear to be taught through art making

(Hetland et al., 2007), and adjusted their expectations to look for dispositions developed in the

arts that might transfer to other cognitive endeavors (Burton et al., 2000). However, all of this

research skates across the surface or skirts the parameters, peering over the side and conjecturing

what might be below. If meaning depends on associations of the felt qualities of experience

(Dewey, 1934), one must wade out, even dive down to observe the nuances of connections to

"other qualities, things, events, and experiences" (Johnson, 2007, p. 265) that lie beneath the

surface of experience. Art functions as both the process and product of cognitive inquiry, becoming the representational artifact for additional qualitative reflection and meaning-making (Eisner, 2002). By looking deeply into a specific body of artworks, assessing their respectively inscribed meanings, I hope to better define the qualities of cognition – the dispositions, intentions, and qualities of thinking engaged in their making. Cognition is a complex, integrated, and often opaque process, the character of which may not be easily apprehended by traditional research tools that attempt to isolate a particular modality. Perhaps those compelling effects of learning in the arts observed by teachers but undetected in research (Burton et al., 2000), will reveal themselves under the scrutiny of a different lens.

Chapter Three

METHOLOGICAL FRAMEWORK: INSTRUMENTAL CASE STUDY

There is much more to be understood in the rich and compelling data from Mimi's artwork before revisiting art making in the lives of other students that I taught. At this point, rather than conducting a broad study of many participants, I examined the Mimi data more closely still in an instrumental case study, reconnecting with Mimi to see if we could access whatever it is I sensed as yet unfolded in the pilot study analysis. Arts-based methods and data collected from other students in the pilot study provided corroborative information to Mimi's experience.

Case Study

The research design most conducive to this intent was a case study (Merriam, 1998). Case study is not a methodology, neither is it a research method. Rather, it has to do with the choice of subject to be studied. A case study is primarily defined by the pursuit of deep understanding of a particularity within a bounded context (Merriam, 1998; Miles & Huberman, 1994; Stake, 1994; 1995). Other general characteristics of case study that forwarded my purpose of inquiry include (a) the ability to isolate and get in close, often excluding data not directly connected to the subject being studied, (b) the ability to study subjects in context and over time, lending itself to longitudinal effects, (c) a design flexibility according to the intents and preferences of the researcher, allowing a wide range of data collection and analysis processes (Merriam, 1998).

My interests as a researcher were more of an instrumental nature. An instrumental case study approach served to understand the phenomena, relationships, and meanings within the bounded context of the case (Stake, 1995), which is, in this case, Mimi's art making. Thus, Mimi was not the focus of the study, and to a lesser degree, neither was her photography. Instead, several aspects of Mimi's story and art making caught my attention, and I wanted to examine more closely as a case of study the characteristics, connections, and significances resident within the body of work that might provide insight into the larger idea of art as cognition. First, I was intrigued with a transformation that I perceived in Mimi's personality after she began taking pictures. When Mimi first enrolled in my class, she was very quiet and meek, rarely looking up, much less asking
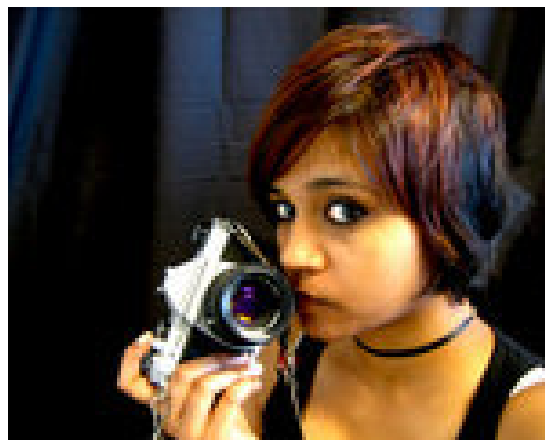
Figure 1. Self Portrait

questions or offering commentary. Three years later, she initiated our meeting and related strong opinions about her socialist political leanings, her identity as a photographer, and her ambition to work professionally. I cannot unequivocally attribute the personality change to her photographic experience - but the stories she shared about pursuing photography while flunking out of Emory University (Interview, December 18, 2007), the subjective and emotive qualities of her images, and her introductory self portrait on www.myspace.com/ytrovarkahc that gazes back at the viewer while gripping a camera close to her face and captioned, "my name is mimi and i'm a registered socialist. if i could be any animal i would pick megalodon shark. photography comes before anything or anyone else in my life." (Retrieved April 1, 2008, from www.myspace.com/ytrovarkahc) - all persuade me to think so.

Second, I was amazed at the proliferation and quality of photographs that are a result not of course requirements and opportunity, but of her concerted efforts beyond any outside expectations and contrary to parental and cultural expectations. Similar to her motivation to produce photographs was her ambition to exhibit them. With images posted on two sites, Mimi spoke of creating her own website to display her work (Interview, December 18, 2007). There are currently three different Internet sites Mimi has designed to exhibit her work: ytrovarkahcimim.deviantart.com/gallery/, www.myspace.com/ytrovarkahc, and http://www.chakravortyimages.com/. Her work also appears on other blogs, music sites, linkedin.com, Netblog, Flickr, and Facebook.

Third, I was gripped by the emotional potency of Mimi's photographs. Having taught photography for 25 years and familiar with the typical family, friend, and pet portraiture, the panoramic landscapes and sunsets, and the formal art-for-art-sake images commonly presented, I recognized a marked difference in the collective content of Mimi's work: none of those things were present. Last, and most related, I was alerted to an underlying angst or tension surfacing in myriad forms in Mimi's writings and photographs. Such emotive depth and creative energy belie significant cognates ruminating behind the lens, and warranted further study. What was she thinking and feeling? What was she looking for? How did her image choices reflect her understanding of her world? What was the motivation behind her art making? What were the intentions underlying her choices of subject matter, composition, and framing? What were the operating cognitive processes or habits of mind afforded by photography?

In my dissertation, research questions narrowed to focus on Mimi's art making activities and creative experiences.

What is the nature of art as embodied cognition as exemplified in the artwork of

this particular case?

What was Mimi learning beyond the given assignments or Mimi's overt

intentions?

How was Mimi learning through the habits of mind and qualities of thinking

evidenced in her photography?

Insights from these inquiries potentially inform broader questions into the nature of artistic

cognition - the thinking processes, habits of mind, and intentions forwarded in art making as

embodied cognition.

The nature and function of the imagination in learning and the cognitive nature of art

making that had preoccupied my reviews of the literature in the pilot study served as a lens

through which I perceived in Mimi's photography an underlying purpose and process to her

creative energies. Assuming the existence of multiple realities, and believing more appropriately

that "the meanings individuals give to their experiences ought to be the objects of study" (Hatch,

2002, p. 30), my research assumed a phenomenological stance, combing through the data to

understand the meanings Mimi ascribed to her photographic experiences and the intentionality of

her art making. Not that the meanings were the focus of my research, but that by understanding

the meanings, I might better apprehend the cognitive qualities of her artwork and how they

transpired through the intentionality of her photographic inquiry.

Hermeneutic Phenomenology

Phenomenology attempts to describe human experience as it is lived and to discover the

meanings people assign to those experiences (Demarrais & Lapan, 2004; Hatch, 2002; van

Manen, 1990). Rather than attempt an explanation or even a description of cause and effect, I

seek to engage Mimi's photography empathically for understanding human experience – specifically, to identify any underlying significances of Mimi's images and understand possible relationships, connections, and personal intentions in the prolific generation, content, and meaning of Mimi's photographs. How does Mimi use art making to interpret her experience? What is the nature or essence of her art making experience? What are the meanings Mimi gives to her lived experiences through art making?

Within the structure of an instrumental case study (Stake, 1995), I will employ a hermeneutic phenomenology methodology adapted from van Manen (1990). Patton (2002) expresses the concern that the term phenomenology has lost clarity of meaning as philosophers, sociologists, psychologists, and other qualitative researchers have modified Husserl's philosophy for a variety of purposes: a paradigm of inquiry (Guba & Lincoln, 1990), an interpretive theory (Denzin & Lincoln, 2000), a foundation for social science (Schutz, 1967; 1970), a qualitative research perspective (Creswell, 1998), and a methods framework for psychotherapy (Moustakas, 1994). Max van Manen (1990) clearly defines the characteristics and parameters of phenomenology as a pedagogic perspective and qualitative research methodology in the human sciences.

According to van Manen (1990), phenomenology is "the systematic attempt to uncover and describe the structures, the internal meaning structures, of lived experience" (p. 10). Phenomenology is less concerned with the subjective experience of the participant or the factual accuracy of the event than with the universal nature of human experience that may be plausibly grasped through the particular study (p. 62). Phenomenology seeks to understand the meanings we assign to events and the intentions of our actions in our everyday experience.

Von Wright (1971) stated "understanding is also connected with *intentionality* in a way that explanation is not. One understands the aims and purposes of an agent, the meaning of a sign or symbol, and the significance of a social institution or religious rite" (p. 6). Intentionality refers to something beyond the conscious act; we don't just love, we love someone or something; we don't just take a photograph, we take a photograph of something. Intentionality infers an object acted upon by the verb, an intention related to human action. Phenomenology is based on – and is the study of - the intentionality of human experience (Marton, 1988). However, the explanation of human action – presenting a clear cause and effect is not so easily accomplished; human nature, choice, and action are much too complex. While my aim was not to obtain with complete certainty what she thought, some understanding of the character, connections, and personal import of Mimi's photography might inform how she used her images to cognitively engage her world. The wealth of information already embedded in the existing data can potentially direct more precise considerations and better questions for subsequent research. Rather than returning to further study of other participants from the pilot study, I made a closer phenomenological inquiry into the intentionality of Mimi's photography as an instrumental case of study.

Methods

Van Manen (1990) views case study as primarily quantitative, dealing with empirical facts and describing "an existing state of affairs" (p. 22) and a less suitable structure for phenomenological questions of meaning. However, Stake (1995) forwards instrumental case study as a way to obtain the descriptions and interpretations of others regarding the complexities of their lived experiences. Preferring the direct interpretation by the researcher over categorical aggregation and coding, Stake emphasized that any aggregation of data stems not from

prescribed categories but from the identification of multiple emic issues, and is purposed to ascertain the essences of experience and apprehend the "emergence of meaning" (p. 76) between relational phenomena within the case.

Van Manen (1990) stated that there are no methods to phenomenological research. However, there are "methodological structures" not meant to "prescribe a mechanistic set of procedures, but to animate inventiveness and stimulate insight" (p. 30). Hermeneutic phenomenological research resides within the dynamic interaction of the following six attitudes or actions. First, the researcher deeply, thoughtfully pursues the understanding of a particular aspect of human experience. Second, the researcher immerses herself in the "living relations and shared situations" (p. 32) as she explores the terrain. Third, the researcher, rather than pursuing facts or the appearances of things, preoccupies her efforts with the "thoughtful, reflective grasping of what it is that renders this or that particular experience its special significance," asking "what is it that constitutes the nature of this lived experience?" (p. 32). Fourth, the phenomenologist applies language and writing – and I would add the word, text, to convey a broader concept that includes images – as a means of revealing the essence of a thing. Fifth, the researcher maintains a strong orientation to the essential question and a steady lens that is ever more focused on the phenomenon. Sixth, the researcher balances or coordinates the "thick description" of specificities as significant parts of the overall effect or intent, not getting lost – or losing the reader – in rambling discourse.

In line with these principles, I will introduce art making sensibilities as my primary method of inquiry. In this particular phenomenological study, positioning art making as a research method affords two entry points into understanding the cognitive qualities of Mimi's artwork: first, it provides a template against which to examine the nature of Mimi's art making

and second, art making serves as an open-ended research tool, further engaging the data for deeper understanding.

Arts-Based Methods

Van Manen (1990) views arts products as visual, tactile, auditory, kinetic texts and as "transcended configurations" (p. 74) of lived experience, citing examples by Mollenhauer, Heidegger, and Merleau-Ponty, but stops short of accepting the act of art making as a form of phenomenological research. He opines that although the artist "transforms (fictionalizes, poetizes, reshapes) ordinary human experience in infinite variety…this does not mean that human science is to be confused with poetry, story, or art" (p. 19) because human science is purposed to make explicit and obtain universal meaning while the arts tend toward the implicit and the particular. However, it is the implicit and the particular in Mimi's art making that I wish to investigate, and, contrary to Van Manen, I agree with Eisner (2008) that "the general resides in the particular" (p. 20) and ascribe to a naturalistic generalization – that I discuss in more detail later - by which people recognize resemblances, make connections, and draw conclusions in everyday life (Barone & Eisner, 2006; Eisner, 2002; Stake, 1978).

I further take the position that the arts constitute humanity's original research processes – the arts *are* human science (Solso, 2003) - and that the arts are uniquely positioned to access the ineffable and give meaning to experience (Barone, 2001; Eisner, 1994, 1998, 2002, 2008). Using the tools and materials of the particular socio-cultural and physical environment, the arts massage out of our memory deep, reflective understandings that assign meaning to our lived experience. Not only can the study of art objects make explicit the significances of experience, art making itself as imagination-charged cognition fully engages our emotions, memories, and physical energies to uncover the essence, reveal the meaning, and generate new possibility in our

everyday life. In my dissertation, I adopt a *hybrid* arts-based educational research (ABER) method, which combines artistic sensibilities with traditional human science methods to meaningfully portray and engender contextual insight into the complex and often ambiguous nature of the data, to preserve participant voice, and to engage dialogue with a broader and more diverse audience (Cahnmann-Taylor, 2008). Art making serves as a phenomenological research tool to access the cognitive nature and meaning of Mimi's photographic images.

Data Collection

Stake (1995) suggested that data collection unconsciously begins the minute a hunch is formed regarding the direction of a study. Perhaps when I received Mimi's email on November 26, 2007 I began to subconsciously reflect on the possible ways in which her post-high school photography experience might be insightful. I certainly looked forward to talking with her and happened to bring along consent forms, protocol, and digital recorder. My initial interview and time spent with Mimi lasted a total of three hours. At Jittery Joe's Coffee Shop, we spent 1.5 hours catching up on respective life experiences over tea and coffee, looking at her photographs on MySpace.com and deviantart.com websites. I realized that her life experience and photography could inform my study, and asked if Mimi would be interested in participating in my research. By then, it was 11:30 a.m. and we decided to relocate to a restaurant a mile down the street, have lunch, and conduct an interview. At Mimi's (the name of the restaurant – ironic, but no relation), I brought in consent forms, my protocol and questions, and my ipod recorder. A typed protocol introducing the research topic and research questions were read to Mimi prior to signing the consent form and the interview, advising of audio-taping, use of transcripts, and confidentiality. Interview questions, "Tell me about what you have been doing since high school," and "What do you remember most about photography in high school," designed to elicit

open-ended conversations, allowed Mimi to talk freely about her memories of high school art experiences and life after graduation. Probes were interjected for clarification and fuller understanding. Additional field notes, taken as we continued to talk over lunch and immediately after we concluded our visit, supported the recorded interview of 34:40. I then went home and spent time on her websites reading journal entries and looking at photographs.

At the time, I was still considering how the data from Mimi's interview related to other participants' data in the pilot study. It would be another six months before Mimi's artwork became an intrinsic case study. However, having transcribed my initial interview with Mimi and analyzed the transcription through Narrative Analysis (Riessman, 1993) and her images using Grounded Theory (Charmaz, 2006), I decided to retrieve and file everything from ytrovarkahcimim.deviantart.com/gallery/ and www.myspace.com/ytrovarkahc on April 1, 2008. Although I would continue to check the sites to see how Mimi had updated them over time, I thought it best to demarcate a time in which the data were collected and filed for further analysis. From the websites I obtained 98 photographs that are discussed in detail in chapter four, her self-description, 14 journal entries, and an alphabetical list of 69 areas of interest. Subsequent to the pilot study, Mimi and I have communicated by email, phone, and Skype (an Internet-based distance conferencing system that allows voice and video transmission in real time), adding new information as well as correcting and confirming prior understandings.

The three hours during which we met on December 18, 2007 is the only time I have actually seen Mimi since she graduated from high school in May 2005. Between November 26, 2007 and April 19, 2010, Mimi and I corresponded through 22 emails, several phone calls and two short Skype calls (which were not documented), and two recorded and transcribed Skype interviews: January 28, 2009 and April 18, 2010. Phone calls and short Skype interactions

primarily served to schedule interviews and work out technical bugs related to digital recording

on Skype. The bulk of the data was gathered from the two websites, the initial interview, the two

Skype interviews, and three emails: March 11, 2008, March 5, 2009, and April 19, 2010 (see

Table 1).

Table 1. Correspondence With Mimi Chakravorty

	Date	Type	Data Obtained
2007	November 26	Email	
	December 18	Initial Interview	34:40
2008	March 11	Email	Need to keep taking personal photos
	December 18	Email	
	April 1	Retrieval	Retrieved journal entries and images from Myspace.com and deviantart.com
	April 25	Email	Member Check initial performance piece
	December 12	Email	
	December 17	Email	
	December 18	Email	Trip to India; Commercial photography; Member check paintings
	December 29	Email	
2009	January 8	Email	
	January 13	Email	
	January 15	Email	
	January 26	Email	
	January 28	Skype Interview	45:51

	January 28	Email	send revised performance piece and pilot study
	March 5	Email	Update: commercial photography and music
	March 6	Email	
	March 10	Email	
	March 11	Email	
2010	April 18	Email	Chapter Four for Member Checking
	April 18	Skype Interview	24:36
	April 19	Email	Member check Chapter Four; Most images were class assignments

In qualitative research, especially using case study and arts-based methods, data collection, analysis, and interpretation are ongoing and somewhat simultaneous events. Data collection has been a fluid process, continuously accruing in three primary ways. First, Mimi has periodically shared information throughout our correspondence - as late as her last email on April 19, 2010 - that significantly altered my interpretation of the data. Second, in spite of the bounded population of 98 photographs that I had originally set out to investigate, Mimi has continued to update my files with photographs she has produced since our initial interview, emailing digital images in March 2009 and again in April 2010, for a total of 27 additional images. Many of the images were formal studies from her commercial portfolio. Most of them I had seen online and were probably already subconsciously impacting my interpretations, so I explicitly included the new information to refine, confirm, and extend my analysis. Third, the creative arrangement of Mimi's images constructed new data. The analysis of Mimi's images

and words through artistic conventions created poetic writing, a performance, and paintings that serve as new data structures from which I have repeatedly gleaned new understandings.

A fourth means of data collection that I did not use, but which I believe holds tremendous potential, is for the researcher and participant to collectively construct art images. To get closer to the understanding and meaning of the art making experience for Mimi, she and I had discussed the possibility of implementing another arts-based inquiry by collaboratively engaging in a photography art making project. Although time constraints and the 2500 miles that currently separate us disallowed such an endeavor, the potential of such collaborative inquiry and the conjecture of such an experience provided meaningful implications as a prospective extension of my research.

Data Analysis

Data analysis in naturalistic case study involves separating out the particularities of an instance and reorganizing or reconstructing the pieces into a more meaningful or cohesive whole (Stake, 1995). Over the three years of data collection, analysis, and interpretation, several different methods have been implemented to uncover and clarify meanings within the data. In the pilot study, Narrative Analysis (Reissman, 1995) and Grounded Theory (Charmaz, 2006), described in chapter one, identified critical data in her stories and in her photographs. Categorization and coding served to aggregate the complexities of Mimi's conflicted feelings about family, her capricious obsessions with fears and ambitions, and her range of emotional expression from rage to resolute hopelessness in the early stages of the study. For example, by grouping Mimi's photographs under the heading of Constraints, in the pilot study, a kind of Grounded Theory (Charmaz, 2006) emerged around Mimi's perception in her initial interview of being "mentally and physically trapped" (Mimi, Interview, December 18, 2007). I identified 22

photographs that aligned in subcategories around the axial code of Constraints. While the initial

coding helped to understand and organize some of the subject matter in Mimi's images,

subsequent critical analysis, applied under a model of connoisseurship (Eisner, 1994) later

refined these categories as I rearranged her images in a way that revealed something of her

intentions through her changing perceptions over time (see Appendix A, Map of Cognitive

Images). The relational mapping of Mimi's photographs is discussed in Chapter Four.

Poetic, visual, and performance art conventions revealed connections between different

aspects of Mimi's life, producing metaphors such as the camera shutter as a means of escape,

images as cogs in a filmstrip that move her life forward, and her life as filmstrip vignettes,

heavily framed and contained. Painting exposed a range of nuanced emotions, and the

performance piece connected her disparate images, journal entries, and stories into a cohesive

expression that retained Mimi's voice (Barone, 2001).

As the dissertation turned toward an instrumental case study of Mimi's images, all of the

preliminary findings informed the subsequent academic analysis and interpretation. Stake (1995)

described two approaches prevalent in the analysis of case study observations and interviews that

I have used throughout this study. One, is the "direct interpretation" (p. 74) of particular

incidents – assigning meaning based on the researcher's perception of the occurrence within the

immediate setting or event. The second, the "aggregation of instances" (p. 74), pieces together

bits of information to form a bigger picture or identify a pervasive condition and conclude - or at

least conject – "the emergence of meaning from the repetition of phenomena" (p. 76).

Direct interpretation is the way people commonly apply prior knowledge to assess the

complex conditions of events in everyday life. In research, interpretations rely heavily upon a

deep, specialized body of knowledge and experience Eisner (1994) called connoisseurship.

Connoisseurship subsumes "the ability not only to experience qualities, but to experience qualities as a case or symptom of factors that have a bearing upon the qualities…experienced" (p. 65) and applies criticism to make an explicit judgment "that illuminates, interprets, and appraises the qualities that have been experienced" (p. 86).

Operating from a constructivist perspective in which knowledge is a construction of personal experience, I have attempted to put forth my interpretation from a critical analysis based on my 34 years of experience as an artist and educator as well as one year as Mimi's photography teacher. Sometimes I was able to make direct interpretations of Mimi's images that were grounded in my knowledge of photography and design, and my recollections of her performance in my classroom. The nature and interpretation of photography somewhat complicates direct interpretation, and those contingencies are discussed in relation to the findings in Chapter Four. In most instances of this research analysis, the meanings and intentions as interpreted in Chapter Four are logical assertions based on literary precedence and the artistic aggregation of her interviews, journal entries, and collection of images. My interpretations are ultimately a reflection of my own personal brand of connoisseurship and criticism, and are not necessarily the conclusions that might be drawn by other researchers.

Outliers and anomalies identified in analysis are important to acknowledge and address, considering how these might be of import to the bigger picture. While evident in the collection of data, they are often omitted in the final report. Undue preoccupation with isolated events creates distraction and possible confusion at a time when the researcher is trying to bring clarity and strength to the case (Stake, 1995). While I have omitted certain outliers and limited explanations of certain anomalies and contradictions for the purpose of this study, I have not ignored their implications and anticipate further discussion of those conditions in future writings.

Ethics

Three issues of ethical concern have been identified in relation to this study. The concerns have to do with (a) participant rights, (b) use of participant artwork in data collection, analysis, and interpretation, and (c) criteria for credibility or trustworthiness of the research design. The nature of each issue and explicit steps to assuage concerns are enumerated below.

Participant Considerations

In this study, the anonymity of the participant cannot be guaranteed. Detailed descriptions of Mimi's life and artwork are recognizable by anyone who knows her or me. Mimi is over 20 years old and has signed a consent form stating that she recognizes that anonymity is impossible. She has also initialed an additional statement on the consent form allowing the use of her real name in the research. Actual names and details not obscured by hidden identities and blended accounts lend an additional level of authenticity to the study. As a participant, Mimi received no remuneration, advantage, or additional benefits for having participated other than having the opportunity to share her stories for possible publication. As a participant, she also understood the potential public disclosure of personal and possibly sensitive material. However, no risks are expected. I respect the rights and concerns of participants by maintaining privacy of transcripts and findings until the participants have had opportunity to review all personally related documents and artifacts to confirm, clarify, or correct what I have written. Mimi and I have engaged in such periodic member checking throughout the study.

Participant Artwork as Data

As an arts-based researcher, I incorporate participant photographs, drawings, paintings, and other images into my research artwork. Superficially, incorporating participant-produced images into researcher artwork appears controversial, since using someone else's art images and

presenting them as one's own or acquiring the artwork of subjugated individuals for personal gain or advantage obviously embodies unethical behavior. However, in human subject research, numerous guidelines and procedures both protect the participant and avoid the appearance of association with such questionable practice. The collection and use of visual data in human subject research is subject to the same guidelines and ethics by the Institutional Review Board as the use of interviews and other data. Several steps have been taken in my research to make explicit the presence and purpose of participant artwork, the protection of the participant, and the context and process of working with the data.

First, participant-produced images are viable and critical data, no different than quotes from interviews. A writer, poet, or researcher substantiates remarks with quotes from interviews and other data. Drawings, paintings, and photographs, like words, are visual "quotes," retaining the authenticity and voice of the participant. A poet/researcher isolates participant dialogue from interviews to write data poems – often embellishing participant words to improve the poetic quality and heighten the emotive impact of the work. As a visual arts researcher giving voice to participant visual expression, I applied the same ethics, seeking to remain true to the original meaning and significance while altering or painterly paraphrasing the image to enhance clarity, quality, and expressiveness.

Although quotation marks in written language indicate retention of exact wording, no such conventions exist in visual form. In all situations, clear indications of what the participant has produced have been referenced. Reproductions and detailed descriptions of the original images have been included throughout the process.

Second, I view participant artwork as more than an artifact. Artwork contains personal voice, where the thoughts, perceptions, and intentions of the participant – however ineffable –

are given visual expression with an audience in mind. Images, then, like stories in interviews, are constructed for self-serving reasons. Much in the same way raw interview data requires a narratologist to reach beyond the thematic to critically apply discourse analysis (Riessman, 1993), visual data necessitates deeper critical examination.

Third, the presence of participant images in my research artwork is an attempt to retain participant voice while assigning interpretive significance to the image. Additionally, my purpose is for the image to more clearly articulate participant intentions, minimizing authorial privilege and more directly connecting the reader/viewer to the original data (Barone, 2001).

Guidelines by the Institutional Review Board qualify responsible and ethical research in terms of benefiting the participant as well as the general public and academic knowledge bank, recognizing and respecting human dignity, and maintaining a sense of justice, fairness, and equity to the researched. Phenomenological research, examining how people construct meaning and make sense of the world around them, applies those maxims by placing the researched on the same footing as the researcher. Ethics in qualitative practice view the respondent no longer as subject, but as a participant that is empowered as a self-determining agent and collaborator in the process. Visual reorganizations of the data were presented to Mimi for additional inquiry as a means of member-checking and to assure comprehensive and accurate conclusions. Mimi was invited to collaboratively add, change, alter, or otherwise advance their meanings. Final representations depict a collaborative conclusion, a "mutual shaping" by researcher and participant (Lincoln, 1990, p. 286).

I ascribe to a participatory epistemology that is both situated and reflexive in what Reason (2006) describes as a "science of persons" in which:

all those engaged in the inquiry process enter the process as persons, bringing

with them their intelligence, their intentionality, and their ability to reflect on

experience and to enter relations with others - and, of course, also their capacity

for self-deception, for consensus collusion, for rationalization, and for refusal to

see the obvious that also characterizes human beings….Our world does not

consist of separate things but of relationships which we co-author. (p. 205)

This form of participatory knowing comes from personal meaning created in everyday

relational experience and "affirms people's right and ability to have a say in decisions which

affect them and which claim to generate knowledge about them" (Reason & Bradbury, 2001, p.

9).

In the pilot study, arts-based inquiry into participant artwork was approached in three

ways. The first and least invasive approach simply involved the juxtaposition of participant

images for the purposes of comparisons, connections, and connotations. A performance piece in

which I associated her writings with her photographic images of similar content conveyed a

greater understanding of Mimi, her artwork, and the nature of thinking and the qualities of

learning she engaged through art making.

Second, I constructed artwork from a student's photographs and artwork. Artistic skills

and creative insight are custom tools of the artist/researcher to analyze, interpret, and represent

the data more powerfully. As a research tool, art making interprets the subject matter according

to the affordances of a particular medium (e.g., painting, photography, collage) using

composition, color, line, and textural qualities to draw out and highlight the emotions, intuitions,

and intentions embedded within visual data. The painting, *Mimi* (see Appendix A2), in which I

rearranged a selection of Mimi's photographs, is an example. It also exemplifies the

phenomenological definition of analysis as taking something apart, examining the pieces, and putting it all back together in a more meaningful way (Stake, 1995).

The third way in which I approach researching participant artwork is to collaborate with the participant in art making. By thinking through the process together, I attain greater insight into not just the actions, but the very personal emotional intentions of the co-artist. Collaborative work with participants also acknowledges the reflexivity in the research process, puts the researcher and the researched on equal footing, and places the researcher closer to the heart and mind of the participant, not just looking through another's eyes, but looking together - figuratively and literally - through the same lens.

<div align="center">Rigor</div>

Another concern in my research has to do with rigor. The flexibility of case study research and phenomenological inquiry that makes them so effective conversely leaves the researcher as the primary instrument of data collection, analysis, and interpretation, with little or no safe guards against bias. There are four ways I consciously sought to minimize bias and enhance credibility in this study.

First, I framed the entire research process in a continuous transparent disclosure of who I am as a person and as a researcher and explicitly stated my relationship to the participant, my relationship to the research, and any personal relevance of the findings. The fact that I am conducting a case study of the art making of a former student as well as the intensely personal nature of the inquiry necessitates that subjectivity statements appear throughout the report.

Second, I have taken explicit steps to avoid the tendency to prematurely interpret the conditions or data according to prior knowledge, personal expectations, preferences, or simple familiarity (Peshkin, 1988). Phenomenologists begin with a question or a statement of curiosity

regarding a particular condition rather than a hypothesis. Although a literature review can help focus the research, Patton (2002) warned that it can also be problematic; that it can "bias the researcher's thinking and reduce openness to whatever emerges from the field" (p. 226). Consequently, I followed the recommendation that the bulk of the review of literature take place either after the data collection process, or coinciding with the data collection and researcher reflexive practice (Marshall & Rossman, 2006; Patton, 2002).

I conducted a pilot study and reviewed much of the literature in terms of learning theory, embodied cognition, and the habits of mind and capacities of thinking involved in art making. Findings from the pilot study shifted my focus to very particular questions about the cognitive qualities evidenced in Mimi's art making. In my dissertation, I conducted literature reviews on the cognitive qualities of expression and representation and the cognitive role of self-made art objects to see how those understandings might further inform my research. The simultaneous review of literature with the data collection and analysis served as both a short-range illumination of the research landscape and as a safe-guard against presumptive expectations and bias.

Third, just because I can construct a logical mapping of the data doesn't mean that it is the right conclusion or the best solution or most accurate interpretation. Patton (2002) suggested that a continued search for alternate meanings or more plausible answers provides a kind of data triangulation that assures both the researcher and the reader that every effort has been taken to consider all angles and possibilities.

In addition to data triangulation, Patton (2002) lists other types of triangulation to increase the sense of credibility and avoid bias: using multiple methods, multiple analysts, participant feedback, reader reactions, peer review, and theory triangulation (pp. 556-563) – five

of which I have employed on different occasions throughout the research. During the pilot study, I experimented with multiple methods, applying grounded theory (Strauss & Corbin, 1998), narrative analysis (Reissman, 1993), and hybrid arts-based methods (Cahnnman-Taylor, 2008) – each analyzing different aspects of the data, furthering my understanding, and moving the research forward. Deeper into the study, the nature, theory and methods of interpreting photography informed my efforts. Second, Mimi has provided confirmation and clarification of findings in member checks along the way – especially as she reflected on the arts-based treatment of her images; Feedback during our discussions has helped to focus subsequent inquiry. Third, four formal presentations of the pilot study findings elicited audience reactions that has shifted my investigation from *what* Mimi was learning to the cognitive qualities inherent in her art making and to the study of her art making as a form of embodied cognition. Fourth, triangulating theories of learning from literature reviews in psychology, education, philosophy, and cognitive neuro-science initially grounded my research; additional inquiry into the interpretation of photography has subsequently supported and extended my inquiry. I have also applied other theories of interpretation from visual anthropology, visual sociology, psychology, and formal design. Perspectives from these various related and plausibly relevant disciplines, rather than disconfirming or casting doubt, have – for the most part -supplied egress into fuller understandings of the cognitive nature of Mimi's photographs. Fifth, peer reviews have exposed thin lines of argument and forced me to question my findings and re-examine the data for more substantive anchors of reasoning.

Similarly, Guba and Lincoln (1981) warned that case studies "can oversimplify or exaggerate a situation, leading the reader to erroneous conclusions abut the actual state of affairs" (p. 377). Case studies present an enhanced moment, a slice of life, or an indepth segment

that can, due to the thorough and detailed description, be construed by the reader as the complete picture or a more pervasive truth. Consequently, I have tried to state throughout the write-up the limitations and contingencies of the report.

Constructivism as a qualitative ontology views knowledge – or data – as socially situated and constructed and not as reductively identified objective truth. Patton (2002) further asserted that constructivists are "suspicious of causal explanations and empirical generalizations applied to complex human interactions and cultural systems" (p. 546). Qualitative methods pull out the "intricate details about a phenomena such as feelings, thought processes, and emotions that are difficult to extract or learn about through more conventional research methods" (Strauss & Corbin, 1998, p. 11), and necessitates different criteria. Thus, validity is not a concept relevant to qualitative studies. Instead, Guba and Lincoln (1989) posited the credibility and transferability of the results as the most critical feature of meaningful inquiry. Member checks (participant review and verification of accuracy), triangulation of multiple perspectives, and confirmability (a transparent audit trail of data collection, analysis, interpretation, and procedures) are means by which researchers explicitly render their results creditable (Mertens, 2005).

Barone and Eisner (2006) refine the merits of ABER that further inscribe the nature of the methodology without prescribing methods, structure, or outcomes. Five criteria redefine notions of validity and genralizability in ABER. The first, *Illuminating effect* seeks to "make vivid the subtle but significant" (p. 102). *Referentially adequate* considers whether the research culminates in concepts or ideas that shed light, perhaps through a constellation of factors as suggested earlier by Bruner (1961). *Generativity,* a central tenant of ABER, asks not only whether the research draws conclusions, but the degree to which findings engender insightful questions toward further research and greater understanding. *Incisiveness* references the

provision of narrow focus within the research to address significant or specific issues. *Generalizability* concerns the implication of broad connections and applications to similar situations. While Eisner (1998) certainly forwards art as inquiry, and sees teaching as a form of inquiry, he stops short of advocating art making alone as *educational* research. For Eisner, research merit rests in whether or not the artistic inquiry "contribute[s] to the quality of education….arts based research must ultimately be appraised on the extent to which that aim is realized" (Eisner, 2008, p. 23).

Objectivity and Subjectivity

Reflexivity, referring to the tendency of investigative results to be influenced by the subjective presence and expectations of the researcher, is an historically problematic condition in scientific research. Most qualitative research – especially constructivism – views objectivity as impossible to attain, since all experience and understanding are specific, subjective, and socially constructed. Merton (1967) characterized the adumbration as "self-fulfilling prophecy" (p. 20). In the social sciences, the mere presence of the observer is considered to impact the situation observed. Patton (2002) advocated rigor in observation and writing instead of a fabricated objective distance, declaring "[d]istance does not guarantee objectivity; it merely guarantees distance" (p. 575). Acknowledging that all researchers have bias, Bourdieu and Waquant (1992) posited that by making bias explicit through self awareness and reflective writing, reflexivity becomes a solution to hidden biases and a method in social science research. Eisner (1998) suggested that since an ontologically objective world view is unattainable, the objective-subjective dualism should be discarded for a more constructivist perspective. He forwarded Dewey's (1938) notion that the interaction of the subjective self with a postulated objective

world locates a *transactive* position of knowing that is more honest and accurate in our understanding of both self and other (Eisner, 1998).

In phenomenology, objectivity and subjectivity take on different roles. Objectivity means remaining "true to the object." The researcher ethically commits to faithfully portray the nature and relational value of the object accurately in both description and interpretation through transparent documentation of the process. "Subjectivity" in phenomenological research references an intimate knowledge and orientation that discloses the richness and depth of the object without misrepresentation (Van Manen, 1990). Subjectivity, as a key constructive part of the research method, provides an essential and effective opening, a doorway, into deeper understanding of the human condition (Patton, 2002; Peshkin, 1988; Wolcott, 1990).

Summary and Implications

This study offers evidence that art making is a cognitive endeavor and that in the process of art making so much more transpires in the mind of the student than what is anticipated in the lesson plan. Although this study highlights unique and compelling instances of art making as embodied cognitive acts of meaning making and self transformation, the findings represent an in depth examination of a single case and are not a definitive report on the nature of learning that occurs through art making. Not every art teacher teaches the way I did; neither does every student respond the same way Mimi did. Findings are unique to the recursive researcher-participant experience described here and are not generalizable beyond the reader's ability to recognize familiar conditions and make connections to other situations.

Obviously, the study needs to be broadened. It is my hope that evidence related here resonates with other art teachers' experiences and illuminate with greater clarity the nature of learning experiences occurring in their classrooms. Secondly, I trust that conclusions drawn from

this study will foster better questions and more astute observations of other ways in which art making serves the adaptive and transformational intentions of the learner, further refining the implications artistic cognition might have for education.

Chapter Four

PHOTOGRAPHY AS EMBODIED COGNITION

In this chapter I examine the qualities of embodied cognition as evidenced in Mimi's photography. In the pilot study, narrative analysis (Reissman, 1993), grounded theory (Strauss & Corbin, 1988), and arts-based methods (Cahnmann-Taylor, 2008a) evinced a pervasive sense of confinement in Mimi's photography. Her images explored her perceptions of parentally imposed censorship, self-imposed anonymity, and, to a lesser degree, cultural limitations she perceived in her life, and conveyed a range of emotions from hostility and anger to despair and hopelessness to passive cynical levity to hopefulness.

The intent of Mimi's efforts was not to produce artistic images, capture reality, document family events, or collect "photograph-trophies" (Sontag, 1977, p. 9). Her images are predominately heuristic inquiry, negotiating a very personal understanding of self according to patterns resident in her world. The camera and her photographs were the tools and materials through which she cognitively sought to generate understanding, construct meaning, and imagine possibilities of autonomous action.

Several unique characteristics and functions of photography directly related to understanding Mimi's work require a brief explanation. Their immediate relevance to obtaining accurate interpretations prompted me to discuss them here, in relation to the findings, rather than two chapters back in the literature review. Thus, I delay the analysis of specific photographs long enough to set the stage with the logic that grounds my interpretations. I begin the discussion of her work talking about the nature of photography, the peculiarities of its interpretation, and how

its affordances served Mimi's sensibilities as a cognitive tool. Although art making naturally

employs the full range of cognitive processes and skills (Johnson, 2007), I have organized the

discussion of Mimi's images around the predominant processes evidenced in her work.

Meanings and significances assigned to her images, what she was learning, and how it

cognitively transpired through the succession of metaphoric images is explicated within the

context of pattern finding and pattern constructing, fundamental operations of the brain. My

purpose is to make explicit the inherently cognitive nature of art making as it is evidenced in

reports of her experience.

<center>Photography as Medium of Choice</center>

As we begin to examine the cognitive nature of art making as it is demonstrated in a

collection of photographs by Mimi Chakravorty, it is important, first, to explicitly discuss the

nature of photography as both a method of inquiry and medium of expression. As artists, we

think through a medium. Whether we are musicians choosing between a piano or a kazoo, a

painter deciding between the opacity of gouache or the transparency of watercolor, or a dancer

electing conventions of hip hop over jazz, it is the constraints and affordances of the medium that

determine the qualities of thought we can ultimately convey (Eisner, 2002). Mimi chose

photography, stating that courses in drawing, painting, and sculpture never inspired her, but that

photography provided a meaningful venue of expression:

> I knew that I always wanted to do something in art. But, I didn't really find
>
> anything I was interested in until I took your photography class and it was
>
> difficult at first because I hadn't really taken any photos before that. But, I don't
>
> know, there was something about, like, being in the darkroom and spending time

doing all that…something clicked I guess [1000-1005] (Mimi, Interview, 12/18/2007).

Later, she explained aspects of photography that gripped her: "there's just something about capturing reality and trying to maybe alter it. . . .or trying to show something else about it that's not, you know, visible to everyone at first" [1269]. The camera and the photographic process afforded Mimi a way of thinking, a way of cognitively exploring and expressing metaphoric understandings that resonated with her. It is important at this point, prior to delineating the qualities of thinking and learning I observed, to discuss the nature of her medium – its character, constraints, and affordances pertaining to her work.

RQ1: The Embodied Nature of Photography

In the course of this study, I realized that photography is a highly unique cognitive medium, different from drawing, painting, or printmaking, for example. Its ubiquitous presence in society, the illusory sense of capturing reality, and the metaphoric properties embedded in its eminently historical nature imply so much more and necessitate further explanation. A review of literature on photography, commensurate with the examination of Mimi's photographs, aided my inquiry and is explicated here in a discussion of her work, rather than in Chapter II, to forward a better understanding of why and how photography clicked for Mimi where other art mediums failed.

Photography, a relatively new technology birthed in the 19th century, is less than 200 years old, but has been thoroughly assimilated into every area of Western culture. No longer the exclusive instrument of the privileged professional, the camera is integral to the daily functions of culture and society, from researching microbes to galaxies, recording data from fashion and fine art to weddings and wildlife, from advertising to forensics and surveillance, from

disseminating journalistic knowledge of places and events to documenting family rituals to the

ubiquitous personal digital visual communication devices such as compact cameras, cell phones,

and the Internet.

As the technologies and uses of the photographic image have diversified, so have the

understandings of the nature of the photograph as a recorded image. At a glance, it would appear

that a typical photograph objectively records a realistic image, captures a moment, or documents

an event. Far from being a mirror image or a window on the world (Szarkowski, 1978), the

photograph presents an illusion of reality that is politically constructed (Berger, 1972) by the

aesthetic conventions of a less than innocent eye (Gombrich, 1960) and transformed by

technology and chemistry onto a two dimensional surface. Rather than beginning with blank

paper or canvas and constructing an image, the photographer begins with the complex, chaotic

world in space and time and editorializes it through the camera by vantage point, focus, framing,

and exposure time (Shore, 2007).

Photograph as Metaphor

All photographs, by their nature of not being the original, present something other – a

representation or a symbol - with expressive elements embedded in the image. We understand

the original in terms of something else; the image may denote one thing and connote quite

another (Barthes, 1980). Thus, Barrett (2006) asserted that all photographs are metaphoric and

require an interpretation. Barrett further emphasized that photographs "are not innocent, free of

insinuations and devoid of prejudices, nor are they simple mirror images. They are made, taken

and constructed by skillful artists and deserve to be read, explained, analyzed, and

deconstructed" (p. 43).

Metaphor is the means by which we understand one thing in terms of another (Lakoff & Johnson, 1980). The use of metaphor is so pervasive in language we fail to notice how it is by metaphor that we connote meaning. While the photograph may denote a pastoral scene or a gathering of people in content, the expressive editorial components and conventions inherent in its making connote the true subject matter of the image (Barthes, 1980). Barrett (2006) warned, "To miss the metaphoric and to see only the literal is to misunderstand the expressive aspects of photographs" (p. 44).

Interpreting Photographs

An artwork is both more and less than the artist intended (Barrett, 1997):

> Some theorists hold that an artist's intent is irrelevant to the discussion of artistic meaning because we can't really know an artist's intent; an artist may intend to express one thing but actually expresses something not intended; artists may not have or know a specific intent; an artwork may express more or less than what the artist intended; an artist's stated intent, when available, might limit interpretations. (p. 50)

According to Barrett (2006), an interpretation is a logical, conclusive argument that reaches beyond the literal to construct meaning. In my interpretations of Mimi's photography, I drew a number of conclusions – and made a couple out-right conjectures - that she had not recognized or considered in her work prior to our discussion. Although there were a couple dates and sequences of events that she had to clarify for me, she was surprised at the depth and accuracy of the interpretations and appreciated the insights they offered her.

The narratives I constructed were informed by several strands of data: my personal knowledge of Mimi and the technical, formal, and creative aspects of photography I taught her,

my experience as an art educator, my limited knowledge of psychology, sociology, and anthropology, my experience reading the internal, external, and original contexts of the photographic image, and most importantly, interviews with Mimi. We learn best about what someone is learning through their artwork by letting them talk about their work (Eisner, 2002). Intentions (Barrett, 2006) and meanings (Eisner, 2002) eventually surface – if we can look at a body of work over time.

However, there are a number of factors that impact Mimi's perceptions, intentions and choices of learning not addressed in this study. The socio-cultural milieu of friends, family, the Indian community, American culture, the academic communities at different schools, living in the South, living on the West Coast are all a part of the complex and insoluble network of confluent factors in the stream of experience that color the intentions, perceptions, attentions, and dispositions of Mimi's everyday lived experience. In phenomenological terms, we assign meaning to experience only in reflective practice (Schutz, 1970). Thus, it is in the study of Mimi's photography, as both cognitive process and product of reflective practice that the meanings Mimi ascribed to her life experiences surfaced. It is impossible to decipher and confirm either the truth or the relative impact of the variegated influences in Mimi's life, and it is not the purpose of this investigation to do so. For the purposes of this study, the meanings of particular images are important only in terms of how art making serves as both cognitive tool and artifact.

Contextual Considerations in Interpretation

Each viewer brings to an image a unique set of prior knowledge and experiences from which the art is understood. In other words, an interpretation is an informed opinion, a plausible argument grounded in a consistent set of information from a particular perspective. A part of the

richness and power of art is that there is not a single right interpretation to an image. A complex, well-constructed artwork may entertain multiple reasonable and valid interpretations – all acceptable and insightful. With that in mind, understand that although I attempt to persuade with a thoroughly argued and conceivable interpretation, it is not the only possible perspective of Mimi's artwork. It is simply mine. Where I think my hypothesis reaches conjecture, I say so. I also offer Mimi's viewpoint as well as other potential solutions to understanding her photographs.

In art criticism, modern tradition approaches the formal evaluation of an artwork from a Kantian "disinterestedness," initiating the assessment of the work by describing the observable characteristics of the image (Feldman, 1967, 1994). However, others (Anderson, 1988; Barrett, 1997; 2006; Geahigan, 1997) argued that we naturally experience and judge from an intuitive Gestalt perspective and then search for consistency in proof of our hypothesis. Even in attempting to execute the initial step of the Feldman method, before one can make the first objective description, the very first looking has already triggered an emotional response to the image. We operate first from our feelings about something and then try to bring that understanding into consciousness through descriptive and interpretive language. It was the pervasive emotional content of Mimi's imagery that first alerted me to the cognitive nature of her work, and throughout this inquiry I have first allowed my own felt responses act as a divining rod to the cognitive content and then sought to transform what I have sensed into language.

A plausible interpretation, however, involves more than an emotive or empathic response and requires substantive and verifiable evidence. The next step in formulating a comprehensive understanding was to derive triangulating data sets from the internal, original, and external contexts of Mimi's photography (Barrett, 2006).

As a swatch "cut from seamless reality" (Barrett, 2006, p. 108), a freeze-frame, a two-dimensional slice of space and time, the photograph is always viewed after the event or outside the context in which it was taken. For that reason, Barrett stated that "Photographs are relatively indeterminate in meaning; their meaning can be easily altered by how they are situated, how they are presented" (p. 111). By directly connecting contextual commentary to the photographs, we gain additional insight into the meanings Mimi assigned to the images.

Internal

I began with what Barrett calls the internal context, describing what is visually evident in the photograph. Obviously, the recognizable images and how they are arranged constitute an internal context. However, there are several other, perhaps less conspicuous, considerations of the image that provide key insight into the meanings assigned to the objects in the photograph. First, I examined the formal design elements employed; what are the compositional conventions used? What are the characteristics of balance, symmetry, movement, contrast, and focus? Second, from my experience as a photographer and photography teacher, I searched for evidence of deliberate manipulations of certain mechanisms or technical affordances of the camera that alter the character of the image - especially the cropping or framing of the image, the depth of field or area that is in acceptably sharp focus. Did Mimi use a large aperture producing a very narrow focal plane, or a small aperture, creating more depth in the picture? Has she applied lens filters to increase or diminish contrast? Has the shutter speed been extended to suggest time and movement or to freeze an action? How has she used light sources to render the object dramatic, mysterious, or benign? Third, I noted any additional embellishments such as hand-coloring, bleaching, drawing, printing, or writing as editorial markings on the finished photograph.

Original

      The second condition that must be explicitly defined to interpret a photograph is the historical or original physical, social, and personal context in which the photograph was made. Although a photograph can convey meanings and significances beyond the moment, and one does not have to know the context to aesthetically experience and appreciate the image, to fully understand the artist's intent requires it to be read in context. It would appear that the artist autonomously chooses the content of his art, however, decisions of content and composition are secured within a socio-cultural context of values, aesthetics, and models of practice that implicitly influence and confer meaning on the image. Bourdieu (1965/1990) warned that understanding a photograph "means not only recovering the meanings which it *proclaims*, that is, to a certain extent, the explicit intentions of the photographer; it also means deciphering the surplus of meaning which it *betrays* by being a part of the symbolism of an age, a class or an artistic group" (p. 7). Along with gathering pertinent data surrounding the physical context of the event recorded – which is discussed further later on - the nature of the photograph may also need to be compared and contrasted with other photographs from the same time, place, and social strata. Just as in black and white film photography, where a red filter absorbs red light while simultaneously heightening contrast of other light rays, so the conditions and conventions of the particular socio-cultural setting in which the photograph was taken diminishes likeness and emphasizes the unique or aberrant aspects of a photograph. Thus we begin to see not all that is novel or clever to our eyes historically, but what would have been intriguing to both the photographer and the viewer in the original context.

External

Third, in addition to deciphering the internal characteristics of the image and the historical context in which the photograph was taken, the interpretation of the photograph is highly dependant on the external context – the conditions or circumstances in which it is presented to the viewer. As mentioned earlier, a photograph is immanently an historical document. Even a digital image, taken seconds before viewing, is already the record of a past event. Much like a recalled memory that is reconstructed by present circumstances, a photograph, brought forward into a new spatial and temporal setting, may acquire a meaning that is dramatically altered from the original context.

Another external aspect that alters the interpretation of a photograph is the context in which it is displayed. Exhibit venues are chosen with particular viewers in mind, and the venue affects the meaning (Barthes, 1980). Barrett (2006) gave a great example, describing how we interpret a photograph of a hunter with a dead deer very differently on the cover of *Sports Afield* as opposed to *Vegetarian Times*.

The external contexts of Mimi's photographs are highly significant for three reasons: (a) The exhibited images were all selected by Mimi; (b) The images were posted on globally accessible websites with particular viewership, ytrovarkahcimim.deviantart.com/gallery/ and www.myspace.com/ytrovarkahc; and (c) They were displayed in relation to journal entries and other written perspectives on her MySpace page. Barrett (2006) explained, "External contexts, or presentation environments, are forms of interpretation. As such, they, like all interpretations, ought to be evaluated for accuracy, fairness, reasonableness, and for their consequences" (p. 113). Therefore, the relationship of particular images that are exhibited together and their associations to Mimi's writings figure significantly into my interpretations, and I have tried to make explicit connections that have been most self-evident.

RQ2 – Embodied Intentions and Meaning Making

In discussing the embodied intentions of art making and the meanings Mimi assigned to her images, I begin with a description of the photographs I examined - a fixed population of images on her MySpace.com and deviantart.com websites posted over a three year period from 2005-2008. A few of the 27 additional images that I later received from Mimi are mentioned in the interpretations where they support, extend, or offer an additional dimension to my argument. Of the 98 photographs I investigated, 27 are images of Mimi. Some she took by manually firing the shutter while aiming the camera back at herself, and a few were shot as reflections in a mirror. For others, she took advantage of the camera timer to delay the shutter release while posing, or had someone else take the picture. Beyond the 27 self-portraits that Mimi publicly posted on the internet, an additional 20 portraits of other people and objects posed as portraits were also posted; many were staged scenes. Three were of concerts. A few of the images conveyed very formal compositions of aesthetic interest: a collection of colorful sandals, a mushroom, a humorous electrical socket, titled, *Oh* (see Appendix B3), reflections in water, a close-up of textured metal, a clothes closet, and a cropped image of an iron handrail. There were no family portraits, no group photographs with friends, no candid landscapes, no panoramas, no vacation sites. All the photographs group into four categories: portraits, isolated objects, staged scenes, and the three concert images. There are no outliers according to this general coding. However, as I talk about the meanings and cognitive processes connected to some of the photographs in each of these sections, outliers surface.

Neither Mimi nor I can explain every image on her websites. While certain themes repeatedly surface in variegated iterations, other images held import for reasons not readily apparent. Some of the images, due to the brevity and disconnectedness of visual information and

composition to other images, remain opaque to interpretation; particular intentions remain below conscious or linguistic explanation. Life is complex -often ambiguous or contradictory - and cannot be neatly packaged into crisp, clean categories; so is the case with Mimi's photographs. I cannot fully interpret the metaphoric content of every photograph, determine all the meanings, or ascertain how she cognitively arrived at all the conclusions she did. Different images and themes convey a range of metaphoric understandings that are often partial and incongruous. Johnson (2007) explained that:

> different, and often inconsistent, metaphorical structurings of a concept gives us the different logics we need in order to understand the richness and complexity of our experience. However strong our desire for a monolithic, consistent ontology might be, the evidence does not support such a unified and simple view of human existence. (p. 259)

I do not think Mimi has necessarily arrived at complete solutions, herself; but her life has, in some measure, moved forward, her conditions have aligned more with her wishes, and she is a different person than she was – and the cognitive trail of her progress is evident in the metaphoric images of her photography.

Neither can I say that her involvement in photography has been the progenitive factor in her emancipation as an individual. First, much of the angst and frustration expressed by Mimi are typical of a teenager's transition into adulthood. Dramatic changes in autonomous thought and behavior are not uncommon to any teenager leaving home to attend college. Secondly, there is a confluence of thoughts, experiences, and influences – not the least of which are memories, fears, and future ambitions – that under gird decisions and motivate action that have nothing to do with art. In spite of the numerous former students over the years that have contacted me to say how

much art changed their life, I believe it had less to do with the art, itself, and more to do with the qualities of thinking art afforded the individuals in advancing their own personal agendas and intentions. Although photography – and music – have been career choices for Mimi, I cannot say that photography changed her life. However, I do believe that photography, as an embodied form of art and cognition, greatly participated in advancing her efforts toward understanding self in relation to her world, constructing meaning in her life, and creating new possibilities of action.

Meaning Making

Costa (2001) explained that meaning is not like trivia or facts; it cannot be disseminated to the masses, the passive recipient or the idle spectator. Meaning making

> is an engagement of the mind that transforms the mind. Knowledge is a
> constructive process rather than a finding. The brain's capacity and desire to make
> or elicit patterns of meaning is one of the keys of brain-based learning. We never
> understand something until we can create a model or metaphor derived from our
> unique personal world (p. xvi).

Meaning, then, is not what something is, but how that something connects to the past and what it portends for the present and future experiences and actions of the inquirer (Dewey, 1934; Johnson, 2007). For an object to have meaning, it must embody personal significance relevant to the needs of the individual. "Things and events have meaning by virtue of the way they call up something from beyond them to which they are connected" (Dewey, 1925, p. 269). Meaning, thus requires a structure or pattern imaginatively applied through cross-domain metaphoric connections (Johnson, 1987).

Strands of Thought

Organizing the entire collection of 98 photographs according to content – the original context or arrangement of objects, subject matter – the interpretation or what the image is about, and sequence over time, several interrelated themes emerged. If this study were about Mimi, I would map them out very differently – probably using concentric circles over-laid with a spider-web kind of design, and arranging all of her self portraits and objects in relation to each other around a divided self center. Time frame and context wou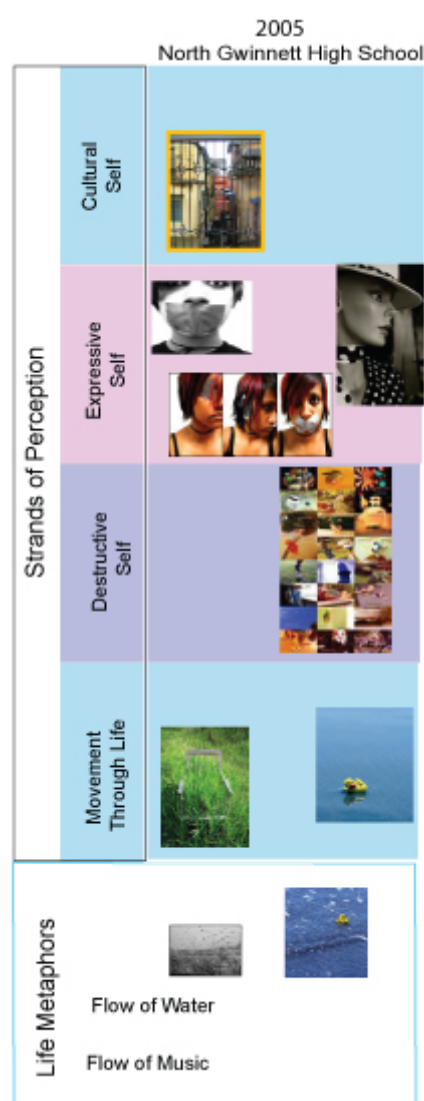ld have little, if any, relevance. Themes or perceptions would align from the center outward, with the strongest or most dominant characteristics closest to the center.

However, this study is not so much about Mimi. It is about the cognitive qualities or the nature of thought evidenced in her photographs. Subject matter and meanings are important in so far as they reveal something about the cognitive conditions that produced them. For that reason, I have coalesced subject matter into five general categories or strands of thought in a predominantly linear format (see Appendix C), suggesting snapshots of thought over time. The original set of photographs was shot and posted 2005 – 2008; a few photographs from 2009 have been introduced where they extend previous trains of thought. All are arranged so that they can be read chronologically from left to right to see how Mimi's perceptions changed over time. The images are also organized for vertical comparison, demonstrating similarities

Figure 2. Strands of Perception

of perception within each time frame (see Figure 2). The five dominant strands of perception are Cultural Self, Expressive Self, Destructive Self, Movement Through Life, and Life Metaphors. Expressive Self and Movement Through Life really overlap and inform each other, having to do with an overall perception of autonomy (see Figure 2). Life Metaphors and Movement Through Life (see Figure 11) are really very much the same subject matter, but I separated them to isolate and talk about how Mimi visually reconstructs her concept of life-as-a-river to life-as-the-flow-of-music. Violent and self-destructive images occasionally surface in Mimi's work during times of depression and anxiety (Mimi, Skype Interview, April 18, 2010), and chronologically represent the first and last series in the entire grouping. Prevalent enough to demonstrate a reoccurring strand of thought, and significant in that Mimi took the time to design graphic scenes and photograph them, I discuss them briefly. The photographs in each of these strands are discussed throughout the study in the context of their cognitive nature.

Figure 3. Three Wise Monkeys

Mimi found metaphoric significance in objects she photographed. A rubber duck, a shopping cart, and dandelion florets personify her percept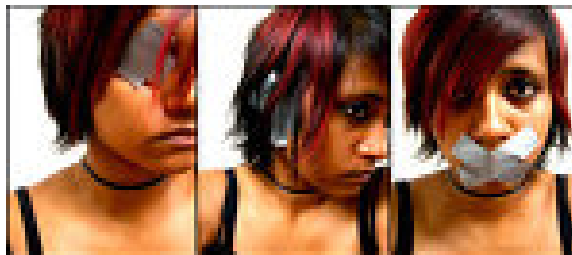ion of moving through life with no control; an old chair, the dolls, mannequins, wig busts, and white masks portrayed various conceptions of anonymity and other conditions lacking autonomy. She constructed patterns of her perceptions, parodying or acting out *Three Wise Monkeys* (Figure 3), Marionettes, and several of the *Anonymity* series. The prevalence of metaphoric images connecting around themes or patterns of thought and their allegorical nature – implying a larger narrative or grander significance - indicates that the apprehension of meaning was a primary objective in Mimi's photography.

Constructing Allegory

Mimi employed four conventions to generate allegorical meanings. First, as I've discussed earlier in this chapter, she used a photographic medium in which the image, itself, became a metaphor, representing the thing photographed (Barrett, 2006). Second, she severely cropped the image, isolating the content from its original context. Third, Mimi applied captions to direct the viewer's connection of image to idea. Fourth, Mimi visually recorded objects whose personifications conveyed some metaphoric insight.

Cropping to construct metaphor. In the initial interview, Mimi mentioned that closely framing an object was a primary convention she used to alter an image or show something about it that others may not notice at first. A highly significant observation here is that all of the 98 photographs are severely cropped in a way that excludes the original context of the image. Cropping was one of many formal design techniques that I taught in Mimi's high school photography class. The pervasiveness of its application in Mimi's work, however, suggests purposeful intent other than formal considerations – especially given the portrait format employed and the absence of other design strategies. Bourdieu (1990) asserted that tightly framed photographs, in which the particulars of the moment and environment are not evidenced, render the person or object an ideogram or allegorical symbol. Several of Mimi's photographs present isolated portrait-like images of a mannequin, a chair, a grocery cart, and dolls. The lack of contextual information causes the

Figure 4. Caged

viewer to consider the image metaphorically, advancing a certain ideology or conveying meaning onto another object or situation.

Captions create metaphor. To complete the allegorical association, the image often requires a bridge – a caption (Bourdieu, 1990). Captions are succinct editorials, automatically interpreting the photograph, telling the viewer how to look at the image, how to read it (Barrett, 2006; Barthes, 1977). Marcel Duchamp's urinal, presented out of context and purposefully titled, *Fountain*, is an example. As we compare the internal context with the captions of Mimi's imagery, the intent of her efforts begins to surface. Many of the photographs appear innocuous, simple, and innocent – until you read the titles. Captions such as *Caged* (see Figure 4)*, Three Wise Monkeys* (see Figure 3), *Beheaded Mannequins* (see Figure 5), and *44 Caliber Love*

Figure 5. Beheaded Mannequins

Letter (see Figure B2) persuade us to understand the isolated images differently. As her high

Figure 6. Mannequin With Hat

school art teacher during the time when many of these photographs were taken, I cautioned my students not to title their artwork – to let the artwork speak for itself. It had been my experience that beginning art students feel a need to editorialize their work for the viewer by adding explanatory titles. Mimi understood this, and often left her classroom assignments untitled. The addition of titles to these otherwise benign photos was not an attempt to explain weak photographs or contradict my edicts as her instructor. The titles were intended as part of the image. Like a Barbara Kruger photograph issuing critical

commentary on American culture, Mimi's work often presents familiar images from her life with disconcerting titles to sardonically infer perceived injustices, constraints, or forebodings in her life. The captions operate outside the benign scene much in the same way the shadow in an Alfred Hitchcock film portends danger just beyond the picture frame.

Objects as metaphoric meaning. Several photographs of objects, severely cropped and intentionally captioned, clearly serve allegorical purposes. *Mannequin With Hat* (see Figure 6) seems rather innocent until associated with *Sealed* (see Figure 7), *Beheaded Mannequins* (see Figure 5), the Marionette series, and the seven or eight Anonymity images that I talk about later in this chapter. The external context of associations with these other images reveals a pattern of thought and metaphoric self identity: The mannequin in stylish hat, polka-dot dress and scarf, with painted-on make-up looks real, successful, and fashionable; dressed and posed by someone else, the mannequin can draw attention, impress, maintain appearances, and sell; but in the end, the mannequin remains a static display with no personal opinion, no personal expression, and no opportunity for autonomous action.

Figure 7. Sealed

Barthes (1980) observed, "I am the reference of every photograph" (p. 84); and Alfred Stieglitz is said to have stated, "every portrait I take is a self portrait." Mimi often photographed images that she happened across in her environment that resonated with her internal condition, her perception of self and world. As I mentioned earlier, in her interview, Mimi remarked:

I take pictures of pretty mundane objects sometimes but I want to make them look
interesting… there's just something about capturing reality and trying to maybe
alter it. . . .or trying to show something else about it that's not, you know, visible
to everyone at first… trying to express yourself even though you're not the
subject, you know…(Mimi, 12/18/2008).

A rubber duck, listing slightly to one side as it floated in a wading pool, echoed back to

Mimi her personal sense of being adrift - made for the water yet
having no means of propulsion or navigation. She shot numerous
variations of the scene, posting three on her website. In each, she
framed the image so that no edges of the pool were evident and
no other objects were reflected in the water, giving the sense that
the ducky was drifting in an expansive sea that had no
boundaries, no scale, no reference to other objects. The
complementary yellow against the pervasive blue field, the Rule

Figure 8. Lost at Sea 2

of Thirds compositional convention of placing the object in the lower left
intersection – or the upper right, as seen in another version – all lend
credence to a minimalist or formalist interpretation - except that Mimi
added a title. To diminish any ambiguity of the image and to clarify her
intent for the viewer, Mimi editorialized the photo with the caption, *Lost
at Sea* (see Figure 8). Obviously, Mimi was the subject of her
photography and her images were a way of rewriting her perception of
self and reality.

Figure 9. Dolls

Mimi's single photograph, *Dolls* (see Figure 9), is a seemingly innocuous portrait of 6 dolls, shoved close together and cropped so that only the heads are visible. At first glance, the image comes across as a snapshot of a poorly arranged collection of dolls – somewhat out of line with Mimi's strong design sensibilities. Although the only photograph of dolls in the collection I examined, the image – and meaning – are in keeping with Mimi's other photographs of toys (beanie babies, rubber duck) and suggests a connection with the mannequin and marionette series. The dolls – toys, again, with no sense of autonomous thought or action, that are manipulated, dressed, arranged, and forced to act out another's imagined life – are both physically pressed together and then visually cropped into an uncomfortable group portrait. The image by no means equals James Rosenquist's garish, suffocating *Gift Wrapped Doll* Series, (1992-1997), but nevertheless issues similar sentiments in Mimi's subtle, understated style. The brevity of the caption fails as a simply descriptive title and connotes multiple possible meanings.

Figure 10. Untitled 1

The ambiguity of the title elicits various inflections and implications of *dolls* in the viewer's effort to derive meaning.

Another photograph of an object in which Mimi personified her anxieties and feelings, is the old wooden chair with grass growing up through it. In portrait format, the image is titled, *Untitled 1*(see Figure 10). Is this the first untitled image in a series? Could she not think of a title? Does the lack of a more descriptive caption indicate that the image is not allegorical? Or, since Mimi has proven prolific in

playing word games with her titles, perhaps she offered us a double entendre. Maybe Mimi sees herself as the *untitled one*. Although the image gives no clear explanation, in a journal entry, Saturday, November 10, 2007, 12:36 PM, on www.myspace.com/ytrovarkahc, where the image was displayed, Mimi expressed a fear of an inert lifestyle, saying, "i have come to realize just how terribly afraid i am of becoming stagnant. i will fight it with all my might" (retrieved April 1, 2008, from www.myspace.com/ytrovarkahc). Second, chairs, by their very nature, personify. Purposed to conform to human proportions, they are even built with arms, legs, a back, and a seat. Chairs sit, and are designed to be sat in. This one has sat too long exposed to the elements; the finish is weathered, the seat has discombobulated, and the grass has grown up through it – reminiscent of the proverbial warning against staying in one place too long, *Don't let the grass grow between your toes*. Third, Mimi's discussion in the interview of having traveled around all of her life and her self-affirmation on www.myspace.com/ytrovarkahc as a "nomad" – even though she had lived in the same place for several years – indicates that staying in one place - whether physically, intellectually, creatively, or socially – is contrary to her experience and perceived as detrimental.

Life Metaphors

The propensity for metaphoric construction forwards the arts as an ideal venue for evidencing dispositions, beliefs, and intentions (Barrett, 2004). Anderson (1988) and Barrett (2006) acknowledged that in the critical analysis of art, before we can even begin with the quasi-objective description, interpretation, analysis, and judgment process (Feldman, 1967), there is an intuitive, somatic response of personal life experiences and feelings toward the work. Anderson and others (Broudy, 1972; Clements, 1979; Hamblen, 1984) writing about art criticism have forwarded an approach to evaluating artwork that begins with the subjective response as a

hypothesis to meaning and then searching for visual clues that support or contradict that course of thought. Much of the recent literature in cognitive science substantiates the role of emotion in reading and responding to conditions in our environment before it ever enters our consciousness (Damasio, 1999; 1994). One effort that I made to understand Mimi's photographs was a highly subjective approach, organizing the images according to content to compare and contrast how she portrayed the subject.

Water as life metaphor. Thirteen of the photographs, taken at various times over the three-year period dealt with water. There were three variations of the *Lost at Sea* (see Figure 8) images of the rubber duck, three of reflections in water, and three portraits of a friend with her hand brushing against the flow of water from a waterfall – probably from a fountain at a mall. The other four contained, respectively, rain drops on the windshield of a car, the cropped handle of a water faucet, cupped hands collecting water from a slightly-more-than-dripping source, and a close-up self portrait of a very wet face. I arranged these images as much as I could from what I knew of the sequence in which they were taken. In a conscious effort to listen to my emotions, to respond on a subjective level, bringing to bear my personal experiences and intuitions as well as my 40 years of expertise in art, I then began to look for relationships, a sequence or meaning in the collective series of water images. I immediately began to construct a narrative from the photographs based on what I already knew of Mimi's perceptions and struggles over the three-year period (see Figure 11).

It is not too much of a stretch to see how the same perceptions, dispositions, and beliefs can surface in myriad forms in all aspects of a person's life. In a hypothetical example, a man's perception of his father's indifference surfaces in expectations of his boss, other authority figures, social relationships, how he performs tasks at work, how he treats his children, and so

forth. The array of emotions elicited in different situations, evidenced in irrational or extreme

behavior, ranges from anger to deep resentment and bitterness to acquiescence and emotional

detachment. The perception or way of thinking is a neural map embedded in memory by which

he responds to various conditions of similar perceived structure; it becomes a habit of mind that

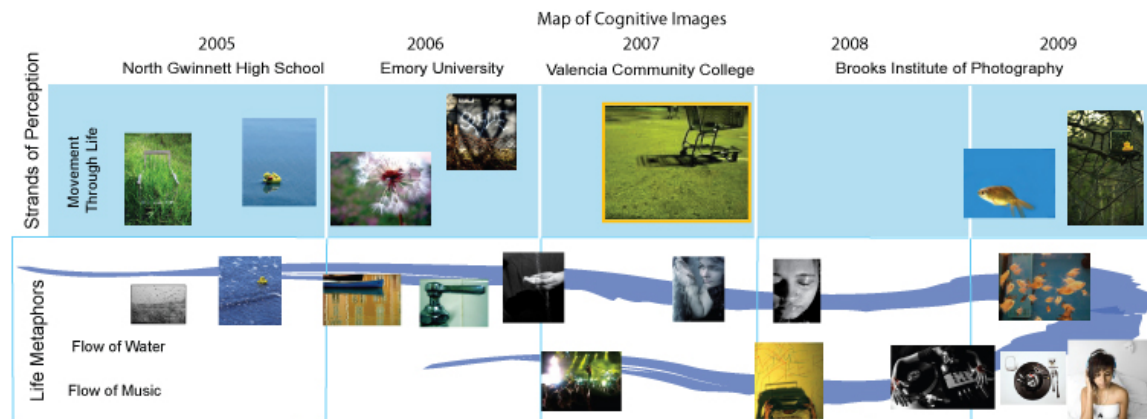predisposes his behavior or reaction in any given set of circumstances.

Figure 11. Life Metaphors and Movement Through Life

In what I've labeled Mimi's Water Series, I recognized a similar treatment of her subject

matter to what I observed in the Anonymity Series. Let me explain. First, I call this metaphoric

sequence, "the flow of life," and in it, I believe, Mimi adopts water as a metaphor for life that she

progressively learns to negotiate (see Figure 11). In the first photograph, raindrops sit on the

windshield of a car. It was a high school assignment in which the students were to photograph a

reflective, refractive, transparent, or translucent surface and incorporate a poem with the image

to broaden meaning. My interpretation – and I admit that this is a highly speculative

interpretation – is that for Mimi, during her senior year of high school, she perceived life as

something that happened to her; life randomly happened and she had no control of it – like rain;

yet she was in a bubble - inside the car, looking out – untouched by the rain/life. The second

photograph – or actually the next three – are the *Lost at Sea* series, in which she is made for the

water – made for life – and connected to it with no means of locomotion or steerage; she must go

with the flow; again, with no control. Next, I selected out of the water reflection photographs the one with a recognizable object floating in the water: a boat - actually a canoe - that can be propelled and navigated across the surface of water/life. The fourth image in Mimi's photographic emancipation or journey in the flow of possibility is the cropped handle of a faucet; an image of control, the ability or autonomy to turn life on – and off. Next, I chose the cupped hands assertively collecting pools of water/life. The sixth photograph or step toward actualization for Mimi portrays the girl swishing her hand through the waterfall; total control of entering water/life at will. Last, and seventh – like the seventh day of Creation – is *Wet* (see Appendix B3) the close-up of Mimi's wet face; total immersion; no mediation, no reticence.

Music as life metaphor. Listening to music had always been important to Mimi. She felt a lot of connections between her music and her photographs, and many of her captions came from song titles and lyrics as a way of extending or bridging their personal meanings (Skype interview, April 18, 2010). The conundrum of lacking mobility or the inability to enact meaningful movement through life - metaphorically alluded to in the stasis of the chair portrait (see Figure 10) and *Lost at Sea* (Figure 8) - Mimi addressed through the structure and meaning in the organized flow of sound and motion in music. Johnson (2007), explained that the embodied meaning of music:

> …"exists" at the intersection of organized sounds with our sensorimotor apparatus, our bodies, our brains, our cultural values and practices, our music-historical conventions, our prior experiences, and a host of other social and cultural factors…our understanding and conceptualization of musical experience, and therefore our linguistic discourse about music, are in large measure irreducibly structured by deep conceptual metaphors. (p. 255)

While photography, and not music, is the focus of my inquiry, music, as a cognitive art form, provided Mimi another means of pattern finding and pattern constructing that she often interwove with her photography. Describing the collection of images Mimi posted on her websites, I mentioned three photographs of concerts. In the performance piece that I constructed from her work, I associated those images with a journal entry from Friday, December 29, 2006, 1:15 a.m. that offered insight into their significance: "I think I always enjoy live music (no matter what kind) simply for the fact that I get some kind of intense kick out of watching people do what they love. everytime i do i get this rare satisfying feeling that maybe there is hope" (Retrieved April 1, 2008, from www.myspace.com/ytrovarkahc). Just as our understandings are visually echoed in the aesthetic character and metaphoric significances of objects in our environment, "image schemas actually constitute the structure and define the quality of our musical experience…they *are* the structure of music. And they have meaning because they are partly constitutive of our bodily experience and the meaning it gives rise to" (p. 258). In that sense, Mimi's quest to pursue interests in "alternate realities, moral ambiguities, stream-of-consciousness, surrealism, and tinkering with musical instruments" (Retrieved April 1, 2008, from www.myspace.com/ytrovarkahc) is reflected in her preferences for similar patterns resident in alternative music.

There are two more primary ways in which music functioned for Mimi. Not only had patterns of sound and motion in music provided Mimi metaphoric connections to an alternative life style, it offered creative inspiration for her photography and a conceptual metaphor for negotiating life. At Brooks Institute of Photography, the technical and commercial nature of her studies and the stress of assignment deadlines limited her time and imaginative energies to pursue her personal artistic photography. In an email, Mimi stated:

Brooks has definitely been eating up my time and I rarely sleep anymore. Right

now I am starting my second session, which mostly is concentrated on learning to

use large format. My classes are very technical as of right now (just as you

warned me) and with our work we're not really allowed to be creative yet as for

now it is all about learning to expose correctly, focus correctly, and we're not

allowed to use photoshop until third semester. I'm learning that I need to shoot for

myself once in a while to keep my sanity. (Personal communication, March 11,

2008)

Looking at the Map of Cognitive Images (see Appendix C), we see how Mimi consistently

incorporated her personal agenda into class assignments even though she stated she wasn't aware

of it (Email, April 19, 2010). Other than two photographs taken in Calcutta, India, the dandelion,

the shopping cart, the graffiti, "SLAVE," (see Appendix C) and perhaps a couple of her self

portraits, all were derivatives of classroom assignments from high school, Emory University, or

Brooks Institute of Photography (Interview, April 18, 2010). Regardless, Mimi struggled with

her own perception of limited opportunities to construct meaningful images for herself through

photography, and turned to making music - another art form that held inspiration for her in the

past. In a Skype interview on January 28, 2009, Mimi explained the evolving relationship

between her photography and music:

> I've been trying to find other ways to inspire myself to take pictures - like music.
> It doesn't take away from my love of photography at all. I really wanted to do
> concert photography for a while 'cause of my love for music…especially that one
> quote you had of me from the interview at Jittery Joe's where I said something
> about how I really like watching people doing what they love, and that is why I
> like going to watch live music alot and (long pause) I actually got turn tables for
> Christmas. I actually already have a gig next month - I'm spinning in a club in
> San Diego.
> I really got into electronic music – while I was at Emory, actually, um, I went to
> an alternative music festival in Miami in 2006. Ever since then I've never listened

to anything else; that's mostly what I listen to. um, When I was in Florida, I stopped for awhile, but when I moved here, I guess there is such a really big music scene over here (Santa Barbara, CA), so I really got into it over here. I began to download music mixing programs on the computer and I just told my dad about it and he bought me turntables (December 2008). My dad has never really bought me anything; it was kind of a random gift, so I started learning how to mix on turntables. I've only been doing it for a couple weeks – since I got back from India – I got to spin at my roommate's birthday party, and I've probably never enjoyed anything so much. Through random connections I was asked to spin in a club. It's really technical – probably more technical than photography, but I like it very much. I also started taking pictures at electronic music concerts last year, so that's how I really got into it (Skype Interview, January 28, 2009).

Third, Mimi found in music a life metaphor that she explored in subsequent personal photography. Where some people conceive of life as a journey, a race, a battle, a dance, a garden, or a game, Mimi viewed life as a river or flow of water that one must navigate. Struggling in previous photographs to obtain an understanding of locomotive control within the context of her

Figure 12. Spin Until Death

water metaphor, she changed her life metaphor to music, finding harmony in going with the flow in synchronous interaction. The structure and motion of sound – especially the purposeful flow of alternative music created by spontaneously interacting on turntables - metaphorically registered with Mimi as a way to negotiate life. Photography and music became a collective "pursuit of consummated meaning" (Johnson, 2007, p. 262). Returning to the Map of Cognitive Images, I have illustrated the merging of her life metaphors. Fauconnier and Turner (2002) refer to this merge as a conceptual blending, in which the imagination subconsciously constructs complex meaning from metaphors in everyday embodied experience. The photograph, *Wet* (see

Figure B5), represents Mimi's immersion into the purposeful flow of music, where she found a more meaningful understanding by which to live her life.

Two of Mimi's later self-portraits, taken in 2009, are very telling. In one – a black and white image – Mimi is wearing headphones and laying face down on her turntables. Her hands, embracing the spin tops appear to be pierced by the needles and covered with red blood – the only color in the photograph. It is titled, *Spin Until Death* (see Figure 12). Interpreting the image based on its internal context and Mimi's discussion of music, several connotations come to my mind: the pierced hands suggest a kind of crucifixion; a transfusion in which the needles are drawing life or converting Mimi's life into music; or perhaps the machine is like Audrey, the plant in *Little Shop of Horrors* that required human blood to live. Regardless of the particular interpretation or even Mimi's original intent, the image clearly conveys a strong connection between Mimi, her music, and her photography.

The second photograph, for me, signals a symbolic end to Mimi's quest. Appropriating

Figure 13. For the Love of Music

and extending the mask metaphor from the original group of 98 photographs and combining it with her music metaphor, the image lends credibility to - if not confirming - my earlier interpretations of her work. In *For the Love of Music* (see Figure 13), Mimi is again wearing headphones, her eyes are closed and her face is tranquil, as she appears to be totally immersed in what she is listening to – the caption references music. She is wearing all white, sitting in an all white room on white sheets – and a white mask hangs on the wall behind her. The whiteness of everything in the image represents a

pure state in which the question of identity, stagnation, and anonymity are mute considerations as Mimi finds herself – or redefines self - completely caught up in the flow of music.

<div align="center">RQ3: Pattern Finding and Pattern Constructing</div>

As I began investigating the qualities of learning, habits of mind, and the processes, skills, and strategies Mimi employed in her artwork, two unanticipated aspects of learning surfaced. First, learning is a far more complex and opaque process than I had previously understood from the literature. Much of the literature that identifies habits of mind and thinking processes splays out individual characteristics of thought as if they are independent, self-contained strands that can be isolated and strengthened like a bicep muscle. Earlier conceptualizations presented mental functions as faculties or capacities housed in different parts of the brain. In actuality, there are no faculties of thought; abstract and concrete reasoning utilize the same neural mechanisms, and the processes work in concert - generally below conscious awareness (Tucker, 2007). Creative and critical thinking, the primary ways in which we think, are complementary rather than competing processes and operate in tandem (Costa, 2001). We can identify the results of thinking and label the nuance of characteristics, such as comparing, contrasting, ordering, or predicting, but we cannot observe how those elements interact in the process. To identify one is to imply others, and we do not know to what degree. To predict, for example, one may observe, recall, order, compare, contrast, summarize, analyze, elaborate, and infer – in no particular sequence or degree; or one may see a connection and make a prediction in one abductive leap. Tucker (2007) stated that "[w]e are largely conscious of the products of the mind, not the process. We can know the unconscious generative mechanisms only by applying scientific inference" (p. 22). Although we can catalog the reductive effects of thought, the actual

processes involve complex neural firing patterns recursively communicating between cortical sensory-motor networks and the visceral limbic system at the base of the brain (Tucker, 2007).

Second, learning is a highly subjective enterprise motivated not by a desire to acquire objective knowledge, but by the uncertainty and needs of the individual (Tucker, 2007) and initiated by the emotive triggers of the limbic system (Damasio, 1994; 1999). Costa (2001) suggested that metacognitive elements inform how we think. Efland (2002) had discussed the dispositions and intentions of human agency as a trilateral element in his integrated theory of cognition. However, in this case study examining the qualities of thinking evinced in Mimi's artwork, personal intent operates as more than an informant and more than a co-conspirator in learning; personal intent is clearly the engine that drives her cognitive efforts. Mimi was a conscientious student, attending to the expectations of her coursework, and maintaining an A average in high school. I cannot attest to her learning in other courses, but in photography, Mimi acquired knowledge and skills primarily as they pertained to her expressive needs and interests: she appropriated conventions of other photographers (Cindy Sherman, Sandy Skoglund) but could not remember or associate her efforts with exposure to their work; she learned camera and darkroom techniques but could not define the terminology or explain much of the chemistry and physics involved; and classroom assignments functioned as a springboard for her inquiry into personal issues.

Learning as Pattern Finding and Pattern Constructing

Tucker (2007) stated, "information does not exist without value…and that information processing must be understood in relation to personal significance" (p. 10). I have grouped the findings according to the primary categorizations of thinking I discovered in Mimi's photographs. Whereas Root-Bernstein and Root-Bernstein (1999) describe pattern recognition

and pattern forming, I adopt their definitions but adapt their titles to pattern finding and pattern

constructing. Characteristics of its application in this study persuade me to prefer the term

pattern finding – *recognition* connotes a more spontaneous or unsolicited event; *finding*, on the

other hand, infers an active search – a heuristic inquiry into meaning – which more accurately

portrays Mimi's efforts with the camera. Root-Bernstein and Root-Bernstein's (1999) definition

of pattern forming as "combining two or more structural elements and/or functional operations"

yielding "a synthetic pattern that may be much more than, and far different from, the sum of its

parts" (p. 115), certainly describes Mimi's theatrically staged images. However, *forming*

connotes the manipulation of a single material – like forming clay on a wheel. *Constructing*

implies the assemblage of disparate parts or the shaping of dissimilar elements to fit together – as

in the construction of a house or a Marcel Duchamp *Readymade*. Mimi's efforts obliquely

circumscribe her conundrums through found images, staged metaphoric vignettes, and various

types of writing – jot lists, journal entries, and philosophical statements. Her websites are

assemblages of terse visual and written commentary that, as a collective whole, reveal a unified

purpose, and in turn, shed insight into the individual cryptic images. Although Root-Bernstein

and Root-Bernstein include pattern recognition and pattern forming in a general list of 13

thinking tools gleaned from the lives of highly creative individuals, they were primary cognitive

operations in Mimi's work. Other thought processes, thinking skills, and strategies are examined

according to the personal significances and meanings subsequently obtained within that context

of pattern finding and pattern constructing. For the purposes of this investigation, Pattern Finding

and Constructing appear to be more apt labels for the Root-Bernstein and Root-Bernstein

definition of the primary cognitive processes Mimi employed.

Pattern Finding

Survival has always depended upon the recognition of pattern. Beneath consciousness –

and even prior to awareness, our eyes continually flit back and forth, focusing on one object and

then another, searching color, shape, and line for patterns of prior experience (Zeki, 1999).

Patterns are created by seeing relationships between two previously unrelated items, ideas, or

actions, and "the more patterns we invent to circumscribe, define, and express our experience of

the world, the more real knowledge we possess and the richer we are in understanding" (Root-

Bernstein & Root-Bernstein, 1999, p. 132). We naturally recognize familiar patterns that evolve

in shifting shapes of clouds, in rock formations, shadows, or the texture of trees. Evidenced in

the earliest records of primitive images, animal features suggested in the contours and textures of

cave walls were accentuated by brush and pigment or embellished by carving. Throughout

history, human beings have creatively appropriated similar patterns from their environment for

personal, social, or cultural meaning (Dissanayake, 1988). Modern artists have consciously

employed pattern finding as a means of inspiration by visualizing images in random splatters of

ink and other textures.

While identifying and making patterns is a natural tool for instigating creative thought

(Root-Bernstein & Root Bernstein, 1999), and a habit of mind that surfaces as entertaining

games, the cognitive practice of patterning is a fundamental neural engagement with the world.

There are no algorithms, registers, or codes in the brain to decipher information in the

environment. There are no objective filters to assign value. Understanding and meaning, then,

must be constructed from subjective experience, and the brain accomplishes the task by

searching for patterns. Pattern recognition – in terms of repeated experience or metaphoric

connections - is the primary function of embodied thought, as the brain somatically selects –

rather than logically deduces – from the ambiguous bombardment of stimuli in the environment

(Edelman and Tononi, 2000). Patterns of experience inform and influence every area of our

lives, from the pattern of our heart beat, breathing, and other body functions we derive metaphors

by which we rhythmically live or understand being *in* the wind or *out* of the woods (Gallagher,

2005; Johnson, 1987, 2007; Lakoff & Johnson, 1980; Lakoff & Nunez, 2000); from the rotation

of the earth we extrapolate patterns of day and night or light and dark as beneficial versus

potentially dangerous or good versus evil; from concrete experiences with natural surroundings

such as the seasons, weather, mountains and rivers, cultures have cultivated metaphors into

myths about the meaning of life that explain our existence, purpose, and how to live. We

naturally anticipate the future based on patterns of prior experience, and interpret the esoteric in

terms of the physical. Emotion, forwarding our needs and intentions, assesses and influences

pattern selection. Connecting Dewey's (1925/1981) hypothesis that emotion is inherent in

situations, and Damasio's (1999) observation that emotions signal awareness of responsive

physical changes within the body, Johnson (2007) asserts that "emotions are processes of

organism-environment interactions" (p. 66) that assist in focusing attention and assigning

meaning to experience.

It is difficult to interrupt the patterns of thought developed through the routines and

rituals of our environment. Conditions and requirements of our socio-cultural and physical

settings determine not only what we think, but how we think. Bransford, Brown, and Cocking

(2000) stated that the brain is structured by experience. In early childhood, there is an

overproduction of synapses that connect to firing neurons, wiring them together into neural

maps. In subsequent experience, the connected map of neurons fire together. Throughout life,

synapses continue to automatically grow and connect as sensory-motor perception triggers neurons in different parts of the brain. Thus, experience determines not only what we learn, but the neural structures of how we learn. Bransford *et al*. stated:

> synapse addition and modification are life-long processes, driven by experience. In essence, the quality of information to which one is exposed and the amount of information one acquires is reflected throughout one's life in the structure of the brain. (p. 118)

We develop the neural maps or ways of thinking necessary to negotiate expectations in the home, the structure of lessons at school, and the social morass of the community. Repeated experiences in the same or similar conditions develop, refine, and strengthen patterns of thought - lending credence to the ancient proverb, "Train up a child in the way he will go, and when he is older, he will not depart from it."

Although neural patterns are elaborated upon and strengthened with use, they are not static structures. New experience recalls and modifies patterns of thought based on present needs and conditions. Learning can be thought of as the modification of these structures. There are several ways in which photography enhanced Mimi's ability to alter her thinking through pattern finding and pattern constructing that I will discuss here.

Controlling Self

We gravitate to the stories, images, people, and conditions that reflect our own prior experiences and perceptions of self. Even when the conditions may be unhealthy or counter-productive, familiar social, cultural, and physical environments offer known parameters and expectations - unspoken rules of how to operate within that space. The accustomed terrain

provides sure emotional and behavioral footing: as a retreat when feeling threatened and as a solid point of departure for learning and growth.

Shore (2005), writing about the nature of photography, describes the mental organization of the image in the mind of the photographer before taking the picture, stating, "they hold mental models in their minds; models that are the result of the proddings of insight, conditioning, and comprehension of the world" (p. 117). Mental models are body schemas (Gallagher, 2005), neural mappings (Tucker, 2007), metaphoric understandings (Johnson, 1987; 2007) from personal experience that constitute the implicit historically constructed self, determining what we see and what we understand. Educator David Ausubel (1968) opined that "The most important single factor influencing learning is what the learner already knows" (p. 18).

Images Mimi captured through her camera lens resonated with her because, in some way, they reflected her perceptions, experiences, or understandings. Through each photo, her imagination reordered her memory, restructuring neural maps toward progressively different understandings. The photographs are both representations and documentations of her cognitive processing, applying aesthetic conventions to visually and ineffably think through the tools and materials of photography as a means of interfacing with the world. The photographic images served neither as a mirror of self nor as a window on the world. Both the camera and the images Mimi constructed were cognitive tools, affording Mimi a new capacity of thinking to systematically process ethereal concepts through physical patterns or metaphoric images from her world. By controlling the past and controlling the present, the camera lens constructs a recursive bridge to new patterns of possibility - a Looking Glass through which she could escape previously held habits of mind into a modified realm of potential self actualization.

The brain, in order to maintain a sense of unity and meaning – a flow – in the random experience of our daily lives, seems to automatically update our understandings, restructure memories, and fill in gaps of understanding with plausible or hypothetical beliefs or rationales. Tucker (2007) described the neural capacity to continuously consolidate events of perceived import or consequence into a meaningful coherence as "the recursive assembly of self," explaining that:

> personal experience- the implicit historical self – becomes an organizing influence in selecting what is retained from events. Conversely, the experience of significant events becomes incorporated with the memory that makes up personal history. The self is thus *active* in the sense that it operates as the implicit agent of experience and *recursive* in the sense that it transforms itself through each active encounter (p. 194).

From an artistic perspective, Stafford (2007) declares that, "[w]e become aware of a personal or private interiority only through acts of exchange with the material conditions of our embodied existence" (p. 212). Pattern finding, then is more than just identifying with objective meaning as it is represented in the world. Pattern finding is a transactive construction of meaning that lies somewhere between what the object might be and the needs, intentions, and understandings of the individual (Dewey, 1934). Bramston (2010), in *Visual Conversations*, suggested that objects can speak to us if we are "looking, observing and absorbing the specific traits and peculiarities of everyday objects" (p. 14). However, from a constructivist perspective, objects do not speak out of their own identity so much as they echo back an inflection of our own understandings as we grapple with the nature of their metaphoric presence in our lives. The arts, then, cognitively function as "boundary events" (Stafford, 2007, p. 212) in which both the world and self are co-

constructed. We receive an echoic response from that which we project onto an object or into an event that is transactive in shaping both our understanding of the event *and* our perception of ourselves.

Caged (see Figure 4), *Beheaded Mannequins* (see Figure 5), and *Dolls* (see Figure 9) are examples of transactive encounters Mimi experienced with objects in her environment. The images she framed and photographed served as metaphors that reflected implicit patterns of personal perception: limited by cultural expectations, a faceless form shelved for other's purposes, and generically grouped and labeled.

Controlling the Past

The photograph is not only a way of experiencing, it is a way of controlling, choosing a course of action; possessing the past in a way that anticipates the future and implies subsequent action. In the modern Western socio-cultural context, photography is thought of as a way to preserve the past, to remind us and keep our memory clear and strong. A person or event is always remembered in the context of a handful of frozen moments in time. Bourdieu (1990), however, explained that:

> while seeming to evoke the past, photography actually exorcizes it by recalling it
>
> as such, it fulfills the normalizing function that society confers on funeral rites,
>
> namely at once recalling the memory of the departed and the memory of their
>
> passing, recalling that they lived, that they are dead and buried (p. 31).

Although a photograph may contain images and qualities that continue to resonate beyond the moment, relevant to different times and contexts and from which others can derive value and meaning, photography is inherently, first and foremost, historical. A photograph, by nature, always presents an image out of context, politically framed (Berger, 1972) and frozen within a

moment that has passed (Barrett, 2006). To view a photograph – even a digital image seen seconds after exposure - is to consider it in an external context. Time is past, the image is static; the space is two dimensional, smaller; the entire event is held in your hand. The meaning has changed.

Sontag (1977) forwards photographs as "ways of experiencing reality as a set of appearances, an image" (p. 160), explaining that:

> [p]hotographs are a way of imprisoning reality, understood as recalcitrant, inaccessible; of making it stand still. Or they enlarge a reality that is felt to be shrunk, hollowed out, perishable, remote. One can't possess reality, one can possess (and be possessed by) images…one cannot possess the present but one can possess the past (p. 163).

In that sense, not only did photography provide Mimi the opportunity to step outside of herself to reflect on the context and conditions of her existence, it helped her to imagine change in her life; to not only understand how things were, but to also declare, "that was me then, not now." Sometimes we write things down, put it on paper, to get it out of our head; we bring our feelings into language – to better understand and to clear our mind; to stop the inchoate and imprecise cogitations. Barthes (1981) related an insightful comment by Franz Kafka, on how the arts serve such a purpose. Kafka, who wrote numerous unfinished short stories and novels, stated, "We photograph things in order to drive them out of our mind. My stories are a way of shutting my eyes" (p. 53).

Many of Mimi's photographs – especially the ones she staged, acting out perceptions of her condition – were possibly a means of getting her ruminations out of her head and precisely arranged on photographic paper to which she could then bring closure. *Sealed* (see Figure 7),

Three Wise Monkeys (see Figure 3), and *Marionette* (see Figure B2) are three examples of visual

texts Mimi constructed that seem to reflect and extend her writings and potentially extricate her

thinking from those perceptions.

Controlling the Present

"[W]hat photography supplies is not only a record of the past but a new way of dealing

with the present" (Sontag, 1977, p. 166). The photograph slices out of the flow of life a moment

in space and time in which the present immediately becomes past and can be possessed,

controlled, categorized, manipulated, reimagined in manageable chunks, one frame at a time.

The photograph is "an extension of the subject; and a potent means of acquiring it, of gaining

control over it" (Sontag, 1977, p. 155). Sontag further declared, "To photograph is to appropriate

the thing photographed. It means putting oneself into a certain relation to the world that feels like

knowledge – and, therefore, like power" (p. 4). The subject is immediately framed, frozen from

our perspective and turned into an object, small and two dimensional in our hands. We can hold

it, reflect on it, make judgments about it. We can immortalize the image in a frame over the

mantle to behold and become the thing observed. Or we can denigrate the image, deny its truth,

wad it up, tear it, deface and burn it; annihilating its memory, its import; liberating our mind

from its power in our lives. The sense of control - the ability to hold that diminutive frozen

moment and to reflect upon it - portends decisions for future action and a sense of controlling the

future. Eisner (2002) stated that "[r]epresentation stabilizes the idea or image in a material and

makes possible a dialogue with it" (p. 6).

Barthes (1980) claimed that photographs can suggest strands of possibility beyond its

edges and went on to characterize a photograph with the potential to "take the spectator outside

its frame," claiming that, "it is there that I animate the photograph and that it animates me. The

punctum, then, is a kind of subtle beyond –as if the image launched desire beyond what it permits us to see" (p. 59). Perhaps for Mimi, too, the self portrait was a way for Mimi to imagine, "that was me in a moment in my life now past; I can put it out of my mind; not only am I beyond that now, I can conceive other possibilities."

Inventing Self. In his reflections on photography, Barthes (1981) declared that the posed subject metaphorically obtains existence through the photographic image, explicating the complicated and transformational identity of the subject from his personal experience of being photographed: "Now, once I feel myself observed by the lens, everything changes: I constitute myself in the process of 'posing,' I instantaneously make another body for myself, I transform myself in advance into an image" (p. 10). He goes on to explain, "In front of the lens, I am at the same time: the one I think I am, the one I want others to think I am, the one the photographer thinks I am, and the one he makes use of to exhibit his art" (p. 13). As one who posed for her own self portraits, Mimi was both subject and photographer, capturing poses of yet another self that she framed with an audience in mind. Mimi thus transformed herself into an object to be read and reflected upon by an audience of which she was also a member.

The integration of self and world is "predicated on an organism's response to the visual features of the environment that *matter* to it" (Stafford, 2007, p. 215). Bramston (2010), talking about the playful way in which designers appropriate ideas from their surroundings, stated that "[o]bjects are constantly speaking to us; suggesting opportunities and connections that we can choose to embrace, retain and reuse in our own work" (p. 14). Similarly, we recognize in the world objects or conditions that are reflective of what we are performing within our selves, our self-talk, our perceptions of self and world that guide decision-making. There is identification with the image, object, or event as metaphoric of our condition. Winston Churchill (1944)

commented, "We shape our buildings; thereafter they shape us." In everyday life, we create our artifacts and images – whether in our dress, our homes, our theatric presentation of a social self – and they, in turn, inform our perceptions of self, beliefs about the world, and personal intent.

Sturken and Cartwright, explicating the impact of visual culture on society, point out that rather than reflecting reality, photographs "organize, construct, and mediate our understanding of reality" (p. 13). Not unlike commercial advertising, which has appropriated photographic images to impose certain values and rituals as social-enhancing practice (Sturken & Cartwright, 2001), the personal camera affords the individual a means of customizing a presentation of self for both self and other. Personal photography especially accomplishes – and in many ways, *expedites* - the task of identity construction (Bourdieu, 1990). In her essays, *On Photography*, Susan Sontag (1977) discussed the social and cultural changes actuated by photography, and further described pedestrian accommodations of photography as a family social rite, rendering vignettes of gatherings, events, and vacations as "photograph-trophies" (p. 9) that construct an impression of engaging life experience – usually portraying a heightened sense of meaningful participation. Although none of Mimi's photographs that I analyzed exhibited family portraits, special events, or prestigious associations, she purposefully chose certain ones for global display. Each time Mimi posed for her self-portraits, each time she constructed allegorical meanings from objects in her environment, each time she costumed and acted out her self-perceptions in staged scenes, and each time she contemplated the exhibited collection of images, she was creating opportunities for acquiring new patterns of understanding. Her personal photography thus became a potential tool for engaging aspects of her environment that mattered to her and constructing visual texts purposed to rewrite her sense of self and world.

Pattern Constructing

We instinctively look for patterns, and when we don't see them, we construct hypothetical or possible patterns of experience. Reflective practice naturally draws comparison between similar patterns stored in memory to formulate more appropriate, efficient, and effective responses. Projecting the possibility of event and action, we contemplate cause and effect to construct new patterns of expectation and behavior. Arthur Koestler (1969), in *Act of Creation*, defined making jokes as a high level of creative endeavor that naturally evolves from the human propensity for anticipating patterns. It is the break or ironic twist from the next step anticipated in a pattern that makes a joke effective. The inclination to search for patterns and form expectations suggests the presence of an imagined concept – a prediction – already constructed in our mind (Root-Bernstein & Root-Bernstein, 1999).

Pattern-making, then, is a cognitive ability to imaginatively consider new structures of meaning, seeing relationships and filling gaps of our understanding with possible events, action, or experience. Mimi was repeatedly exploring patterns of her condition, behavior, events, and expectations of others. Photographically replicating patterns of perceived constraints in her life was not a concession to fate or an inability to conceive of a different life. Her image construction was a nonlinguistic cognitive process of acquiring understanding, searching for patterns, and constructing meaning; the photographs were what's next, both recognizing and recursively constituting steps forward.

Transferring Patterns

Root-Bernstein and Root-Bernstein (1999) explained, "there are patterns to pattern forming that allow one to cross disciplinary boundaries and transfer simple ideas in one realm of

human experience to another realm" (p. 118). Instead of a total break from her understanding of the world with which she grew up, Mimi re-appropriated metaphors from her experience to reconfigure new possibilities in her life. In the interview, Mimi portrayed moving around all her life as a negative experience, and yet in her writings and certain photographs, she extolled travel, articulated the need for change, and expressed anxiety over becoming sedentary.

In another example of a re-appropriated metaphor, Mimi embraced her perception of lacking control in the flow of life as a means of actively engaging with her world. Mimi connected with the metaphoric pattern of a rubber duck drifting helplessly, lost at sea, posting three variations on www.myspace.com/ytrovarkahc.

Figure 14. Untitled (Shopping Cart)

Through her writings, Mimi reconfigures the sense of living with no control to a metaphor of choosing to construct conditions that resist or limit control. Adjacent to her photographs, Mimi posted a list of 69 things she was interested in. Among other seemingly random items, she enumerated "getting lost on purpose, sitting in shopping carts, stream-of-consciousness, unexplored territory." Also juxtaposed in the external context of the website, is an otherwise unexplained outlier - a photograph of a shopping cart (see Figure 14) partially visible as it exits the picture plane in the upper right hand corner. The image is slightly out of focus and records, other than the shopping cart, only a parking lot at night, cropped so that it appears to extend infinitely off all four edges - much like the kiddie pool in *Lost at Sea 2* (see Figure 8). Although the shopping cart, like the rubber duck, has no steerage
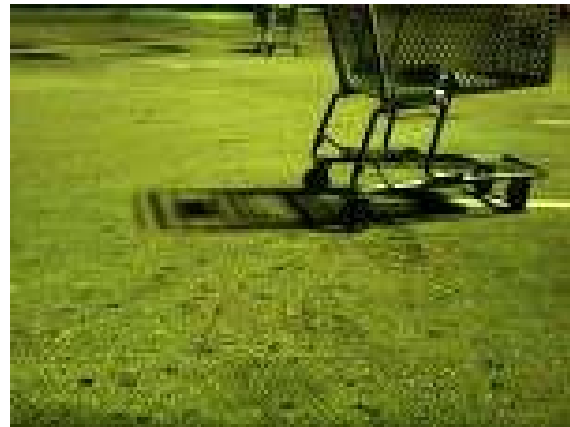
and no brakes, propulsion can be initiated in a general direction and maintained to some degree by inertia. The metaphoric image of a shopping cart as a life-negotiating vehicle implies a choice and a modicum of control. Again, her visual and verbal thoughts are cryptic and allegorical and require readings of both the internal and external contexts for interpretation. Collectively, they convey a transfer of pattern and meaning from one realm of understanding to another, redefining her familiarity with no control as an exhilarating, risk-taking opportunity, conceiving it as an autonomous pattern for negotiating life.

Staging Photographs

Although many of Mimi's photographs recorded metaphoric images from her environment that echoed perceptions of self, such as mannequins, dolls, the rubber duck, the shopping cart, and an old chair, many of her photographs – the marionette series, the anonymity series, the suicide series – were deliberately, consciously staged – somewhat in the style of Cindy Sherman's *Movie Stills* self portraits or Sandy Skogland's dream-like vignettes. She consciously constructed metaphors of her ruminations. Like Kafka's story-writing, she recorded her thoughts in images not only to demarcate a perceived condition, but also to drive them out of her mind and to animate her energies toward other potential actions. Photography became a deliberate, transactive experience; an attempt to theatrically deconstruct, recursively assemble, echocially interface, intertextually rewrite a sense of self.

The Anonymity series is a stellar example. In the Spring of her senior year of high school, Mimi created a hostile, violent self portrait with duct tape over her mouth titled, *Sealed* (see figure 7), and posted it on ytrovarkahcimim.deviantart.com/gallery/ (Retrieved April 1, 2008). Elaborating on that image, Mimi constructed *Three Wise Monkeys* (see Figure 3) – her solution to a hand-colored triptych photography problem that I assigned a couple months later.

Instead of photographing herself in the traditional pose by placing her hands over her ears, eyes, and mouth in the respective photographs, Mimi cleverly added a sardonic twist to the Japanese pictorial maxim, Hear No Evil, See No Evil, Speak No Evil. She applied duct tape, cropped out parts of her head, and inscribed the collective image in red paint, implying an external and punitively imposed censorship. My visceral reaction to the image has always been strong. I remember sitting with a rubric to grade it; putting it on the wall for a class critique, and seeing it later on her ytrovarkahcimim.deviantart.com/gallery/ website. I have never been able to look at it for very long; it conveys such a sense of deep-seeded betrayal, hurt, and anger.

Subsequent photographs of mannequins and a shelf of Styrofoam wig busts metaphorically extended her self perceptions of being a parental and cultural display with no personal voice, thought, or action. The gut-wrenching emotion elicited in *Sealed* (see figure 7) and *Three Wise Monkeys* (see Figure 3) is uncomfortably absent. The white Styrofoam busts, all sitting inertly the same, facing slightly different directions on the shelf, are quiet, benign, and devoid of emotion; they visually read as an academically acceptable solution to a formalist exploration of value, repetition, and variation in a composition – and satisfied that requirement for a high school photography assignment. However, when the image appeared on Mimi's website, a caption, "Beheaded Mannequins," (see Figure 5) had been added to editorialize the metaphoric meaning of the subject matter. Mimi seems to infer that the violent dismemberment of self is the consequence of either remaining too long as a mannequin or perhaps, the repercussion of not adequately performing one's duties as a mannequin. Here, I recognize – or conject - from my experience facilitating Children of Alcoholics (COA) groups, working with students returning from drug rehabilitation centers, and identifying children of sexual abuse, that familiar "shut up, shut down, shut out" survival mechanism employed by those that feel they

have no control in an abusive environment. Again, this is clearly conjecture on my part; I never asked Mimi what she thought of this particular interpretation; and you as the reader, may have a different take on it. The correct interpretation is not germane to my argument. What is indisputable, however, is the operation of a deeper cognitive enterprise beyond the fulfillment of the classroom assignment. The photographic act and image advance a qualitative reasoning (Eisner, 2002) that serves to reconstruct self through metaphoric connections.

Figure 15. Tangled Mess

Having photographed mannequins, Mimi refined perceptions of her condition by staging photographs of herself as a marionette. Mimi originally chose the marionette motif as a costume theme for a party. By assuming the appearance and publicly performing as a marionette, Mimi empathically characterized and kinesthetically conceived what it is like to be a puppet. Her body a cognitive instrument (Gallagher, 2005; John-Steiner, 1997; Johnson, 2007; Root-Bernstein & Root-Bernstein, 1999), Mimi physically explored the physical, mental, and emotional qualities of marionette-ness. Proprioceptive acts are non-linguistic thought, emotions, and moods that are engaged and expressed through posture, gesture, rhythms, energies, and actions (Gallagher, 2005). Performers bring kinesthetic thought forward as socio-culturally expressive elements of communication in theatre and dance. For Mimi, the public performance at the costume party allowed her to physically think through the nature of being a marionette and get feedback form a live audience.

Mimi photographed her face made-up as a marionette before attending the costume party. Later, having physically acted out the role, Mimi staged a marionette photo-shoot with a shallow background imitating stage curtains, studio lighting, and ropes, representing puppet strings, tied to her wrists. In the series of self-portraits, Mimi sat on the floor, legs splayed awkwardly, with arms and head askew – as if the marionette is unable, without a puppeteer, to stand-up and function properly. Two of the images, exhibited on www.myspace.com/ytrovarkahc, were titled, *Tangled Mess* (see Figure 15) and *Tangled Mess 2*. Mimi's thinking through these photographs contemplated conditions of independence, elaborating her inert-figure-metaphor. Where mannequins are posed, marionettes are animated as they act out someone else's thoughts. In the *Tangled Mess* series, the strings are not taunt; with no external manipulation, the apparent consideration has to do with the tangled mess that is created in relationships (the strings) by her inexperienced attempts to act autonomously. The making of these photographs coincides with the difficulties between Mimi and her parents while she is living on campus but not attending classes during her year at Emory University.

As Mimi gained a degree of autonomy, living on a college campus with new friends and less parental interaction, the perception of severe constraints and lack of identity resurfaced in a slightly evolved form. Her Anonymity series, begun during her

Figure 16. Anonymity 4

freshman year at Emory University, revisited this conundrum, adding a significant caveat: instead of mannequins, the figures in her photographs are real, living people – herself and friends - exhibiting personal thoughts, feelings, and dreams postured beneath the white masks. Marionette strings are no longer attached; perceptions of control have shifted from external powers to a growing internal autonomy. The figures are posed in various environments, preoccupied in activity, gazing back at the viewer, or focusing upward or outward beyond the picture frame. Each photograph is a performative treatise, a *tableau vivant*, collectively revealing an explorative narrative of self-sufficiency, self-governance, and autonomous action operating behind - and in spite of - the externally imposed mask. The performer appears to accept the mask as an unfortunate condition – like a physical trait or item of apparel - that ultimately has no bearing on the acumen of the wearer. Perhaps the comfortableness exhibited - and here, again, I offer conjecture – is recognition that we're all wearing masks - a condition of which the viewer only gradually becomes self-aware. The images forward a certain anonymity – a social distancing – that may have begun as an act of survival, a defense mechanism, or an unwarranted imposition we learn to live with - an encumbrance that over time has acquired a level of familiarity that is now comfortable and safe. Much like the shopping cart and the portrait of the chair imply a change in thinking about previous patterns in her life, *Anonymity 4* (see Figure 16) communicates a tentative hopefulness. Examining the internal context, there is a male figure standing on a fence at night facing the viewer, wearing a mask and staring skyward toward a light outside the upper left corner of the picture plane – presumably a streetlight, since the moon appears partially obscured by clouds beside his right shoulder. The image is shot from an extreme, low camera angle so that the figure's head is near the top – his head in the clouds above the moon, and looking larger than life as his body fills the center of the photograph. The fence

runs horizontally across the bottom of the picture plane, dividing unseen foreground and background domains. Due to the lack of reference, the photograph, then, functions as an allegory. Metaphoric sayings come to mind regarding straddling two opinions, jumping the fence from one camp to another and the grass is greener on the other side. But the figure is not looking at either domain; he does not appear to be teetering or preparing to jump. Conversely, he is standing on the boundary quite comfortably and gazing upward through the white mask. The external context of the image places it again in relationship to Mimi's writing, where a journal entry of Sun Feb 17, 2008, 12:02 p.m. offers the reflection, "it appears that i have become really quite adept at emotionally distancing myself. i have never felt this invincible." I surmise that the figure, feeling emotionally distanced and invincible, remains un-persuaded by either side of the fence, and is quite comfortable contemplating an ethereal calling toward which he is gazing beyond the boundaries of the picture plane. How such an interpretation aligns with Mimi's perceptions of self, I can only conject. But the felt response that I have toward the image is decidedly different than that from other photographs she exhibited in the same collection.

Images Revisited/Patterns Revised. Interestingly, in addition to *For the Love of Music* (see figure 13), Mimi revisited other old metaphors much in the same way we bring memories forward into consciousness, updating the image in terms of present conditions or new knowledge. *Memory_v1* (see Figure 17) is an example. The rubber duck from the *Lost at Sea* series is now sitting in a nest in a

tree, accompanied by a clock. The caption even suggests a recall

Figure 17. Memory v_1

and restructuring of past perceptions. The duck has found a home, not in a marsh, but in a tree. A duck out of water, perhaps? A reference to Salvador Dali's
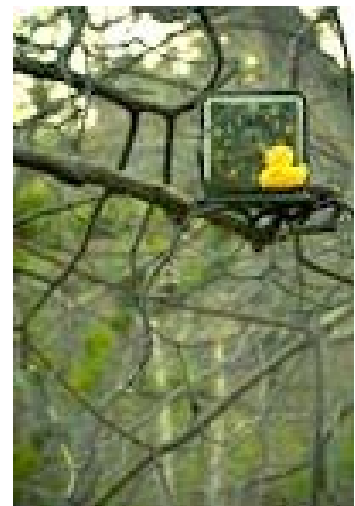
(1931) *The Persistence of Memory*? Mimi stated that the image – again, a class assignment at

Brooks Institute of Photography - is a response to an article in *Psychology Today* on the nature of

memory and how the brain stores information. Her idea was to place a toy with a clock on a limb

of a burned tree (the result of a wild fire in Los Angeles) to connote lost childhood memories

(Skype Interview, April 18, 2010). The placement of the duck in the composition, however, is

exactly the same as in *Lost at Sea* 3 (see Appendix B5). Perhaps the choice of the rubber duck in

the photograph is out of convenience; perhaps the use

of the Rule of Thirds as a compositional device is

simply an engrained convention from four years of

photography; but the coincidences and the allegorical

nature of the image – in context of the body of work

already discussed – suggest a deeper, unconscious

metaphoric import for Mimi beyond assignment

completion.

Another revisited image or reoccurring theme

is the suicide series. One of the earliest pieces of

artwork that I remember Mimi producing, was *Beanie*

Baby Suicides (see Figure 18), a response to an

assignment in Spring 2005. The 24 scenes of beanie

babies incurring various forms of death were grouped

as a poster and then folded to become the cover of the

booklet. Inside, each of the scenes was reproduced as

individual pages. The first of her photographs to

Figure 18. Beanie Baby Suicides

really catch the attention of the class, it generated a lot of interest, laughter, and discussion as it passed around the room. I referred to the image as darkly humorous and acknowledged the clever, albeit inappropriate, content for a children's book. The hostile treatment of otherwise cuddly animals – perhaps a rejection of her childhood, the sentimentality and misplaced values of the highly collectable creatures, or others who valued them – signaled a concern. As a teacher, I was trained to treat seriously any imagery or comments of an illegal, destructive, or self-destructive nature. Following protocol, I informed the counseling department of the incident and images.

The booklet satisfied the assignment requirements, but was not sent to the school in our district for pre-K children with special needs, like the other picture storybooks that my students produced. I did not see the *Beanie Baby Suicides* series again until I viewed Mimi's ytrovarkahcimim.deviantart.com/gallery/ website a year and a half later.

Figure 19. Executed

Mimi created another iteration of beanie baby deaths while at Brooks Institute of Photography. Titled, *Executed* (see Figure 19), the image depicts a cow, a chicken, and a pig hanging with ropes around their necks as a vegetarian's commentary on slaughterhouses (Skype Interview, April 18, 2010). Although Mimi's explanation sounds plausible, there are no other references in the image indicative of her dietary/political leanings. Visually, in the external context of the ytrovarkahcimim.deviantart.com/gallery/ website, *Executed* allegorically associates with other violent imagery posted there: *Beanie Baby Suicides* (see Figure 18), *Wrath* (see Figure 20),

Sealed (see Figure 7), *Three Wise Monkeys* (see Figure 3), and a new iteration of the suicide

series, *Seven Most Popular Ways to Commit Suicide* (see Figure 21).

Not humorous at all, *Seven Most Popular Ways to Commit Suicide* (see Figure 21) depicts a male figure in the act of committing suicide. The seven graphic photographs are titled, *Shooting, Asphyxiating, Cutting, Hanging, Jumping Off, Overdose*, and *Electrocute*. Technically well composed, well lit, and severely cropped, the

Figure 20. Wrath

images present very sophisticated renditions compared to the playful ruminations in *Beanie Baby*

Suicides. When I mentioned to Mimi I had seen the images on

ytrovarkahcimim.deviantart.com/gallery/, she abruptly dismissed the topic as a series for her

Photographing People class, Fall 2008, summarizing that she had been overwhelmed by

schoolwork, felt depressed at the time, and the idea fit her mood (Skype interview, April 18,

2010).

Figure 21. Seven Most Popular Ways to Commit Suicide

The Natural Contexts of Learning

I have alluded to the original contexts in which Mimi took many of her photographs, but

chose not to discuss them further until now. It was important first to develop an understanding of

the internal contexts and meanings of the imagery she created, to establish the relationships between the images, and then to determine the kinds of thinking in which she was engaged. The external contexts in which the photographs were displayed – especially in relation to her writings - broadened those understandings.

Barrett (2006) defined original context as "social history, art history, and the history of the individual photograph and the photographer who made it" (p. 109) – all very different categories that inform the interpretation of the work. At different points, I have already related some of Mimi's social histories, artists of particular influence, and the possible impact of my lessons to forward some understanding of the meanings the images held for her and the patterns of thinking with which she approached her photography.

Because of the predominantly allegorical nature of Mimi's images, the contexts in which the photographs were taken provide little comprehension of the *meanings* Mimi or I assigned to her images. However, the original context does offer insight into *how* Mimi metaphorically derived meanings from a unique and personal interaction with her immediate environment (Costa, 2001; Johnson, 1987). Mimi found significance in objects that somehow metaphorically connected to her past or present conditions and offered possibilities for future action (Dewey, 1925; 1934; Johnson, 2007) - a rubber duck, a shopping cart, an old chair, dolls, mannequins, and a mask. Rudolph Arnheim (1969) declared, "…human thinking cannot go beyond the patterns suppliable by the human senses" (p. 233). Photography afforded Mimi a way of isolating or capturing those resonate patterns to creatively reflect upon and construct meaning (Sontag, 1977). The discussion of the original contexts of her photography explains the prompts and conditions through which she naturally acquired those images.

Most of the photographs Mimi posted on her websites were initiated by or evolved from class assignments either in high school, at Emory University, or at Brooks Institute of Photography. Her mannequin photographs stemmed from discussions of Reality during the third week of my high school course. To heighten students' awareness of reflections in their photographs, I had them consciously shoot reflections and refractions of light as subject matter. A particular student response to the assignment – not Mimi's - was an image of a glass storefront, in which mannequins, store employees, and customers can be seen through the window while images of pedestrians outside are simultaneously reflected in the glass. During the class critique, the image prompted questions as to what was real and not real in the photograph, and to what degree their meanings had changed due to the distortions of reflection and refraction of light as well as the two-dimensionality and framing of the photographic image. Mimi subsequently sought out and photographed mannequins.

The Anonymity series of photographs, involving Mimi and her friends wearing white masks, began as an assignment at Emory University in which photography students were asked to create stills from an imaginary horror movie. Mimi explained that in shooting the *Anonymity* photographs, "there was no particular idea behind the series" (Skype interview, March, 18, 2010); she and her friends just kept taking pictures of each other in and around an apartment complex near Emory University; the images were all taken at night and Mimi was experimenting with an extended exposure technique she learned in my high school class – using a flashlight to "paint" light onto the object.

The marionette series began as an assignment at Brooks Institute of Photography, where Mimi drew a blind prompt from a box that simply said, "tangled mess." Mimi stated that the

puppet idea developed from thinking about tangled limbs; she had no one else to model for her, so she posed herself.

At first, these accounts appear to contradict and possibly dispel the narratives I have created to explicate what she was learning through her photography. Actually, Mimi's descriptions of how the images transpired confirm and extend my observations of pattern finding and pattern constructing as the natural way in which the imagination constantly and unconsciously compresses and blends metaphoric images into the meanings we acquire in everyday life (Fauconnier & Turner, 2002). Photography, for Mimi, simply assisted – and perhaps expedited - the process.

Mimi's recounting of the historical sequence of affairs is not interpretive of their subconscious significances. An artwork generally says both more and less than the artist intended (Barrett, 2006), and although the metaphors are resident in the artist's thinking, the intentions and implications often remain below conscious awareness (Fauconnier & Turner, 2002; Tucker, 2006). The artist's explanation of context and process are often a distraction and hindrance to interpretation (Barrett, 2006) because "the effects of the unconscious imaginative work are apprehended in consciousness, but not the operations that produce it (Fauconnier & Turner, 2002, p. 57). Tucker (2006) explained that

> [m]otivation is the engine of the creative struggle, and it often operates in ways
> we do not understand. Because the mind's mechanisms are largely unconscious,
> motive blindness may extend even to creative demands for which we exert our
> best conscious effort. (p. 145)

Regardless of the specificities of the given assignments, Mimi's images imply personal choices that exceed those expectations. For example, after the discussion of the mannequins in the high

school Reflection/Refraction assignment, Mimi chose to photograph mannequins – and to create captions, like, *Beheaded Mannequins*. *Tangled Mess* could have referred to a ball of yarn, a pile of clothes hangers, or the streets of Los Angeles; but Mimi chose a puppet as content and chose to act out the role in front of the camera. Why choose a white mask to create imaginary horror film stills? What was so intriguing about the white mask that she and her friends took so many photographs wearing it? If the mask was just part of a college assignment, why title the images *Anonymity* and post them on a website? Why did the masks show up in several photographs at Brooks Institute of Photography three years later? And why, when I spoke with Mimi on Skype (April 18, 2010), did I see a white mask hanging on the wall behind her?

<div align="center">Conclusion</div>

In a Skype interview (April 18, 2010) about some of the findings, I asked Mimi to clarify my understanding of some of her photographs. I also asked her to read and give feedback to a draft of this chapter that I had emailed to her. In an email reply, she stated,

> H,
>
> Just got done reading the chapter. I found very interesting the conclusions you
> have drawn from my work as I never quite had the intent of telling these stories
> (as some of them are intensely personal), but I suppose they were expressed
> subconsciously. Some of it was difficult for me to read as lately I seem to have
> dismissed my past; Not too long ago I cleared out many of the photographs I had
> posted. Now I wish I hadn't…Overall I very much enjoyed the piece. I had never
> realized at the time how much my timeline of photographs visually reflected
> myself and my life. There isn't anything I can think of changing, though some of
> the settings of a few photographs might be wrong (which we already discussed,

i.e. the marionette party or the anonymity series), but that isn't important. Let me

know what other photographs you need or what else I can help you with.

The next couple days are a little crazy with finals week but I will call you once I

get the chance.

Mimi (email, April 19, 2010).

The old chair was more than a dilapidated construction of wood, the mannequin was

more than a structure for draping clothing, the marionette was more than a visual response to an

assignment, and the mask represented far more than a generic plastic face, just as "form is not

just form; metaphors apply to forms to give meaning. Form is therefore a vehicle for inference,

and the content of the inference depends on the metaphor" (Lakoff, 2006, p. 156). Mimi's

descriptions of how the photographs transpired are critically important illustrations of how

meaning is acquired in the process of engaging with the objects and events of daily living.

Several key observations warrant further discussion in the concluding chapter of this

study. First, nearly all of Mimi's photographs on her website were produced in conjunction with

course assignments in a formal educational setting. Assignment prompts provided the creative

connections and motivations on which Mimi piggybacked a personal investigation of meaning.

Second, the camera afforded Mimi a way of extending her thinking - a vital tool for self-

engineering a better way of understanding and performing in the world she lives in (Clark,

2008). Through the camera lens, Mimi was able to select, isolate, and frame metaphoric images

immediately available for metacognitive reflection. Third, cognition and meaning-making are

largely unconscious acts that are primarily about pattern finding and pattern constructing.

Patterns or metaphors that convey meaning are the most important learnings that Mimi carried

forward to subsequent educational environments. The relevance of associated content and skills determined what was acquired and brought forward to new contexts of learning.

The arts are more than educational frills, enrichment activities, or the purview of the gifted and talented. The embodied nature and cognitive character of the arts demonstrated here and in the supporting literature forwards the arts as more than a core discipline, promoting it as an essential pedagogical strategy. Like a cognitive umbrella, the arts provide a framework that arches across disciplinary boundaries – that perhaps should never have been fabricated in the first place - reconnecting ideas and constructing rich patterns of meaning.

Chapter Five

ARTS EDUCATION: THE UBIQUITOUS COGNITIVE UMBRELLA

Having spent the last chapter examining the cognitive nature of art making through the

detailed descriptions of some of the qualities of learning Mimi experienced in her photography, I

would like to draw several conclusions and suggest a few implications this study might have for

education. As a high school art and drama teacher, I advocated strongly for the presence and

purpose of the fine arts in education. A principal who acknowledged the value of a prominent

fine arts program in his school more than once shook his head at me and exclaimed that I must

think that the arts are the umbrella under which all other educational disciplines ought to be

arranged. I like the metaphor – not in terms of function, not as a shield, but as a structure, as an

all-encompassing central entity that reaches out in every direction, embracing every aspect of the

human experience. Although I did not coin the term and attribute its origin to Dr. John Green's

introductory statements at a North Gwinnett High School Fine Arts performance, I have

appropriated the phrase more than once – and do so again, to characterize the conclusions and

implications I forward in this chapter.

Limitations

Although this study presents compelling evidences of art making as an embodied

cognitive act of meaning making and self transformation, the findings represent an indepth

exploration of a single case and are not a comprehensive report on the qualities of learning that

occur in art making. The distinctive findings I have previously described are unique to this study

and are not generalizable beyond what familiar conditions the reader can recognize and associate to other situations.

There are no assertions I can make from the findings beyond the personal significances for Mimi of thinking through a visual medium. The qualities of non-linguistic cognition, the profundity of somatic knowledge, and her use of the camera as an extension of the embodied cognitive process are potent phenomena gleaned from her experience. However, I must state again that these rich descriptions, while perhaps compelling, are unique to this case study and cannot be extrapolated across all art making experiences.

Instrumental case studies present an enhanced moment, magnifying an aspect of a situation to obtain deep, detailed information; the investigations are not meant to provide a complete picture or comprehensive portrait. Consequently, an in depth account of significant data can potentially result in three misleading conditions. First, to fill in gaps, the reader may insert assumptions about the extraneous circumstances surrounding the data. My intent has been to structure the findings for clarity and logical understanding, and yet the content of my inquiry - human thought and the human condition - are not always logical and rarely linear-sequential. Discussions are limited to explicating the cognitive nature of Mimi's photographs; other references to Mimi's life are incomplete; with regard to her images, even some of the less important time frames and sequences have been omitted. The reader is encouraged not to draw conclusions beyond the explicitly stated information.

Second, ignoring outliers offers an over-simplification of findings that can lead to false conclusions. Ambiguities and contradictions are a natural part of the cognitive process, and although I have acknowledged they exist and mentioned several, such as social relationships with boyfriends and trips to India, they do not provide critical insight into the data and their

discussion has been relatively minimal. Similarly, not every photograph in the population of 98 has been discussed or even presented in the Appendix. I have mentioned a few, such as images of mushrooms and sandals, that were important enough for Mimi to exhibit on her websites but had no greater meaning that I – or Mimi – could explain.

Third, particular findings potentially forward an exaggeration of significance on the data that may cause the reader to make erroneous assumptions (Guba & Lincoln, 1981). Discourse such as the description of the water metaphor - that required a bit of creative conjecture on my part, the emotional impact of Mimi's series of self-destructive images, and the absence of data that I felt were of lesser importance, misleading, or extraneous are three examples that may imply an undue emphasis or misrepresent the big picture.

Having said that, I must reiterate that I have attempted at every juncture to examine my conjectures for alternate meanings, to look for other, more plausible answers, and seek corroborative evidence (Patton, 2002). The thorough and detailed descriptions I forward are as accurate as Mimi and I could possibly formulate, although they are not the complete picture of Mimi's life. Having researched relevant literature and repeatedly checked with Mimi for confirmations and corrections, I am confident in the veracity of my findings in the given time and context specificity of the phenomena (Lincoln & Guba, 1986). Although I isolate and reemphasize what I think are significant conclusions and thought-provoking implications, the speculative potential of the findings I leave to the reader to make connections and ask further questions.

<h3 style="text-align:center">RQ1: Art as Embodied Cognition</h3>

Embodied cognition means that thought is not relegated to a separate mind in the brain. Thought is an engagement of the whole body – neural, sensory, visceral, and physical capacities

– collectively interacting with and being informed by the immediate environment that is social and cultural as well as physical (Johnson, 2007). Mimi's art making through photography engaged embodied cognitive practice in three ways. First, her photographs documented a cognitive trail of visually contemplating self in relation to her parents and her culture and formulating an understanding of life through the appropriation of objects in her environment as metaphoric meaning. By grouping the images according to subject mater, certain strands of thought were evidenced as she construed patterns of existence or conditions of objects in her environment into allegorical narratives. A rubber duck floating in water, dandelion seeds borne by the wind, a shopping cart, fish in a tank, and a turntable all represented vehicles for negotiating the flow of life. Second, Mimi constructed understandings of self by photographing staged vignettes in which she acted out her self-perceptions as a beanie baby, a wise monkey, a mannequin, a marionette, and a masked personality. Third, Mimi engaged in self-engineering through the self-reflective display of selected images on her websites, exhibiting her perceptions for contemplation by both herself and others (Clark, 2008).

Although there are particular cultural conventions, skills, processes, and techniques that are acquired through systematic training, the qualities of thinking afforded by art making are not privileged propensities only possessed by a talented segment of the population. Art making is an inherently cognitive process in every individual, reflecting – and fully engaging - the neural structure of the brain with the visceral and sensorimotor interactions with the technologies and conditions of the environment. Johnson (2007) declared: "the structures, processes, and qualities that make art possible and valuable are exactly the same ones that constitute all meaning, thought, and understanding" (p. 213). Johnson furthered his assertion and extended Dewey's

(1934) declaration, purporting that all thought and meaning making begins with aesthetic experience, finding its greatest potential in art.

RQ2: Personal Meanings

There are undoubtedly social and cultural considerations to Mimi's art making. Her photography in many ways addressed her questions of culture – her Indian heritage, living in America, and her interpolation into an alternative lifestyle. Several of her images, such as *44 Caliber Love Letter* (see Appendix B4) and *Dance in My Blood* (see Appendix B7) were responses to the break-up of a relationship. Second, her photography has been produced within the context of contemporary cultural conventions. Her artistic training in public school and college settings and among peers - occasionally collaborating *with* peers - implies a high degree of socially distributed learning and an enculturation of certain modern and post-modern sensibilities. Her unique and creative qualities are judged by how the images push the envelope of social and pictorial norms. Photographs were purposefully exhibited in globally accessible virtual galleries with particular viewers in mind: when Mimi constructed her social websites in 2005, MySpace.com was primarily utilized by college students and young professionals; deviantart.com has always appealed to a primarily young and culturally alternative art crowd. Thus, Mimi's photography is highly socially mediated imagery, operating as a reaction to traditional norms and in identification with alternative values within the context of contemporary cultural conventions.

However, Mimi's work contains very little social content; the images are not about social issues; they are not typical social documents of family gatherings, friends, or travels (Sontag, 1977), even though she talked with some pride of being conferred the title of family photographer. Even the pictures of her boyfriends belie none of the relational conditions one

would generally expect; there are no photographs of them together. The male figures are un-named models, serving allegorical purposes beyond personal identity and relationship.

Although art making for Mimi has served social and cultural functions, her photographs are pervasively first and foremost about personal meaning making. Photographic experiences functioned as cognitive exercises purposed to obtain cultural identity, construct meaning, create an autonomous sense of self, and generate possibilities of action. Five dominant strands of perception are repeatedly hashed out in a range of understandings that are, for the most part, progressive. First, Mimi struggled with her cultural identity, distancing herself from the strictures of Indian culture in *Caged* (see Figure 3) and *Firebreather* (see Figure B8), and embracing an alternative lifestyle through her music, posting on deviantart.com, and photographing alternative music venues. Second, Mimi persistently explored her sense of self and self-expression in the most prevalent series of over 30 photographs, highlighted by the mannequin-marionette-Anonymity series. Third, reoccurring feelings of depression, anxiety, and hopelessness surfaced in images of a destructive nature, most strongly represented by *Beanie Baby Suicides* (see Figure 18), *Dance in My Blood* (see Appendix B7), *Wrath* (see Figure 20), *Executed* (see Figure 19), and *The Seven Most Popular Ways to Commit Suicide* (see Figure 21). Fourth, Mimi captured metaphoric patterns of autonomous action, beginning with the dilapidated chair, *Lost at Sea* series, the dandelion, and the shopping cart. Fifth, similar queries advanced her perception of negotiating life through her myriad experiences and understandings of water and then music.

Identifying and labeling these strands of perception are vital to understanding how Mimi thought visually through her imagery. However, it is also important to point out that it would be dangerous to allow these labeled strands to reductively reify into a theory. They are not isolated and self-contained channels. Each of these patterns of thought – identified in objects and events

in her environment and constructed through her staged photo shoots – overlapped and informed each other. At roughly the same time Mimi is photographically experiencing possibilities of autonomous acts of locomotion in the shopping cart, in other photographs she is acting out possibilities as an independent marionette, exploring the control of water flow, and snapping a self portrait with a boom box as her head. There are confluences of conditions that impact how we think. This is just one of several examples of connectedness between different strands of thought conveyed in her photographs – and there are many other influences we cannot begin to comprehend. Cognition is a continuous and complex process; we can ascertain the products and isolate some of the unconscious mechanisms as I have done here with Mimi's photography, but we cannot conclude all that was involved in her visual thinking. Mimi's images are simply evidence that she was thinking visually and that the construction of images through her photography was an active part of the process.

<div style="text-align:center">RQ3: Pattern Finding and Pattern Constructing</div>

The primary impulse of human cognition is the understanding of self and world based on experienced patterns within our own bodies, our observed patterns from image schemas, the environment, and patterns of social interaction and cultural conventions. Tucker (2007) explained that "*information is relational*…[t]he information that achieves such interesting functions in the parallel-distributed networks is formed through the *patterns* of relation among elements, not the content of elements themselves" (p. 99). In 2005, Mimi had observed patterns of Indian culture as restrictive and patterns of parental censorship as punitive; she recognized similar patterns in the mannequin, the dilapidated chair, and the rubber duck. Reading the Map of Cognitive Images vertically (see Figure 2), we can see similar perceptual patterns across all the images during that period. The resulting sense of hopelessness was then conveyed in *Beanie*

Baby Suicides (see Figure 18). Our embodied thought naturally connects pattern-to-pattern, creating more complex understandings. In the photographs Mimi took at Brooks Institute of Photography, there is a similar pattern of autonomous self-expression in her music and metaphoric understandings of negotiating life like a fish in water. The content doesn't map, but the patterns of perception layer well.

Another observation in Mimi's Life Metaphors is that there are no sudden jumps from one metaphoric understanding to another. The progression of understanding life as a flow is incremental through various connotations of water, wind, and music. Tucker (2007) pointed out "the spread of meaning – from an idea to its close associates and then to more remote ones – happens over time in a regular and predictable gradient of relatedness" (p. 106). It is also important to note that most of our real-world knowledge is acquired in this manner, implicitly and analogically rather than in an explicit and logical manner (p. 107). Mimi's perceptions of self, her autonomy, and her ability to negotiate in the flow of life changed, and yet she was unaware (Skype Interview, April 18, 2010) of "the imaginative operations of meaning construction that work at lightening speed, below the horizon of consciousness, and leave few formal traces of their complex dynamics" (Fauconnier & Turner, 2002, p. 15). This subconscious construct of meaning that evolves from the observation of patterns in everyday life holds several implications for education that I discuss in the following section.

<div align="center">Implications for Education</div>

As a long-time educator, I am in the habit of asking myself in any given situation, what does this new information portend for the classroom? How is this important and what does it change? How can it inform pedagogical practice? There are a number of aspects from the findings that are intriguing to me that I think educators – especially art educators – should reflect

upon. First, is the significant role the camera played in Mimi's ability to think through her life. The camera was more than a technology, more than a tool for creating art. The camera became a cognitive extension of Mimi's embodied engagement with her world, allowing her to construct new meanings: to pose herself into an imagined identity in her many self portraits, to create cultural artifacts (Johnson, 2007) that alter her perception of self in reflective practice, to capture metaphors from her environment that hold meaning, to render a perception as history to see it as the past in a way that anticipates the future and change, and a way of constructing new meanings. This was such rich experience for Mimi that she had not experienced with drawing, painting, and sculpture. However, I have observed the same passions arise in students drawing, painting, and working in clay and my curiosity is stirred as to whether those mediums might embody for others what photography did for Mimi.

The two most significant findings, however, are the fact that almost all of the photographs that Mimi exhibited in MySpace.com and deviantart.com were from course assignments and that the elements that seemed to transfer from one setting to another were not the content but the patterns or metaphors of meaning. Learning seems to be far more deeply seeded in the personal perceptions and subconscious intentions of the learner. I turn my attention now to those two considerations as findings that may contribute significantly to the fields of art and education.

Art Activities as Prompts for Deeper Learning

When I met with Mimi for our first interview in December, 2007, I could only recall two of her photographs from high school: *Beanie Baby Suicides* (see Figure 18) and *Three Wise Monkeys* (see Figure 3). As she scrolled through digital files of her work, I recognized a few others: *Sealed* (see Figure 7), a couple pinhole photographs, and a cyanotype triptych. The rest of

the work was new, much better quality than she had produced in high school, and she was posting them on her website. My assumption was that she had continued to produce work on her own after graduation. Well, she had, but few of them made it to her MySpace.com and deviantart.com websites. Most of the visual inquiries Mimi posted stemmed from assignments in photography courses in high school, at Emory University, and at Brooks Institute of Photography. Only a few of the photographs that I examined on her websites were not related to particular prompts introduced by her photography teachers. This was a puzzling discovery during a late Skype interview (April 18, 2010). How did the course prompts instigate such personal investigations? Why were they so connected? Was I reading too much into her work? Were the images just responses to assignments and not personal cogitations at all? Yet, in the same Skype interview (April 18, 2010), while asserting that she had not realized that her personal life was so explicitly displayed in her photographs, Mimi also confirmed the insightfulness of my interpretations. How were the studio activities, assigned by three different instructors in three different educational settings over a three-year period so perfectly aligned with Mimi's personal ruminations?

Tucker (2006) explained that new learning is difficult and that our sense of agency fails quickly "in the face of powerful implicit motives such as hunger, lust, or even sleepiness, which regularly overwhelm the will" (p. 144). The volition to find answers and solve problems that are perceived as unique and personal is weaker than most people realize and requires an additional impetus. Tucker elaborated that "[w]hen the mind is challenged, what is required is not just a pattern of intelligence but also the motivational energy to organize and develop this pattern" (p. 145). Unconsciously, the individual attaches a personal uncertainty to an external related endeavor as a motivational thrust to obtain meaning. Think of the students that choose to apply

themselves to a task because they like the teacher, are in competition with others, or see some additional reward for their efforts. Conversely, students who perceive no personal relevance to the task usually put forth much less effort.

For Mimi, this weakness of will was further exacerbated by feelings of hopelessness and perceptions of an inability to act. Consequently, many of her photographs expressed her

insecurities (see Figure 22) and explored destructive measures as a way to absolve those feelings. In her photography courses, assignment constraints that required highly creative solutions both generated an uncertainty and provided an additional motivation. Studio assignments triggered the imagination not only to visually formulate answers to the problem at hand, but to also

Figure 22. Anxiety

simultaneously apply meanings to Mimi's metaphorically interrelated but latent questions of personal import. "To be creative, we must not only tolerate but also engage the anxiety of uncertainty" (Tucker, 2006, p. 145).

This measure of insight forwards an increased importance for the role of the arts in education. While Mimi's photographs remain a unique case of study, and no particular generalizations can be definitively drawn, the conditions under which she produced her work is not uncommon; her experiences as a high school and college student seeking to define herself and the conditions of autonomous action are not unfamiliar to most students her age; and the passion and self-actualization evidenced through the duration of her work are no anomaly, as well. It is possible, then, that the qualities of learning she experienced are also shared by other impassioned students of the arts. Perhaps the increased enthusiasm, motivation, and learning

teachers observed in the Burton et al. (2000) study are demonstrative of satisfactions derived from the acquisition of personal meanings through their art activities. It is interesting to note that the teacher testimonials of the compelling evidence of learning revolved not around the recitation of course content, but the descriptions of "self-expression, self-esteem, heightened focus, pride, expression of ideas, and self-confidence" (see p. 7) – all characteristics of personal growth and fulfillment.

The personal transformations I observed in other art students over the years were of similar nature and followed a similar pattern: students of varying interests and skills in art at the beginning of their high school art experience are suddenly spending a lot of time in the art room, producing a lot - if not always great - work. Many make plans to continue their creative activities beyond the classroom experience, even when they do not major in art in college. Positive changes in affect, effort, attendance, and performance in other classes are also residual effects. These are generalizations, but clearly patterns that I have repeatedly observed in my classroom during my tenure as a high school art teacher. Previous research in art education does not indicate any correlations between art experience and performance in other areas (Hetland & Winner, 2004), and there is no indication that teacher influence is a sustainable motivation for impassioned art making (Barone, 2001). I offer the conjecture that these transformations are evidence of students acquiring meaningful understandings through willful inquiry or, more likely, the simultaneous layering of personal inquiry onto related course assignments. Thus, what students are learning in the classroom is far more than the course objectives, and has to do with personal intentions of understanding self and constructing meaning through the visual manipulation of metaphor.

Human thinking cannot exceed the dimensions of personal experience (Arnheim, 1969); abstractions are derived from sensorimotor processes (Johnson, 2007; Tucker, 2007); and we are constantly mapping the unknown, the esoteric, and the recondite within temporal, spatial, and intentional conditions on a human scale (Fauconnier & Turner, 2002). We acquire our understandings of life through making connections with the metaphoric conditions within our physical, social, and cultural environment. Given the nature of art as a cognitive engagement with the tools and materials of the environment to construct personal meanings from metaphoric content, clearly, there is potential for personally transformational exploration to be associated with course assignments. Open-ended problem-solving pursuits in studio assignments invite or motivate the attachment of personal inquiry.

An art curriculum is not a psychology lab or a social study class no more than it is a mathematics, history, or literature course, however, the nature of art making engages the content and promotes the understanding of all these disciplines. The findings from this investigation of Mimi's meaning making through the cognitive apprehension of patterns of experience in her life suggests the potential relevance of art making as a way of visual thinking that reaches across boundaries of disciplinary content to construct meaning that is personal, meaningful and complex. Art making is a way of thinking that places self in relation to the world.

Transfer: Metaphors and Patterns of Perception

My motivation to look at the nature of thinking in the process of art making evolved from two considerations. First, an understanding of the highly cognitive nature of art making would better inform how art is taught and how art might be used in the broader culture of schooling to enhance learning in other subjects. This implies the notion that something transfers from one discipline to another, whether it is content, skills, or habits of mind. Second, based on the broad,

general findings in Hetland et al. (2007) discussion of the kinds thinking and habits of mind identified in teaching art, I sought to more deeply explore the nature of cognition exhibited in a case study of the artwork of a single student.

Educators frequently return to the question of transfer. What are the conditions of the learning experience that might inform learning in another domain? Content? Memorized names and dates? Skills and processes? Habits of mind or ways of thinking? Mimi's study of photography for three years in three different educational settings is not a major change of domain – like trying to observe math skills that transfer from algebra to chemistry, or language arts skills that transfer to social studies. This is not a formal study testing for transfer, either, but there are a few observations I can make from this investigation that may inform future considerations of transfer.

It would seem that being heavily involved in a discipline that is desired as a college major and a career ambition, a person would learn all they could at every juncture of the experience. One would expect Mimi to be fairly well grounded in content after a year of high school and a semester of college photography, but in an email (March 11, 2008) while in her first semester at Brooks Institute of Photography Mimi stated that she remembered little or nothing of the technical and historical content she had been taught in the past. Examining the collection of photographs over the three year period, certain design conventions – severe cropping, the Rule of Thirds, the intentional use of landscape and portrait formats - and camera techniques - shallow depth of field, framing, deliberate lighting, and occasional extended exposures – are quite consistent under the tutelage of three different instructors. These appear to be personal sensibilities that would characterize Mimi's images over time, and not the influence of any

teaching strategy or personality. Even within the particular field of photography, not a great deal seems to have transferred.

When I looked at Mimi's work collectively, I sensed an energy, a drive, a motivation to her work. Every image conveyed a poignancy or urgency; a statement strongly considered in the making. While particular conventions and techniques carried over from setting to setting as personal design sensibilities, the most significant contribution to learning with which she approached each new experience was an intense personal inquiry into meaning that was heavily grounded in her present worldview. Learning appeared to be less predicated upon a desire to acquire objective knowledge based upon the content or skills "the learner already knows" (Ausubel, 1968, p. 18), and more prominently a subjective enterprise motivated by the uncertainty and needs of the individual (Tucker, 2007). More than a habit of mind or a predisposed way of thinking, Mimi's learning had to do with the meanings she appropriated from the metaphoric images and patterns in her world. What seemed to transfer for Mimi were patterns of thought. When Mimi shifted her life metaphor from water to music, it was a gradual process over time during which she held multiple views – all conflicting, ambiguous, and incomplete. Part of her motivation to take pictures was the drive to fill in the gaps of those understandings. "Art always pushes toward some sense of connection and completion" (Heath, 2006, p. 133). Steen (2006) explained the natural drive to search for patterns to construct meaning: "We unconsciously make use of such complex natural orders in wiring the brain and calibrating our perceptual systems, that our self-construction relies on them, and that natural selection has constructed a motivational system that leads us to seek them out" (p. 63).

Photography for Mimi was a link, not to other subject matter, but to patterns of thinking – not just patterns of thought processes, like inference or logic, but patterns of meaning, metaphors

of understanding, derived from everyday engagement with her world. In Mimi's experience, her metaphoric understandings did not rapidly and radically change. The shifts from one analogy to another were gradual as she saw relationships and over-lapping patterns. Fauconnier and Turner (2006) more accurately refer to the over-lap as *blends* that are imaginatively constructed from portions of previous metaphors. Attempts to reapply her metaphors in new situations gradually shifted Mimi's thinking over time. For example, Mimi always metaphorically depicted life as a flow. Her perceptions of negotiating that flow morphed gradually over a five-year period through a collection of metaphors from the static deteriorating chair to moving with the flow of water and wind to swimming like a fish in water to purposefully interacting in harmony with the flow of music. Patterns are not about content, but the relationship of patterns to patterns (Tucker, 2007). In talking about the connectedness of music and art, Root-Bernstein and Root-Bernstein (1999) stated, "there are patterns to pattern forming that allow one to cross disciplinary boundaries and transfer simple ideas in one realm of human experience to another realm" (p. 118). Steen (2006) further implicated the role of pattern constructing through art making:

> This means that through art, an individual can not only acquire a certain type of self-knowledge about his own aesthetic preferences, but also use the art itself to propose new orders. These new orders can then be selectively incorporated into his own perceptual system, in effect teaching him to perceive and sense the world in new ways. (p. 65)

The brain is in a constant state of acquiring and assessing information –identifying patterns in our environment, comparing them to patterns of previous experience, and reconstructing and committing to memory refined patterns of action in anticipation of future events.

The significance of personal inquiry adapted to formal course requirements in the classroom and the prevalence of meaning construction through the investigation of patterns in everyday experience observed in this study implicate the following conditions for improving the educational setting. What seems to transfer from one learning environment to another are the meanings we ascribe to the patterns we encounter and how those understandings might inform present uncertainties and anticipate subsequent experience. Being aware of the metaphoric understandings students bring to the learning environment, and explicitly allowing for the pursuit of personal inquiry in the context of broad, open-ended assignments would appear to provide a more motivational and meaningful learning experience. Activities that permit the acquisition of visual metaphors through the manipulation of relevant tools and materials would be the most rewarding.

The growing disconnect between schooling and the needs and purposes of contemporary life have forced educators to construct elaborate strategies to promote student engagement and foster learning in an increasingly strained and alien learning environment. In a contemporary zeitgeist of personalized technologies, autonomous life styles, and rapid changes locally and globally, appropriate pedagogical practice facilitates student learning through ill-structured, open-ended assignments and modeling how to think instead of inculcating what to think. Teachers must become more comfortable with the complex, the messy, the ambiguous. Teachers must be willing and able to guide students through the unsure waters of ill-structured, open-ended assignments that foster habits of mind to search for patterns of possibility rather than a deductive trivial pursuit of one (already identified) right answer.

The structure of schooling that met the needs of an agricultural calendar and an industrial work environment is inadequate for the needs of an information society in a global economy

with transient cultures. The World Wide Web has rendered the four walls of the classroom, bell-to-bell isolated disciplines, the textbook, and the knowledge-disseminating teacher obsolete. Teachers must become facilitators of student inquiry through ill-structured assignments that require personal engagement with the metaphoric patterns of thinking with which they view the world.

The arts naturally afford the kind of complex thinking that connects new content to present and future conditions in creative and meaningful ways. All students should be directed through a series of ill-structured pedagogical structures (Efland, 2002) that elicit personal artistic solutions. Siegesmund (2004), discussing the importance of putting Eisner's (2002) theory of qualitative reasoning into practice states "[i]f developing skills in qualitative reasoning is the educational aim of instruction, then it requires a planned curriculum, pedagogical skill, and specific learning objectives" (p. 85). Resnick (2001) and Costa (2001) similarly opine from research in teaching thinking that specific skills should be explicitly taught in the context of the discipline. The qualities of thinking and learning evidenced in Mimi's art making lends credence to the value of lessons explicitly structured to cultivate and strengthen thinking skills.

To understand how the brain works and the nature of thinking processes, neurologists, cognitive scientists, and psychologists isolate and study the phenomenon in laboratory conditions. Participants are often patients with brain damage or other anomalies that facilitate the isolation of the mental process. While those conditions help to understand aspects of how we think, they offer little toward the development of strategies for teaching thinking. Particular thinking skills, like inductive thinking or critical thinking or inference, do not operate in isolation. In real life and in the classroom such processes function in concert, primarily below the surface of conscious awareness, and are influenced by a multitude of conditions (Fauconnier &

Turner, 2002; Tucker, 2007). The intentions, attentions, and dispositions of human agency as well as the socio-cultural dynamics and classroom climate further complicate any attempt at predictability or uniformity of thought from student to student. It is suggested that the assignment of open-ended inquiries be utilized to engage the full capacity of the embodied mind with the technologies and materials of the physical and social-cultural environment to develop understanding, construct meaning, and create new possibilities of action.

Final Thoughts

Teaching, researching, and art-making are all highly reflective enterprises that recursively inform and change the proprietor of such acts. As I wrap up this discussion with a few final thoughts, I reflect on my experience with arts-based methods and how the over-all research has further influenced my teaching.

Reflections on Arts-Based Research

In the pilot study, I experimented with several approaches to qualitatively analyzing the data. Narrative Analysis interpreted the stories in the interview, Grounded Theory forwarded the emergence of themes in Mimi's words and images; and arts-based methods examined the complexities of Mimi's condition in an intuitive and empathic way. Narrative Analysis served to break down Mimi's interview into distinct stories, disclosing much of her close relationship to her extended family and friends and her perceptions of limitations in her life that those relationships potentially imposed. Grounded Theory identified a network of negative emotions stemming from Mimi's perceptions of cultural and parental limitations. However, it was through the arts-based processes that I began to deeply understand Mimi's photography.

Anthropologist, Adrie Kusserow (2008) stated that in her work, "poetry and data collection became mutually informative" (p. 74). Poetic writing, drawing, painting, and other

artistic conventions functioned in the same way in my research. Within the context of raw data collected from interviews, emails, personal websites, and reflections of Mimi as a student in my class, my art-making experiences were heuristic inquiry, simultaneously collecting, analyzing, and interpreting the data. While I realize that no person can know exactly what another is thinking and feeling and comprehend the confluence of factors that influence another's thoughts and actions, the visceral, empathic qualities of art-making afforded a deeper connection to the intentions and cognitive conditions of Mimi's photography. To me, it felt like looking from the inside out rather than the outside in.

Initially unable to verbally articulate those insights, I attempted to visually reconstruct or emphasize those qualities in three collective and somewhat more summative artistic formats. First, poetic writing distilled Mimi's perceptions from the initial interview of being caged, trapped, and silenced with the allegorical nature of her images to reveal insight into her artistic intentions. The release of the shutter became a metaphor for creating an opening through which she could escape or reconstruct her perceptions one frame at a time.

Second, the act of qualitative reasoning (Eisner, 2002) through drawing from her photographs - physically making marks with paint and pencil to interpret her images opened up what I perceived as an insider's view of Mimi's condition. I somatically experienced and viscerally, intuitively gained insight into her images. I cannot fully explain the experience of reconstructing her photographic self-portrait, *I Shed No Tears For Broken Me* (see Figure A4), in paint and graphite (see Figure A2), but in attuning myself visually to the image, reading its composition and expression, and physically interpreting it in color, shape, and line, I ached with sadness, regret, and resignation.

Third, in the performance piece, I arranged a poetic impression of Mimi's intentions and a summary of her life from the interview with a juxtaposition of quotes from her journal and images from her websites in a way that visually/verbally privileged Mimi's voice. While I could not explicate all that I was sensing in Mimi's experience, I organized the words and images in a way that made sense - that aligned with my understanding of how Mimi assigned meaning to her images. Feedback from audiences, peer reviews, and Mimi, herself, tweaked my understanding as well as the performance. The multiple dialogues as well as the visceral experience of each performance helped bring those understandings into language.

In additional efforts in the dissertation to systematically investigate the cognitive qualities of Mimi's photographs as a phenomenological case study, I took a more analytical approach and interpreted Mimi's images from an art criticism perspective, relying more on literary precedence and a connoisseurship (Eisner, 1994) as an artist and art teacher. Somewhat like Barone (2001), I made an effort to "play two games at once" (p. 171). The second approach served two purposes. One was an effort to bring the findings and analysis more into language and an academic form that might advance understandings of the cognitive process of art-making in education. The other was to see how a different methodology would mine the research landscape.

The analytical approach explicated in Chapter Four unearthed two significant conditions of Mimi's photography not evidenced in arts-based methods: personal agendas were piggybacked to open-ended classroom assignments, and metaphoric patterns of meaning Mimi both found in her environment and constructed through her photography were the most prevalent aspects of learning that transferred from learning environment to learning environment.

The dissertation writing has been an arduous task of first attempting to put into words the insights I had intuited through the creative manipulation of her words and images through poetry,

painting, and performance, and second, analyzing and interpreting Mimi's photographs from a scholarly perspective. The academic approach identified salient conditions of cognition in Mimi's artwork. Arts-based methods, applied to the same data, accessed and interpreted the data differently, deeply mining the human condition. As I associated journal entries to her images, I was surprised at the nuance of primarily negative emotions, the contradictory thoughts about family, the intense angst behind her cryptic remarks, and expressed ambitions that were directly polar to her perceived condition.

I found the application of different creative conventions natural and comfortable forms of inquiry. Manipulating the data and creating data from data through visual and other creative means felt direct, natural, real. I somatically comprehended the qualities of the data; I viscerally understood. Not that I knew exactly what Mimi felt and thought while taking pictures, but through my personal creative engagement with her imagery I experienced an ineffable knowing, a somatic resonance, that was sure and clear, and that I had not realized before hand. I had accessed a significant level of understanding long before I was able to put it into words.

When the time came to display my research artwork, I felt a little uncomfortable. I worried about whether others – especially others not trained in the arts – might perceive my efforts less than rigorous. I had doubts about whether they would appreciate art-making as a method of inquiry or understand the images. Within the art community, I doubted whether the work would be judged fairly on its research merits. The artwork is neither fine art according to modern or post-modern conventions nor illustration in a commercial sensibility. The effectiveness of research-based artwork requires the same trained skills and design sensibilities as fine art or commercial illustration, but the nature of the images reside in neither camp. While possessing the intuitive, open-ended qualities of real inquiry, the meaning of the image must still

be visually legible to others outside the art community. The arts-based images I produced were explorative; the paintings and compositions constituted data and documents of investigation and not refined illustrations of drawn conclusions. This placed the somewhat unfinished, unrefined images in a hybrid no-man's land between fine art and illustration to which no one seemed quite able to respond. Feedback on the images was minimal; I took that as a no, and abandoned my original intention of refining and completing a series of images for display and returned to a more traditional explication of the data.

As a supporter of arts-based methods in theory, I felt like I had to try it; I had to experience it in a research context to know how it works first hand. Drawing and painting were intuitive and natural means of inquiry and I look forward to future studies with those methods. However, I am not an eloquent poet or performer even though both art forms were effective in my research. Metaphors and relationships of Mimi to her photography were established early on through the use of poetic *conventions*. I was told not to call my work poetry - I am not a poet – but wordplay has been an effective way for me to see relationships and construct metaphoric understandings. The performance piece was the most effective method in my toolbox. So many of the connections between the data – especially Mimi's words to her images - were identified in that expressive format. In retrospect, given Mimi's preoccupation with music, perhaps pertinent musical compositions should have been included. Having brought the study to its current conclusion and reflected on much of the process, I have thought of other changes or additions I would make. It is not an unreasonable consideration that I might revisit this data again – most likely through painting or photography.

Personal Pedagogical Transformations

Still ruminating within are considerations about how continuous and pervasively unconscious is our learning. As an educator, I find myself approaching student work and curriculum design with a pedagogical openness and respect for the inherent qualities of learning in each individual and a greater sensitivity to facilitating their intentions of personal inquiry in relation to course content.

During the pilot study, I recognized three or four photographs on Mimi's websites from assignments I had given when she was enrolled in my photography class. At first, I made the assumption that she was simply proud of those works and wanted to share them with others. As I analyzed all 98 images and her journal entries with her interview statements, I realized her choices for posting were far more deliberate and carried much greater meaning. Through photography course assignments, Mimi was not only learning technical skills and developing design sensibilities. As previously discussed, she was learning something about herself in relation to her world through finding and creating metaphors and patterns of experience.

In high school, Mimi had piggybacked her personal agenda to creative inquiries in her art assignments. I had no idea the extent to which it had happened subsequent to high school when I was writing up the pilot study, but I began to think about how art-making activities might support – if not enhance - the learning process in a course I was teaching. Would open-ended visual assignments help students to connect more deeply and personally to the content? In a secondary art education curriculum course I was teaching, I assigned open-ended and ill-structured in-class activities and out-of-class assignments that require inductive, creative, and connective thought processes to complete. Students used artistic skills and design conventions to relate course content to their personal lives. For example, to introduce a discussion of pedagogy,

I asked, How can you use photography/drawing to describe the relational "space" between yourself and another person? To discuss the nature of school as a community of educators, I asked the pre-service teachers to think about a particular community in which they were involved. I then asked them to use drawing or photography to construct a metaphor that conveys their personal sense of relation, meaning, and purpose within that particular community.

The visual journal assignments became a highlight of the course. I observed heightened energy in the classroom as students anticipated the next assignment, discussed possibilities, and viewed each other's solutions in a power point critique. The pre-service teachers found themselves deeply invested in their work and drew - both figuratively and literally – strong, personal conclusions about their role as educators, their relationship to their students, and the nature and purpose of their curriculum. Each one developed a very unique and personal philosophy of art education, expressed a deep, personal passion for teaching, and a desire to empower their students with the same habits of mind. This was not a formal study; it was simply my observation and formative evaluation of their learning. The most distinctive characteristics of learning that I attribute to the visual journal assignments are threefold. First, I observed an enhanced effort or personal commitment to the learning activities. Second, there were highly individual and deeply thought-out solutions demonstrated both in the images they constructed and in the written reflections about their work. Third, I observed efforts by the pre-service teachers during their student teaching that reflected their work in my class the previous semester.

When I think about the curriculum I am preparing to teach in the fall I ask myself, how can a course structure allow students personal investigation into the content, making it personally relevant and meaningful? Irwin and Springgay (2008) stated that such a facilitator of learning is "concerned with *creating the circumstances* to produce knowledge and understanding through

inquiry-laden processes" (p. 111). I believe, from my study of Mimi's photography and the positive feedback from visual journal assignments in my secondary curriculum course, that examining course content through open-ended art-making activities allows students to make deeper, more personal connections.

Art: The Cognitive Umbrella

The self-reflective, cognitive nature of art, stemming from the "most ancient domain of the human mind" (Donald, 2006, p. 19) positions art as the original, pre-linguistic neural – Johnson (2007) would add *embodied*, Donald (2006) would add *social* – construct for cognitively engaging the world. Art is not just a type of cognition – art *is* cognition – embodied cognition – applying all of the neural, sensorimotor, social and cultural networks to acquire understanding and construct meaning. All other subjects of study, structured into disciplines as they are in contemporary culture, are domains that have been created and can be effectively understood through imaginative inquiry. Art, then, is the central rod and the all-encompassing cognitive umbrella for learning, reaching out across disciplines to make explicit the patterns of metaphoric connections.

It is my hope that evidences related here from the interpretations of Mimi's photographs resonate with other educators' experiences and illuminate with greater clarity the nature of learning experiences occurring in their classrooms. Secondly, I trust that conclusions drawn from this study will foster observations of other ways in which art making serves the transformational intentions of the learner, further refining the implications artistic cognition might have for education.

I have inferred throughout this dissertation that although this research is limited to photography as a visual art form, these cognitive affordances are inherent in all the arts. There is

certainly a similarity of process, embodied action, and habits of mind across fine art disciplinary boundaries. Mimi's experience is not an unfamiliar occurrence. As an educator in visual art and drama, I have observed similar conditions of self-actualization in the lives of fine arts participants. If I have been able to make those connections, it is hoped that other educators and parents can, through the detailed descriptions given here, recognize similar patterns of experience in their lives or the lives of others. It is hoped that by making explicit the affordances and focus of cognitive action through art making that the reader can make natural generalizations as to the potentialities of the arts for advancing the creative ways in which people – especially our youth – can apply these cognitive skills to construct new metaphors for personal transformation and for successfully negotiating the rapidly changing conditions of our culture and environment.

References

Albers, J. (1963). *Interaction of color*. New Haven, NJ and London: Yale University Press.

Anderson,T. (1988). A structure for pedagogical art criticism. *Studies in Art Education*, *30*(1), p. 28.

Arnheim, R. (1969). *Visual thinking*. Berkeley, Los Angeles, London: University of California Press.

Ausubel, D. (1968). *Educational psychology: A cognitive view*. New York: Holt, Rinehart and Winston.

Banks, M. (2007). *Using visual data in qualitative research*. London: Sage Publications, Ltd.

Barone, T. (1990). Using the narrative text as an occasion for conspiracy. In E. Eisner & A. Peshkin (Eds.), *Qualitative inquiry in education: The continuing debate* (pp. 305-326). New York: Teachers College Press.

Barone, T., (2001). *Touching eternity: The enduring outcomes of teaching*. New York: Teachers College Press.

Barone, T. (2008). How arts-based research can change minds. (pp. 28-49) In M. Cahnmann-Taylor & R. Siegesmund (Eds.). *Arts-based research in education: Foundations for practice*. New York and London: Routledge.

Barone, T. & Eisner, E. (2006). Arts-based educational research. In L. Green, G. Camilli, P. B. Elmore (Eds.). *Handbook of complementary methods in education research*. Mahwah, NJ and London: Lawrence Erlbaum Associates, Publishers.

Barrett, T. (2006). *Criticizing photographs: An introduction to understanding images.* New York: McGraw-Hill.

Barthes, R. (1977). *Image, music, text*. New York: Hill and Wang.

Barthes, R. (1980). *Camera lucida*. New York: Hill and Wang.

Berger, J. (1972). *Ways of seeing*. London: Penguin.

Bourdieu, P. (1990). *Photography: A middle-brow art.* Stanford, CA: Stanford University Press.

Bourdieu, P. & Waquant, L. (1992). *Invitation to reflexive sociology*. Chicago: The University of Chicago Press.

Bramston, D. (2010). *Visual conversations*. La Verne, TN: Ingram Publisher Services Inc.

Bransford, J. D., Brown, A. L., & Cocking, R. R. (Eds.) (2000). *How people learn: Brain, mind, experience, and school.* Washington, D. C.: National Academy Press.

Bransford, J. & Schwartz, D. (1999). Rethinking transfer: A simple proposal with multiple implications. *Review of Research in Education*. Vol 24. American Educational Research Association.

Brown, J. W. (1999). On aesthetic perception. *Journal of Consciousness Studies*, 6(6-7), 144-160

Broudy, H. (1972). *Enlightened cherishing: An essay on aesthetic education*. Urbana, IL: University of Illinois Press.

Broudy, H. (1977). Types of knowledge and purposes of education. In R. Anderson, R. Shipiro, & W. Montague (Eds.). *Schooling and the acquisition of knowledge*. Hillsdale, NJ: Erlbaum.

Burger, K. & Winner, E. (2000) Instruction in visual art: Can it help children learn to read? *Journal of Aesthetic Education, 34*(3/4), 277-293.

Burton, D. (2000). *1999 survey of secondary art education instruction in U.S. schools.* Richmond, VA: VCU Arts, Virginia Commonwealth University.

Burton, J. M., Horowitz., R. & Abeles, H. (2000). Learning in and through the arts: The question of transfer. *Studies in Art Education, 41*(3), 228-257.

Bruner, J. (1961). *The process of education*. Cambridge, MA: Harvard University Press.

Catterall, J. S. (2002). The arts and the transfer of learning. In R. Deasy (Ed.). *Critical links: Learning in the arts and student achievement and social development*. Washington, DC: AEP.

Catterall, J. S. (2000). The arts and the transfer of learning. *Champions of change: Involvement of the arts & human development* (pp. 151-157). Washington, DC: Council of Chief State School Officers.

Catterall, J. S. (1998). Does experience in the arts boost academic achievement? A response to Eisner. *Art Education*, *51*(4), 6-11.

Catterall J. S., Chapleau, R., & Iwanaga. J. (2000). Involvement in the arts and human development: General involvement and intensive involvement in music and theater arts. *Champions of change: Involvement of the arts & human development* (pp.18-33). Washington, DC: Council of Chief State School Officers.

Cahnmann-Taylor, M. (2008a). Arts-based research: Histories and new directions. In M. Cahnmann & R. Siegesmund (Eds.). *Arts-based research in education: Foundations for practice* (pp. 3-15). New York: Routledge.

Cahnmann-Taylor, M. (2008b). To dwell in possibility: Poetry and educational inquiry. In M. Cahnmann & R. Siegesmund (Eds.). *Arts-based research in education: Foundations for practice* (pp. 51-53). New York and London: Routledge.

Charmaz, K. (2006). *Constructing grounded theory: A practical guide through qualitative analysis.* London: Sage Publications, Ltd.

Churchill, W. (1944). Speech to house of commons, October 28, 1944. Cited in Education: Schools of tomorrow. *Time Magazine*, September 12, 1960.

Clandinin, J. & Connelly, M. (2000). *Narrative inquiry: Experience and story in qualitative research.* San Francisco, CA: Jossey-Bass.

Clark, A. (2008). *Supersizing the mind: Embodiment, action, and cognitive extension*. New York: Oxford University Press, Inc.

Clements, R. (1979). The inductive method of teaching visual art criticsm. *Journal of Aesthetic Education, 13*(3), pp. 67-78.

Costa, A. (2001). *Developing minds: A resource book for teaching thinking (3rd edition).* Alexandra, VA: Association for Supervision and Curriculum Development.

Creswell, J. (1998). *Qualitative inquiry and research design: Choosing among five approaches.* Thousand Oaks, CA: Sage Publications.

Csikszentmihalyi, M. (1990). *Flow*. New York: Harper & Row, Publishers, Inc.

Csikszentmihalyi, M. (1996). *Creativity: Flow and the psychology of discovery and invention.* New York: Collins Publishers, Inc.

Damasio, A. (1994). *Descarte's error: Emotion, reason, and the human brain*. New York: Penguin Books.

Damasio, A. (1999). *The feeling of what happens: Body and emotion in the making of consciousness.* San Diego and New York: Harcourt, Inc.

Damasio, A. (2003). *Looking for Spinoza: Joy, sorrow, and the feeling brain.* Orlando, FL: Harcourt.

deMarrais, K. B., & Lapan, S. D. (2004). Foundations for research: Methods of inquiry in education and the social sciences. (1st ed.). Lawrence Erlbaum.

Denzin, N. & Lincoln, Y. (2000). (eds.). *Handbook of qualitative research* (2nd ed.). Thousand Oaks, CA: Sage.

Detterman, D. (1993). The case for the prosecution: Transfer as epiphenomenon. In D. Detterman & R. Sternberg (Eds.). *Transfer on trial: Intelligence, cognition, and instruction.* Norwood, NJ: Ablex.

Dewey, J. (1910). *How we think.* Boston: D. C. Heath & Co., Publishers.

Dewey, J. (1934). *Art as experience.* New York: Capricorn Books.

Donald, M. (2006). Art and cognitive evolution. In Mark Turner (Ed.). *The artful mind* (pp. 3-20). New York: Oxford University Press.

Edelman, G. (2006). *Second nature: Brain science and human knowledge*. New Haven and London: Yale University Press.

Edelman, G. & Tononi, G. (2000). *A universe of consciousness: How matter becomes imagination.* New York: Basic Books.

Efland, A. (2002). *Art and cognition: Integrating the visual arts in the curriculum.* NY: Teachers College Press.

Egan, K. (1992). *Imagination in teaching and learning: The middle school years.* Chicago: The University of Chicago Press.

Egan, K. (1997). *The educated mind: How cognitive tools shape our understanding*. Chicago: The University of Chicago Press.

Eisner, E. W. (1994). *Cognition and curriculum reconsidered*. New York and London: Teachers College Press.

Eisner, E. W. (1998). Does experience in the arts boost academic achievement? *Art Education, 51*(3), 7-15.

Eisner, E. W. (2002a). *The arts and creation of mind.* New Haven: Yale University Press.

Eisner, E. W. (2002b). What can education learn from the arts about the practice of education? *Journal of Curriculum and Supervision, 18*(1), 4-16.

Eisner, E. W. (2008). Persistent tensions in arts-based research. In M. Cahnmann-Taylor & R. Siegesmund (Eds.). *Arts-based research in education: Foundations for practice* (pp. 16-27). New York: Routledge.

Ellis, R. D. (1999). The dance form of the eyes: What cognitive science can learn from art. *The Journal of Consciousness Studies*, *6*(6-7), 161-175.

Ellsworth, E. (2005). *Places of learning: Media, architecture, pedagogy*. New York: Routledge.

Emmison, M. & Smith, P. (2000). *Researching the visual*: *Images, objects, contexts and interactions in social and cultural inquiry*. London: Sage Publications Ltd.

Epstein, R. (2004). Consciousness, art, and the brain: Lessons from Marcel Proust. *Consciousness and Cognition*, *13*, 213-240.

Erickson, M. (2004). Interaction of teachers and curriculum. In E. Eisner & M. Day (Eds.). *Handbook of research and policy in art education* (pp. 467-486). Mahwah, NJ: Lawrence Erlbaum Associates, Publishers.

Erickson, M. (2005).Teaching for transfer through online and traditional art instruction. *Studies in Art Education, 46*(2), 170.

Ezzy, D. (2002). *Qualitative analysis: Practice and innovation.* London: Routledge.

Falk, J., & Dierking, L. (2000). *Learning from museums.* Walnut Creek, CA: AltaMira Press.

Fauconnier, G. & Turner, M. (2002). *The way we think: Conceptual blending and the mind's hidden complexities.* New York: Basic Books.

Feldman, E. (1967). *Varieties of visual experience.* Englewood Cliffs, NJ: Prentice-Hall.

Fiske, E. (Ed.). (1999). *Champions of change: Involvement of the arts & human development*. Washington, DC: Council of Chief State School Officers.

Gardner, H. (2007). *Five minds for the future*. Boston: Harvard Business School Press.

Gardner, H. (1999). Zero-based arts education: An introduction to ARTS PROPEL. *Studies in Art Education*, *30*(2), 71-83.

Gallagher, Shaun, (2005). *How the body shapes the mind*. New York: Oxford University Press, Inc.

Gombrich, E. (1960). *Art and illusion: A study in the psychology of pictorial representation.* Princeton, NJ: Princeton University Press.

Goodman, N. (1976). *Languages of art*. Indianapolis, IN: Haskett Publishing Company, Inc.

Goodman, N. (1978). *Ways of worldmaking*. Indianapolis, IN: Hackett.

Greene, M. (1995). *Releasing the imagination*. San Francisco, CA: Jossey-Bass.

Guba, E. & Lincoln, Y. (1989). *Fourth generation evaluation.* Newbury Park, CA: Sage.

Guba, E. & Lincoln, Y. (1990). Can there be a human science? *Person-Centered Review*. *5*(2), 130-154.

Hamblein, K. (1984). The culture of aesthetic discourse (CAD): Origins, contradictions, and implications. *The Bulletin of the Caucus on Social Theory and Art Education*, 4, pp. 22-34.

Harland, J., Kinder, K., Lord, P., Stott, A., Schagen, I., & Haynes, J. (2000). *Arts education in secondary schools: Effects and effectiveness.* Berkshire, UK: National Foundation for Educational Research.

Hatch, J. A., (2002). *Doing qualitative research in education settings*. Albany, NY: State University of New York Press.

Heath, S. (2000). Imaginative actually. *Champions of change: Involvement of the arts & human development* (pp. 19-34). Washington, DC: Council of Chief State School Officers.

Heath, S. (2006). Dynamics of completion. In M. Turner (Ed.). *The artful mind* (pp. 133-150). New York: Oxford University Press.

Hebb, D. (1949). *The organization of behavior*. New York: Wiley.

Hetland, L & Winner, E. (2004). Cognitive transfer from arts education to nonarts outcomes: Research evidence and policy implications. In E. Eisner & M. Day (Eds.). *Handbook of research and policy in art education* (pp. 135-162). Mahwah, NJ: Lawrence Erlbaum Associates, Publishers.

Hetland, L., Winner, E., Veenema, S., & Sheridan, K. (2007). *Studio thinking: The real benefits of visual arts education.* New York and London: Teachers College Press.

Hope, S. (2001). REAP: More than fifteen minutes? *Arts Education Policy Review*. *102*(5), 7-10.

Immordino-Yang, M. H. & Damasio, A. (2007). We feel, therefore we learn: The relevance of affective and social neuroscience to education. *Mind, brain, and education, I*(1), 3-10.

James, W. (1890). *The principles of psychology: Volume 1*. New York: Cosimo Classics.

Johnson, M. (1987). *The body in the mind: The bodily basis of meaning, imagination, and reason.* Chicago: The University of Chicago Press.

Johnson, M. (2006). Mind incarnate: From Dewey to Damasio, *Daedalus*, *135*(3), 46-54.

Johnson, M. (2007). *The meaning of the body*. Chicago: The University of Chicago Press.

Kress, G. & van Leeuwen, T. (1996). *Reading images: The grammar of visual design*. London and New York: Routledge.

Kubler-Ross, E. (1969). *On death and dying*. New York: Scribner.

Kusserow, A. (2008). Ethnographic poetry. In M. Cahnmann-Taylor & R. Siegesmund (Eds.). *Arts-based research in education: Foundations for practice* (pp. 72-78). New York and London: Routledge.

Lakoff, G. (2006). The neuroscience of form in art. In M. Turner (Ed.). *The artful mind: Cognitive science and the riddle of human creativity* (pp.153-188). New York: Oxford University Press, Inc.

Lakoff, G. & Johnson, M. (1999). *Philosophy in the flesh: The embodied mind and its challenge to western thought.* New York: Basic Books.

Lakoff, G. & Johnson, M. (1980). *Metaphors we live by*. Chicago and London: The University of Chicago Press.

Lakoff, G & Nunez, R. (2000). *Where mathematics comes from: How the embodied mind brings mathematics into being.* New York: Basic Books.

Lave, J. & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. New York: Cambridge University Press.

LeDoux, J. (1996). *The emotional brain: The mysterious underpinnings of social life*. New York: Simon and Schuster Paperbacks.

Lincoln, Y. (1990). Toward a categorical imperative for qualitative research. In E. Eisner & A. Peshkin (Eds.), *Qualitative inquiry in education: The continuing debate* (pp. 277-295). New York: Teachers College Press.

Lincoln, Y. & Guba, E. (1985). *Naturalistic inquiry.* Thousand Oaks, CA: Sage Publications, Inc.

Marshall, C. & Rossman, G. (2006). *Designing qualitative research* (4th Ed.). Thousand Oaks, CA: Sage Publications, Inc.

Marton, F. (1988). Phenomenography: A research approach to investigating different understandings of reality. In Robert Sherman and Rodman Webb (Eds.). *Qualitative research in education: Focus and methods*. (pp. 141-161). London: The Falmer Press.

Marzano, R., Brandt, R., Hughes, C., Jones, B., Presseisen, B., Rankin, S., & Suhor, C. (1988). *Dimension of thinking: A framework for curriculum and instruction*. New York: Association for Supervision and Curriculum Development.

Merleau-Ponty, M. (1962). *Phenomenology of perception.* New York: Routledge & Kegan Paul.

Merriam, S. (1998). *Qualitative research and case study applications in education.* San Francisco, CA: Jossey-Bass Inc.

Mertens, D. (2005). *Research and evaluation in education and psychology.* Thousand Oaks, CA: Sage Publications, Inc.

Merton, R. (1967). *On theoretical sociology*. New York: The Free Press.

McLuhan, M. (1964). *Understanding media: The extensions of man*. New York: McGraw-Hill.

McNiff, S. (2008). Art-based research. In J. Knowles & A. Cole (Eds.). *Handbook of the arts in qualitative reseach* (pp. 29-40). Thousand Oaks, CA: Sage Publications, Inc.

Miles, M. & Huberman, A. (1994). *Qualitative data analysis: An expanded sourcebook* (2nd ed.). Thousand Oaks, CA: Sage Publishers, Inc.

Modell, A. (2003). *Imagination and the meaningful brain*. Cambridge, MA & London: MIT Press.

Moustakas, C. (1994). *Phenomenological research methods*. Thousand Oaks, CA: Sage Publications, Inc.

Murray, E. (1986). *Imaginative thinking and human existence*. Pittsburgh, PA: Duquesne University Press.

Parsons, M. (2007). Art and metaphor, body and mind. In L. Bresler (Ed.), *International handbook of research in arts education* (pp. 533-542). Dordrecht, NL: Springer.

Patton, M. (2002). *Qualitative research & evaluation methods*. Thousand Oaks, CA: Sage Publications, Inc.

Peshkin, A. (1988). In search of subjectivity. One's own. *Educational Researcher. 17*(7), 17-21.

Phillips, D. (1990). Subjectivity and objectivity: An objective inquiry. In E. Eisner & A. Peshkin (Eds.). *Qualitative inquiry in education: The continuing debate.* (pp. 19-37). New York and London: Teachers College Press.

Pink, S. (2003). Representing the sensory home: Ethnographic experience and ethnographic hypermedia. In G. Bloustein (Ed.). *Envisioning ethnography: Exploring the complexity of the visual methods in ethnographic research,* [a special issue of] *Social Analysis, 47*(3), 46-63.

Pink, S. (2004). Introduction: Situating visual research. In S. Pink, L. Kurti, & A. Afonso (Eds.). *Working images: Visual research and representation in ethnography* (pp. 1-12). London & New York: Routledge.

Pink, S. (2004). Conversing anthropologically: Hypermedia as anthropological text. In S. Pink, L. Kurti, & A. Afonso (Eds.). *Working images: Visual research and representation in ethnography* (pp. 166-184). London & New York: Routledge.

Pink, S. (2006). *The future of visual anthropology*. New York: Routledge.

Polanyi, M. (1974). *Personal knowledge: Towards a post-critical philosophy*. Chicago: The
University of Chicago Press.

Posner, M., Rothbart, M., Sheese, B., & Kieras, J. (2008). How arts training influences
cognition. In C. Asbury and B. Rich (Eds.). *Learning, arts, and the brain: The Dana
consortium report on arts and cognition* (pp. 1-10). New York and Washington: Dana
Press.

Reason, P. (2006). Cooperative inquiry. In P. Reason & H. Bradbury (Eds.). *Handbook of action
research: The concise paperback edition* (pp. 205-231). London and Thousand Oaks,
CA: Sage.

Reason, P. and Bradbury, H. (2001). Inquiry and participation in search of a world worthy of
human aspiration. In P. Reason & H. Bradbury (Eds.). *Handbook of action research:
Participative inquiry and practice* (pp. 1-14). London: Sage.

Resnick, L. (1987). *Education and learning to think*. Washington: National Academy Press.

Resnick, L. (2001). Making America smarter: The real goal of school reform. In Arthur Costa,
(Ed.). *Developing minds: A resource book for teaching thinking* (pp. 3-6). Alexandra,
VA: Association for Supervision and Curriculum Development.

Reissman, C. K. (1993). *Narrative analysis*. Thousand Oaks, CA: Sage Publications, Inc.

Riessman, C. K. (2001). Analysis of personal narratives. In J. Gubrium & J. Holstein (Eds.).
Handboook of interview research (pp. 695-710). Thousand Oaks, CA: Sage Publications,
Inc.

Ricoeur, P. (1975). *The Rule of Metaphor*. Toronto: University of Toronto Press.

Rilke, R. M. (1983). Malte laurids brigge. In Flemming, A. E. *Rainer Maria Rilke: Selected
poems*. New York: Routledge.

Root-Berenstein, R. & Root-Berenstein, M. (1999) *Sparks of genius: The 13 thinking tools of the world's most creative people.* New York: Houghton Mifflin Company.

Rose, G. (2007). *Visual methodologies: An introduction to the interpretation of visual materials.* London: Sage Publications, Ltd.

Schacter, D. (1999). The seven sins of memory. *American psychologist*, 54(3), pp. 182-203.

Seidman, I. (2006). *Interviewing as qualitative research: A guide for researchers in education and the social sciences* (3rd ed.). Teachers College Press.

Shavelson, R., Phillips, D., Towne, L., & Feurer, M. (2003). On the science of educational design studies. *Educational researcher*, 32(1), p. 25.

Shoenfeld, J. (1993/2001). *Recursion theory*. Natick, MA: A K Peters, Ltd.

Shore, S. (2007). *The nature of photographs*. New York: Phaidon Press, Inc.

Short, G. (1998). The high school studio curriculum and art understanding: An examination. *Studies in art education*, 40(1), p. 46.

Shusterman, R. (2004). Somaesthetics and education: Exploring the terrain. In L. Bresler (Ed.), *Knowing bodies, moving minds: Towards embodied teaching and learning* (pp. 51-60). Dordrecht, NL: Kluwer Academic Publishers.

Shutz, A. (1970). *On phenomenology and social relations.* Chicago and London: The University of Chicago Press.

Shutz, A. (1967). Making music together. In *Collected papers* (Vol. 2). The Hague: Nijhoff.

Siegesmund, R. (2004). Somatic knowledge and qualitative reasoning: From theory to practice. *Journal of Aesthetic Education*, *38*(4), 80-96.

Solso, R. (2003). *The psychology of art and the evolution of the conscious brain*. Cambridge, MA, London: MIT Press.

Sontag, S. (1977). *On photography*. New York: Picador.

Stafford, B. (2007). *Echo objects: The cognitive work of images*. Chicago: University of Chicago Press.

Stake, R. (1978). The case study method in social inquiry. *Educational Researcher*, *7*(2), pp. 5-9.

Stake, R. (1994). Case studies. In N. Denzin & Y. Lincoln (eds.). *Handbook of qualitative research* (pp. 236-247). Thousand Oaks, CA: Sage Publications, Inc.

Stake, R. (1995). *The art of case study research.* Thousand Oaks, CA: Sage Publications, Inc.

Steen, F. (2006). A cognitive account of aesthetics. In M. Turner (Ed.). *The artful mind* (pp. 57-71). New York: Oxford University Press.

Strauss, A. and Corbin, J. (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory.* Thousand Oaks, CA: Sage Publications, Inc.

Sturken, M. & Cartwright, L. (2001). *Practices of looking: An introduction to visual culture*. Oxford and New York: Oxford University Press.

Sullivan, G. (2005). *Art practice as research: Inquiry in the visual arts.* Thousand Oaks, CA: Sage Publications, Inc.

Szarkowski, J. (1978). *Windows and mirrors: American photography since 1960*. New York: Museum of Modern Art.

Tishman, S., MacGillivray, D., & Palmer, P. (1999) Investigating the educational impact and potential of The Museum of Modern Art's visual thinking curriculum: Final report to the Museum of Modern Art. New York: Museum of Modern Art.

Tomasello, M. (1999). *The cultural origins of human cognition.* Cambridge, MA: Harvard University Press.

Tucker, D. (2007). *Mind from body: Experience from neural structure*. New York: Oxford University Press, Inc.

Turner, M. (2006). The art of compression. In M. Turner (Ed.). *The artful mind: Cognitive science and the riddle of human creativity* (pp. 93-114). New York: Oxford University Press, Inc.

Van Manen, M. (1990). *Researching lived experience*. Ontario, Canada: The Althouse Press.

Von Wright, G. (1971) *Explanation and understanding.* New York: Cornell University Press.

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes.* Cambridge, MA: Harvard University Press.

Wilhelm, J. (1995). Reading is seeing: Using visual response to improve the literacy reading of reluctant readers. *Journal of Reading Behavior, 27*(4), 467-503.

Winner, E. & Cooper, M. (2000). Mute those claims: No evidence (yet) for a causal link between arts study and academic achievement. *Journal of Aesthetic Education*, *34*(3-4), 11-75.

Winner, E. & Hetland, L. (2000). Does studying the arts enhance academic achievement? *Education Week*, *20*(9), 64-65.

Wolcott, H. (1990). *Writing up qualitative research* (2nd Ed.). Thousand Oaks, CA: Sage Publications, Inc.

Zeki, S., (1991). Art and the brain. *Journal of Consciousness Studies*, *6*(6-7), 76-96.

Zeki, S. & Nash, J. (1999). *Inner vision: An exploration of art and the brain*. Oxford: Oxford University Press.

Appendix A. Arts-Based Research

Figure 1. Filmstrip Motif

Figure 2. Mimi

Figure 3. Sofa

Figure 4. I Shed No Tears For Broken Me

Appendix B. Ancillary Photograph Data

Figure 1. Your Silent Face

Figure 2. Marionette

Figure 3. Oh
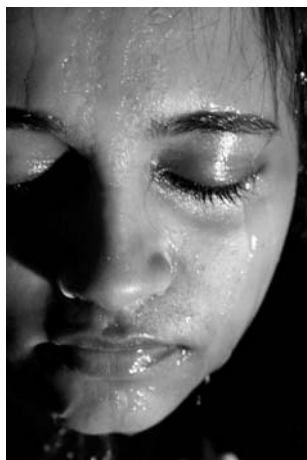

Figure 4. 44 Caliber Love Letter

Figure 5. Wet

Figure 6. Lost at Sea 3

Figure 7. Dance in My Blood

Figure 8. Firebreather

Appendix C. Map of Cognitive Images

Map of Cognitive Images