The Historical Aspects of Mural Making, Art Therapy, and Social Action,
in Relation to the Disability Mural Project

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By:

Deborah Dawn Costandine

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Abstract

The exploration of prehistoric symbolic art making illustrates the intrinsic need to communicate and belong, and demonstrates the healing nature of symbolic art and social action. The evolution of symbolic art making is similar throughout all developing cultures from primitive society to more advanced cultures. It is developmental and emergent and involves a communal sense of belonging. Ancient art making used collaboration and social engagement and was historically essential for survival. Symbolic art making is evolutionary, and was used to illustrate core societal values of belonging, and demonstrates societal awareness, and societal progression. Art and mural making are also used to illustrate complex concepts and conflicting ideology. The Disability Mural Project is an example of an educational and therapeutic project of a socially active and modern culture. The project uses these issues to help those with limited access to art making, act, react, and grow through a collaborative process. The Disability Mural Project demonstrates societal awareness of disability and accessibility through action toward a therapeutic and healing conclusion. It has a positive and enduring effect and is a national project and ongoing social action that continues throughout the United States fifteen years after the first mural action was completed.
# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dedication</td>
<td>6</td>
</tr>
<tr>
<td>Acknowledgements</td>
<td>8</td>
</tr>
<tr>
<td><strong>Chapter I Introduction</strong></td>
<td></td>
</tr>
<tr>
<td>Introduction</td>
<td>11</td>
</tr>
<tr>
<td>Evolution and Originality</td>
<td>12</td>
</tr>
<tr>
<td>Paleomammalian Brain and Mimesis</td>
<td>14</td>
</tr>
<tr>
<td>Multi-theory Models of Evolution</td>
<td>17</td>
</tr>
<tr>
<td>Modern Art, Social Action and Mural Making</td>
<td>37</td>
</tr>
<tr>
<td>The Effects of Belonging and the Actions of Superiority</td>
<td>46</td>
</tr>
<tr>
<td>Striving for Recognition and Effects of Feelings of Inferiority and Shame</td>
<td>48</td>
</tr>
<tr>
<td>The Purpose of the Americans with Disability Act Mural</td>
<td>62</td>
</tr>
<tr>
<td>Extension of the Disability Mural: Duluth Minnesota</td>
<td>71</td>
</tr>
<tr>
<td>Extension of the Disability Mural: Twin Cities and Saint Cloud, Minnesota</td>
<td>72</td>
</tr>
<tr>
<td>Limitations of the Study</td>
<td>79</td>
</tr>
<tr>
<td>Assumptions</td>
<td>80</td>
</tr>
<tr>
<td>Operational Definition of Adlerian Terms</td>
<td>81</td>
</tr>
<tr>
<td>Operational Definition of Terms</td>
<td>82</td>
</tr>
<tr>
<td>Implications</td>
<td>84</td>
</tr>
<tr>
<td><strong>Chapter II Literature Review</strong></td>
<td></td>
</tr>
<tr>
<td>Literature Review</td>
<td>84</td>
</tr>
<tr>
<td>Overview of Literature Review</td>
<td>84</td>
</tr>
<tr>
<td>Conclusions</td>
<td>90</td>
</tr>
</tbody>
</table>
Chapter III Project Summary

Setting ..........................................................................................................................90

Chapter IV Results

The Genesis of Cultural and Social Belonging .........................................................91
Psychology of Aesthetics, Neuroaesthetics, and Neuro-Cognitive Brain Research........92
Art and neuro-psychology..........................................................................................93
Social action and social engagement, and social intervention.................................97
Creativity and mental illness.....................................................................................98

Chapter V Discussion

Conclusion ....................................................................................................................103
Major Findings ..........................................................................................................103
Implications and Recommendations .........................................................................104
Future Developments ...............................................................................................104
Conclusions ...............................................................................................................105

References

References ..................................................................................................................107

Appendices

Appendix A: List of Figures ......................................................................................121
Appendix A: List of Tables .......................................................................................137
Appendix A: Abbreviations ......................................................................................140
Appendix B: Permissions .........................................................................................142
DEDICATION

This paper is dedicated to those who will not allow disability to encumber the development of a passionate and fulfilled life. In my quest to transform my disabilities into re-abilities, I have tried to utilize my talent and intellect to educate myself to all the possibilities of living the fullest life possible. This has moved me toward helping and empowering others through art so that they may know the possibilities of art and healing.

“Our deepest fear is not that we are inadequate. Our deepest fear is that we are powerful beyond measure. It is our light, not our darkness, that most frightens us. Your playing small does not serve the world. There is nothing enlightened about shrinking so that other people won't feel insecure around you. We are all meant to shine as children do. It's not just in some of us; it is in everyone. And as we let our own lights shine, we unconsciously give other people permission to do the same. As we are liberated from our own fear, our presence automatically liberates others.”

Marianne Williamson

In 1999 I was hit by a car while bicycling home from university. I flew over the hood and hit my head on the pavement with such force it cracked my bicycle helmet. Thus began my downward spiral of cognitive debility. I experienced cognitive decline, emotional dysregulation, anxiety, hives, physical symptoms of pain and swelling on my right side, vertigo, tinnitus, hearing and light sensitivity, and migraine headaches. It was as if my immune system had turned inward on my own body. Of all these symptoms, the worst was the depression and anxiety. For the first time in my life, I doubted my ability, my creativity, my talent and most of all myself. I no longer had the energy to create art, socialize, or to be productive to society. I was broken and frightened and alone.
I was an undergraduate at Metropolitan State University but it had become a struggle to complete my school work. I withdrew from undergraduate school. Test scores showed my short-term memory was at the bottom 2%. At the encouragement of my psychiatrist Dr. Schnick, and my therapist Dr. Garwick, I filed for Social Security Disability.

In 2004, I re-enrolled at Metropolitan State University and graduated in 2006 with a GPA of 3.87. One year serving AmeriCorps, which I failed to complete due to anxiety and the onset of hives, and one successful year serving AmeriCorps Vista gave me the confidence to move forward with my life. I decided to apply to Adler Graduate School to become a counselor, psychotherapist and art therapist.

This thesis is the culmination of some of the many aspects of art and psychology I have learned during my graduate school experience.
ACKNOWLEDGEMENTS

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I am truly grateful to VSA, the international organization on arts and disability. VSA was founded in 1974 by Ambassador Jean Kennedy Smith. This organization provides arts and education opportunities to people with disabilities, and was formed to increase access opportunities of art experiences for people with disabilities. VSA has been a force and an influence in my life for many years and I am eternally grateful to this wonderful organization.

I wish to thank Craig Dunn, Executive Director of VSA Minnesota, who invited me to participate in the VSA Minnesota Disability Mural & Storytelling Project as an Artist Facilitator. The VSA Minnesota Disability Mural & Storytelling Project replicates a 2011 project directed by Bridget Riversmith with the Arrowhead Alliance of Artists with Disabilities (AAAWD) in Duluth. The Duluth Disability Mural was the inspiration and impetus for VSA Minnesota Disability Mural & Storytelling action.

Recognition goes to Integrated Arts, a now defunct non-profit that was responsible for the American Disabilities Act (ADA) Mural Project. Integrated Arts chose Osha Neumann and Frances Valesco as lead mural artists to oversee the facilitation of the mural project. In 2003 Integrated Arts was folded into the Center for Accessible Technology. Frances Valesco became the Mural Coordinator in charge of shepherding the mural to its eventual destination at the new
Ed Robert Campus at the Ashby BART station in Berkeley. The ADA Disability Mural Project was completed in the year 2000 for the 10th Anniversary of the ADA.

Many thanks to Bridget Riversmith who was also co-director of the VSA Minnesota (VSA MN) project until travel and distance became too difficult. Recognition and commendation for their dedication to the project: Jon Skaalen, Access Coordinator of VSA MN, Jenea Rewertz-Targui, former Education Coordinator of VSA MN, Meghan Laird, former VSA MN Intern, VSA MN Mural Artist Facilitators Christi Furnas, Mark Davison, Sheri Phau, Stacey O’Connell, and Tara Arlene Innmon. Thanks also to Char Diamond Coal, the VSA MN Disability Mural Twin Cities Curator, VSA MN Disability Mural Evaluators Mary McEathron, Ph.D., and Ann Mavis, M.A., as well as Open Flow facilitator Pamela Veeder for her help with my part of the project. Thank you all for your valued feedback and collaboration.

Many thanks to the organizations and participants that completed tiles for the VSA MN Disability Mural & Storytelling Project, it could have been done without you. The Minneapolis/St. Paul hosts included: Advocating Change Together, Aliveness Project, All God’s Children Church, Carlson Drake House, Charaka/Spectrum, Coon Rapids Civic Center, Edina Art Center, Hazelfest at Hazelden Treatment Center, Health Partners, Goodwill Easter Seals, Lifeworks Services Inc., Lyngblomsten Care Center, Maple Grove Arts Center, Midwest Social Services, Midwest Special Services, Minnesota Center for Book Arts, Minnetonka Arts Center, Open Flow Forum, Opportunity Partners, Partnership Resources, Pathways, People Incorporated, Richfield Schools, Saint Paul Rice Street Public Library, Solar Arts, Spectrum Artworks, Soo Visual Arts Center, Upstream Arts/Pillsbury House, Utrecht Art Supply, Vail Place, WACOSA in Waite Park, and White Bear Lake Arts Center.
The St. Cloud host sites included: Independent Lifestyles, Legends Assisted Living, Opportunity Matters, Paramount Visual Arts Center, and the Veteran’s Administration Hospital.

Thanks also to City Center in Minneapolis, the exhibit site for the Twin Cities VSA MN Disability & Storytelling Project, and the St. Cloud site at Gallery Saint Germain.

My gratitude to Sam Jasmine of KFAI “Disabled & Proud” for hosting Tara Innmon, Christi Furnas and I on your radio show in regards to the VSA Minnesota Disability & Storytelling Mural Project.

Very special thanks to my former supervisor Kim Oftedahl-Brooks, Executive Director of Carlson Drake House who supported me throughout this adventure.

The VSA MN Disability Mural & Storytelling Project was funded by the National Endowment for the Arts, the Minnesota State Arts Board through the arts and cultural heritage fund and the voters of Minnesota.
The Historical Aspects of Mural Making, Art Therapy, and Social Action,
in Relation to the Disability Mural Project

Margaret Naumburg (1890-1983) was a leader in the field of Art Therapy at the very beginning of its development. Both an educator and a psychotherapist, Naumburg recognized that humans have been using art to express “basic mode(s) of communication for man since primeval times” (Naumburg, 2001, p. 46).

Edith Kramer (1916-2014), also a pioneer of art therapy used psychoanalysis and art in her practice. She encouraged the use of sublimation to expose unconscious biological impulses and transform them into acceptable aesthetic expressions through art (Rubin, 2010, p. 59).

Together they played important roles in the development of art therapy interventions as we know them today. That both Naumburg and Kramer studied and understood the importance of archeology and ethology is an important consideration (Rubin, 2010, p. 58). Today’s emphasis on science is uncovering various links through new applications and technological advances that have begun to unravel the secrets to the developmental biological structures of art and psychology.

The history of visual art-making and the relationship between primordial mural art creation and social consciousness began out of necessity. The concept of human Evolution (Darwin, 1809-1882) toward understanding the development of symbolism by modern humans is provocative and not at all concise.

To fully understand the development of visual symbolism by modern humans and visual art evolution, it is necessary to explore the history of art through the eyes of the archaeologist and neuropsychologist. The objective of uncovering the link between how prehistoric and
modern art, social action and the intrinsic human need for cultural belonging are interwoven is key to understanding this path and our creative genesis.

This approach includes exploration into the development of art through the lenses of archaeology, art and neuroscience, art and neuro-psychology, the study of anatomy, and the science of aesthetics. Consideration of art therapy and the efficacy of art and social action interventions and its links to evolutionary functions will be explored as well.

Included in this discussion is the historical importance of art and mural making in the context of mental health and wellbeing, and social engagement through the research of a decade’s and longer activity aptly named *The Disability Mural Project*. Exploration of the contributions and contents of The Disability Mural project are aptly illustrated as a prime example of art and social action. The research will elucidate the relationship between artistic creativity, communal life, health and wellbeing, a sense of security, adaptation, and social feeling.

**Evolution and Originality**

The evolving use of visual components have their beginning through discovery of prehistoric art making. Art through the ages exhibits evolutionary and morphologic interaction. This visual pathway from elementary shape and structure to sophisticated logographic, pictographic and ideographic imagery evolved from prehistoric art into what can be observed in modern art and mural production today. There are numerous examples of similar prehistoric imagery throughout the world that connect the development of the human race (Verstockt, 1987, p. 7-8; Morriss-Kay, 2010, p. 158).

This artistic pathway brings to surface many unanswered questions. What drove humans to create artistically? How did these artistic social urges develop? Are images hardwired into our
collective consciousness as an evolutionary process as Jung hypothesized? Or is the creation of art a part of our experiential, social, or cultural consciousness? Socially, how did the process of art and mural making correlate to the development of society and culture and what are the benefits of mural making as a group process? Other questions arise of importance include; which areas of the brain are activated when participating in or viewing art, and why is this important to group dynamics? What are the rewards, artistic or otherwise to the development of a sense of belonging? What does accessibility to art mean to underserved or marginalized individuals when participating in a group art intervention? The researcher hopes through the study of anthropology, psychology and art to elucidate these and other important questions pertaining to the science of art and the development of creativity and social action.

There is a universal tie that binds the human communication structure. Whether through visual, spoken or written language; through dance, vocalization, music, or a combination of these actions (d’Errico, Henshilwood, Lawson, Vanhaeren, Tillier, Soressi, Bresson, Maureille, Nowell, Lkarr, Backwell, & Julien, 2003, p. 6); these communication channels are consistent throughout all modern human societies on every level (Morriss-Kay 2010). Yet, only modern humans have the capacity to express language and culture and create expressions of material culture (Zaidel, 2012; 2013a).

Furthermore, modern humans have the ability to define and express themselves through symbolism, language, music, art and math, and have the capacity to understand and refer to past, present and future tense, using gathered facts or by using imagination and creativity (d’Errico et al., 2003, p. 6). But how did this creative structure evolve from primitive animals into what we as modern humans experience today?
There is a plethora of evidence about this evolution, but little hard science as to a concise path toward the development of human cognition. What has been established is that all anatomically modern humans (AMH) are related to those humans who lived in sub-Saharan Africa 195,000 - 200,000 years ago (Elhaik et al., 2013, p. 1021; Zaidel, 2013, p. 218). Yet it is only within the last 50,000 to 100,000 years that humans began to migrate and explore other continents (Elhaik et al., 2013, p. 1021).

**Paleomammalian Brain and Mimesis**

There are many evolutionary theories that examine how cognitive development in humans progressed. To be sure, they are not all in agreement! These are hypotheses that have been winnowed and teased into concrete ideas through the examination of archeological and paleoanthropological findings, then matched with the collection of scientific data (d’Errico et al., 2003, p. 2). At its core is Darwin’s (1809-1882) theory of Evolution. Darwin observed natural ornamentation and other external courtship displays in animals as a means to attracting potential mates (Darwin, 1871, as cited by Zaidel 2013, p. 224).

It is through Darwin’s theory of Evolution that we begin to understand and appreciate the road human beings have traveled to get to where we are today. It is through evolution that the living world has emerged, merged, and changed. It is through evolution that humans have developed communication channels like no other vertebrate. It is through evolution that *we know what we know and how we know it* through complex cognitive thought. But how and when did this wondrous evolutionary progression begin?

It is now understood by the scientific community that our actions stem from evolutionary pre-mammalian animal rituals. Shamanistic activities in vertebrates include group activities, chanting and vocal iterations involving ritualistic, communal and sexual dances. These activities
of imitation through iterations are functional and systemic of group communication through coordination of goal driven activity. These actions are formations of the ‘reptilian’ brain through the R-complex and predicated paleomammalian brain functions including those functions dedicated to the limbic system (Winkelman, 2010, p. 469) and driven primarily due to the urge to procreate (Zaidel, 2013, p. 224).

The foundations of animal ritual are based on biogenetic structures that are necessary for communication and adaptation (Winkelman, 2010, p. 464). Mimesis, voluntary biological iterations are essential to vertebrate social functions and provide queues for communication grounded in social harmonization (Winkelman, 2010, p. 464). Animals use ritualistic behavior to signal social functionalities, facilitate interactions between the species and contribute to cooperative group dynamics (Winkelman, 2010). Ritualistic behavior is indicative of courtship and successful mate selection through procreation of the species (Zaidel, 2013, p. 223) by various signals that indicate genetic health, talent, skill and cognitive flexibility” (p. 224).

Studies have shown iterative mechanisms are derived from evolutionary processes that developed from “ancient hominid ritual capacities” that are present and exhibited in “complex ritualized behavior” (Winkelman, 2010, p. 463). Jane Goodall, one of the world’s most expert primatologists, noted homologies between communal chimpanzee rituals by alpha-males that demonstrate shamanistic practices that involve emotional vocalizations, drumming, and upright charges meant to provide community integration. This display by the alpha leader to meant to imbue a protectiveness of the group that culminates toward emotional release by all. Winkelman compares chimpanzee behavior to human shamanic practices through biological and evolutionary processes that both chimpanzee and humans elicit through altered state of consciousness (ASC) triggered by ritual and release. Ritual activities of many other animals, not
only those of chimpanzee or human, are implicated in this process and these formulaic behaviors can be compared to human shamanistic practices in many religions or ceremonies today (p. 463).

This engagement of mime activities can be observed in the vast animal world and is further exploited by humans. The use of a uniquely human ability to mime and use human activity with deliberate and intentional imitation through movement is not seen in any other animal (Molina 2000; Donald 1991; Winkelman, 2010, p. 469). These shamanistic practices are ritualistic in nature; include rhythmic postures and involve emotional and physical release of the participants in a group setting whether in human or in other mammals (Winkelman 2010, p. 469).

This mimetic activity was the predecessor to what would emerge as intentional and deliberate conscious interaction and collective expression that “maps actions onto perceptions of events” to emerge as pre-language expressions in prehistoric hominids (Winkelman, 2010, p. 469).

One has only to observe these patterns in AMH, especially young sexually available humans who are biologically primed to procreate to understand mimesis and its implications. At present around the world AMH’s gather together with the shared desire to commune through cultural venues. One common activity in many cultures throughout the world today includes rhythmical mimicry in large crowds in sync with music that encourages physical mime, vocal iterations, encourages a visual feast of peacockery, emboldens sensory touch, and is surrounded with all queued senses active, in tuned, and designed to encourage ASC and release (Winkelman, 2010, p. 463). Neural correlates of visual aesthetics in studies of aesthetics and beauty show a trigger of the right amygdala (amyg) in the brain that evaluates beauty assessments and is factored by powerful positive or negative role models. These neural triggers queue beauty to assess and influence judgment (Jacobs, Renken, & Cornelissen, 2012, p. 7). This simple
primitive activity is just one example of the display of essential biological pre-mammalian animal courtship rituals that has been assimilated through evolution; one that AMH’s still practices today - it is dance!

The evolutionary expression of mimesis in animal courtship is designed to encourage procreation; but how did mimesis and intention develop into fundamental language and art expression in humans?

**Multi-theory Models of Evolution**

There are many competing hypothesis pertaining to the development of modern cognition, communal living and social action; all are worthwhile and valid in their various vantages and viewpoints. Comparisons can weave together congruent hypothesis toward a harmonious, picturesque and cogent view of human cognitive, social and aesthetic development.

Archaeologists and paleontologists concentrate their efforts toward uncovering evolutionary theories by examining how AMH’s emerged and developed cognitive thought as it is understood today. This is done by examining bone and fossil evidence, material expressions such as stone fragments, stone art, burial evidence, decorative ornamental shells, pigments and other germane remnants. These finds are used to determine the timeframe for emergence. Archaeologists and paleontologists compare Neanderthal and AMH patterns in behavior, environmental factors, social systems and adaptive factors. These include the development of humanoid speech through bone development and language acquisition, the development of conscious thought, and the implementation and application of mnemonic storage systems, musical traditions and the branching off and diversity of language (d’Errico, 2003, pp. 1-2, 6).

The “Gradualist hypothesis” takes an indirect and protracted approach to human development. Gradualists argue that evidence suggests human cognition was not consistently
developed worldwide, and that similar cognitive development was not found around the world at documented prehistoric locations. The gradualist hypothesis looks at archaeological evidence that has been found to show signs of civilization anywhere from one million years to about 40,000 years ago to date (d’Errico et al., 2003; Zaidel, 2013, p. 220).

The “Revolution hypothesis” looks at archaeological evidence and proposes a swift development to human cognitive behavior within the past 40,000 years. They base this premise on the abundance of archaeological findings that appeared in Europe during the European Upper Paleolithic span, as compared to the sparse Middle Paleolithic remnants, that led Mellars (1991) to hypothesize that there must have been significant cognitive development during the European Upper Paleolithic era (Zaidel, Nadal, Flexas & Munar, 2013, p. 101). The Revolution hypothesis suggests rapid cognitive development of AMH and the possibility of Neanderthal comingling as referenced earlier, but this does not rule out rapid cognitive development among other AMH including ancient Saqqaq, Hadza and Sandawe, Melanesian (Elhaik et al., 2013, p. 1024), and archaic Denisovan (Elhaik et al., 2013, p. 1012). The researcher merely suggests there is more abundant and documented mtDNA data collected from Neanderthal and AMH’s.

A cultural shift would begin during the 1970’s that would change the ideology from Descartes’s Cartesian line of thought that the mind and body are separate, toward a view more supported by contemporary “native” South African views of shamanistic interpretations connecting mind and body (Lewis-Williams, 2006, p. 366 as cited by Berrocol, 2011, p. 3). Bias was examined during a resurgence of ethnographic and anthropological studies that took a fresh look at archeological evidence by South African researchers (Berrocal, 2011, p. 2), who also applied social theorems for a more cogent hypothesis (Berrocal, 2011, p. 2). These hypotheses
can be interchangeable depending on the explicit purpose of specific archaeological studies (Berrocal, 2011, p. 6).

This reexamination included comprehensive “ethnographic analogical reasoning” that incorporated analogy into art rock motifs thus allowing for a “re-adopt of ethnographic information and the application of analogy in rock art research in an explicit and thoughtful manner” (Berrocal, 2011, p. 2). This combined with the careful examination of symbolic inference and analogy (Berrocal, 2012, p. 2) would solidify shaky ethnographic and anthropological studies.

Ethno archaeology would then emerge as a sub-discipline (Berracol, 2012, p. 2). This renewed look at ethnography and anthropology would form the foundation of the Functionalism and Structuralism hypothesis based on Culture-historical archaeology.

Further complicating the definitive path of cognitive development is the interpretation of a multiple species model in humanoids. This model suggests that symbolic behavior and art expression may not have been exclusive to AMH (d'Errico et al., 2003, p. 3; Abadía & González Morales, 2010, p. 230).

Style is also an important component to understanding cultural constructs and heritage. Culture-historical archaeology uses style as a chronological meter to assume the expression of the degree to which a culture has developed, or as a measure of a social period of development. Style inference also includes the observation and documentation of ethnic expression. Culture-historical archaeology includes the study of analogy and focuses on the idea that similar motifs infer commonalities. Study of prehistoric rock art and common motifs were believed to be formed by AMH by their unique ability to intrinsically communicate, articulate, express and create shared stylistic and cultural social traits. This hypothesis was an important link to
understanding the significance of rock art. However, this line of thought was also limited as it “minimizes its relevance in social terms because it is treated as an inherent human manifestation, rather than a historical, social and political one” (Berrocal, 2011, p. 3).

From this gap in Culture-historical archaeology sprung forth the hypothesis of Functionalism and Structuralism. Archaeological, cultural and historical frameworks of prehistoric rock art, a precursor to mural making, provided theorist’s an interpretive range of hypothesis from which to work from.

While scholars supporting Revolution and Gradualist hypothesis try to winnow out the hierarchy of human evolution, migration patterns and cognitive development; Culture-Historical archaeologists offer a range of hypothesis as to how and why humans have used their innate talents culturally to create, invent and communicate. All these areas of study are important and necessary in order to understand and uncover the course of human creative development. Yet problems persisted in the culture-historical archaeology area primarily due to the biased and prejudicial interpretation of rock art and the meager scientific standards of early ethnographic work (Berrocol, 2011, p. 2). Racism of colonial societies (Berrocol, 2011, p. 2), particularly in South Africa marginalized ethnographic material by labeling them ‘meaningless’ and ‘primitive’ (Berrocal, 2011, p. 2).

Other hypothesis about the origin of art making and rock art by various archeologists range from “art-for-art’s-sake”, shamanism and hunting magic, and art and healing. These expressions can be used to mark social stages and political action in chronological order. Prehistoric mural making expresses the degree to which the cultural group has developed; the social stage of form and the cultural expression of ethnicity (Berrocal, 2011, p. 6).
Functionalists on the other hand held no specific meaning in the pictorials that ranged from elementary shape and structure to sophisticated logographic and pictographic imagery. Structuralism theorists reasoned that rock and mural art were created of symbolism and entirely intentional. This differs from the Functional hypothesis as Structuralism’s believe that the artwork created is a direct manifestation of the groups “structures of thought” and “past worldviews” (Berrocol, 2011, p. 3). Structuralist’s hypothesize mural art as “entirely intentional and symbolic character” and interpretative excess in the moment of creation.

The plethora of conflicting hypothesis has made it difficult to determine who, what, where, when and why AMH’s evolved in the way they did. Yet with the advent of genome sequencing and mapping and molecular anthropology our prehistoric history is slowly being revealed.

The study of molecular anthropology has now concluded through phenotypic reconstruction that African apes and AMH’s are undeniably closely related. With the introduction of the study of molecular anthropology, the evidence is now overwhelming that humans are indeed linked to chimpanzee with divergence in the East African Rift Valley (Bradley, 2008, p. 337). Comparative anatomy of morphology with molecular data places primates in the superorder Euarchontoglires (Bradley, 2008, p. 338). This superorder indicates chimpanzee and humans share exclusively from all other orders “7SL RNA-derived short interspersed nuclear DNA elements”. These DNA elements are ideal markers for the detection of ancient primordial relationships. The utilization of DNA and fossil data can be used to complement, reconstruct, and match evolutionary relationships to map the order of divergence (Bradley, 2008, p. 338).
Zaidel suggests hominids were walking the earth approximately 4.1 – 7 million years ago in what is now known as Africa, with *Homo erectus* surfacing approximately 800,000 years ago. The *Homo sapiens* branch emerged approximately 195,000 years ago (Zaidel, 2013, p. 219).

Archaeologists have postulated that the gene KRTHAP1, the keratin gene that is associated with hair growth in primates, was inactivated in the genetic line that leads from chimpanzee to human within the past 240,000 years (Bradley, 2008; Morriss-Kay, 2010, p. 161). Theorists such as Wrangham and Carmody believe there is good evidence that when *Homo erectus* began to use fire to cook they began the rapid evolutionary process. Cooking food detoxifies and kills parasites. It unlocks the energy consumption of food by about 30% in vegetables and approximately 78% in protein such as eggs. Fire was also used to keep hominids warm, kept predators away, and made body hair obsolete. Without body hair, hominids could “run farther and faster after prey without overheating (Adler, 2013, pp. 44-45). Whatever the case may be, one could speculate that this loss of body hair left them vulnerable to a myriad of other dangers. Therefore belonging to a social group was essential to survival. The ability to cohabitate, communicate, hunt, clothe, and feed the social clan was now necessary for self-preservation, not just for procreation.

Figure 1.1 illustrates this divergent path. Bradley created this simple chart to illustrate gene progression. This chart was meant as a simple diagram of the path of evolution without chronological order and an illustration of the split from chimpanzee toward the development of human traits (Bradley, 2008, p. 344). One gene that is especially interesting is FOXP2, the gene that is considered important to human language development (Zaidel, 2010, p. 181). The researcher modified the chart to include d’Errico et al. (2003) and added developmental information about language, symbolism and music.
With the discovery and introduction of DNA sequencing evolutionary paths are slowly being uncovered. A breakthrough in microarray single-nucleotide polymorphism (SNP) technology was used to search for genetic diversity using Y-chromosome and mitochondrial DNA (mtDNA) (Elhaik et al., 2013, p. 1021).

It is now a well-established fact through mtDNA sequencing that Homo Sapiens are descendants of many human populations, including but not limited to ancient Saqqaq Hadza and Sandawe, Melanesian (Elhaik, 2013, p. 1024) AMH’s, and archaic Neanderthal or Denisovan populations (Elhaik et al., 2013, p. 1021). What is not well established is the path from primate to AMH.

Development of Goal Directed Activity

It is in Africa at Twin Rivers in Zambia that the earliest archaeological artistic artifacts can be found. Through these artifacts, archeologists have begun the process of pinpointing the development of symbolic utilization. These artifacts are dated between 260,000 and 400,000 years ago during the Acheulian-Middle Stone Age transition. Pigments dating at roughly 200,000 years old were discovered that showed “traces of use”. The Twin Rivers excavation yielded 176 fragments of five pigment colors. It is believed, based on geological surveys that the pigments were from sites kilometers away from the excavation site (d’Errico et al., 2003, p. 4). D’Errico argues that a functional use of pigment would indicate intentional use of symbolic material by archaic Homo sapiens (sensu lato), and of some kind of indirect use of language skills (d’Errico et al., 2006, p. 4) along with goal directed activity. Goal-directed activity was discovered while excavating in the South African Blombos Cave at the Western Cape of South Africa. Excavation of the cave uncovered a 100,000 year old ochre block decorated with zigzag patterns (Henshilwood et al., 2002 as cited by Morriss-Kay, 2010, p. 161). Cognition involving pattern-
making involves planning and intention. It involves a creative mind that can conceptualize the
nuance of pattern, color, composition (p. 158) and the hand-eye coordination and finger dexterity
(Zaidel, 2013, p. 219) to implement the idea.

Between the Blombos Cave and Twin Rivers over 300 bits of mineral pigments were
found. These minerals ranged in colors from yellow, brown, red, purple, pink and dark blue.
They were gathered approximately 100,000 to 200,000 years ago by Acheulian-Middle Stone
Age hominoids and were gathered from areas that were miles away from the actual settlement
site (d’Errico et al., 2003, p. 4; Henshilwood et al., 2011, p.219; Nadal & Skov, 2013, p. 1).

Other archaeological finds in Israel indicated expressions of symbolic cognition in
ecological cultural and personal objects, that were dated from between 90,000 and 100,000
years ago (Zaidel, Nadal, Flexas & Munar, 2013, p. 101). The Blombos site remained hidden and
protected for 100,000 years or more until archeologists uncovered the site in 2009.
Archeologists were surprised to discover artifacts in this cave that would increase our knowledge
into the cognitive abilities of these inhabitants. These prehistoric individuals used this cave to
prepare for an unknown event. They utilized crude hammers to chip off the red rocks in the cave.
They then rubbed the rocks on grey stones to produce red powder, or crushed the powder with
crude hammers. Mixing powder, crushed rock and bone, they sprinkled this mixture with
charcoal and liquid into two abalone shells to produce a type of colorant. Stirred, then extracted
with a long bone, they applied it, probably to their bodies in some symbolic way. They then
carefully wrapped up the art materials and put their tools away presumably to be used again at
some future time (Henshilwood et al., 2011; Nadal & Skov, 2013, p. 1).

Alfred Adler (1870-1937) touches on compensation, confluence, and transformation of
drives as a force toward social action. The prehistoric group activity of unifying toward an end
goal is a cogent example of social action predicated on *organ inferiority* and compensation. There can be little doubt these Acheulian-Middle Stone Age hominids were gathered together for some type of ceremony or event. This group activity in itself would bolster the individual’s courage. As a group, they could strive to compensate for their lack of individual strength and *organ inferiority* by applying psychological and physical compensation to maintain their social and cultural equilibrium (Adler, 1964, p. 22-23). This might include painting their environment, their bodies, ornaments, participation in ceremonies such as hunting and gathering, or burial (Nadal & Skov, 2013, p. 1). Adler noted that organ inferiority is predicated on the external environment. Inferiority and compensation are predicated on mutuality. Adler represents this development as a continuum of “ameliorating brain compensation” that has developed and “applicable also to the origin of highly cultivated psychomotor achievements, to the origin and development of language and art” (Adler, 1964, p. 27).

Unfortunately, the hominids never returned to this site. The tools discovered in the Blombos site would never be utilized again. Were the hominids preparing for a hunt? Was there perhaps a power uprising within the clan or with a neighboring clan? Did they begin the process of migration due to drought, tsunami, or other catastrophic event? Regrettably, we will never know, but the scientific world is grateful that these remnants were left behind for archaeologists to discover (Henshilwood et al., 20011; Zaidel, 2013, p. 221; Nadal & Skov, 2013).

Added to this mystery is the Neanderthal conundrum. MtDNA studies indicate Neanderthal and *early modern humans* coexisted for thousands of years in many geographic locations. This cohabitation encouraged “hybridization and genetic flux” (Abadía & González Morales, 2010, p. 235), “direct interaction or acculturation” (Adadía & González Morales, 2010)
and “independent development” (d'Errico et al., 2003; Abadía & Morales, 2010, p. 235) of AMH’s.

Bradley (2008) indicated he thought it “seems unlikely that Neanderthals contributed in any significant way to our modern gene pool”. New DNA analysis indicates that Neanderthals comingle with emerging descendants of present-day European AMH’s. This commingling occurred sometime between 37,000 and 86,000 years ago as AMH’s migrated out of Africa (Sankararaman, et al., 2012).

Figure 1.2 illustrates finds of late Neanderthal decorative ornaments. The first six ornaments from the left, the Chatelperronian ornaments were excavated from Grotte du Renne. The two ornaments on the right are from Quincay (d’Errico et al., 2003, p. 3). Symbolic creation can be hypothesized based on markings, colorants, pierced beads and marked bones, and tools (d’Errico, Henshilwood, Vanhaeren, & van Niekerk, 2005, p. 4; Zaidel, Nadal, Flexas & Munar, 2013, p. 101). These and other archeological finds led scholars to link hominid development to human developmental theories with differing analytical results. d’Errico et al. (2003) cites Longuet-Higgins (1996), and Wynn (1985), who link hominid cognitive development to Piaget’s theory to estimate evolutionary cognitive processes. d’Errico cites mixed results as to definition of a cognitive timeframe (d’Errico et al., 2003, p. 8).

D’Errico cites other scholars who believe cognitive development came much earlier than Middle-Upper Paleolithic hominids, and believe Acheulian populations were capable of complex cognitive thought. Still others believe the development of AMH to be uneven in cultural development as mentioned. D’Errico cites these differences are due to lack of “a firm link between a given form of stone tool technology and a degree of intelligence, whatever that may be” (d’Errico, 2003, p. 8).
Just as Piaget’s theory is utilized to explain the cognitive development of hominids, Adler’s theory of Individual Psychology can be used to explain the development of social interest. Adler writes of the teleological view of perpetuity and growth - “community sub specie aetermitatis” and the “striving for community”. This “striving for community” according to Adler is the “ultimate fulfillment of [societal] evolution (Adler, 1964, p. 141-142). Adler’s theory of Individual Psychology can be applied by utilizing social interest to preserve the species by utilizing community to compensate for individual weaknesses and dependence necessary for survival and “communal function” (p. 154).

Stout, et al. (2008) as cited by Morriss-Kay (2010), studied the neurological connection between language and art in prehistoric tool making. Stout hypothesized that hominids adapted to tool making 2 million years ago. Stout examined the link between Early Stone Age tool making techniques and neural relationships. Stout studied the process of constructing Oldowan and Acheulian tools; tools that have been found to be dated approximately 2 million years ago. This was done by replicating the crafting of these tools under laboratory conditions with positron emission tomography (PMT). The PMT detected brain activation in subject areas that included language and visuomotor circuits. Stout suggests this to mean that tool-making and language are interconnected in order to facilitate sophisticated goal-directed manual activity; activity that also suggests the development of creativity (Morriss-Kay, 2010, p. 159). Certainly, it seems new technology has finally begun to link these various developmental hypotheses with solid brain-based empirical evidence.

Without evolutionary change in perception, art and language, AMH’s as we know ourselves today would not exist, or would exist in another form. This unique creative ability has evolved into a myriad of modern creative human expressions. Hunting and gathering are
complicated communal activities that must be combined with the necessary social tools to assist hunting.

Objects found at the Arcy-sur-Cur site in France illustrate evidence of likeness recognition in Homo sapiens. Fossilized coral, brachiopod mollusks, and gastropods were found at a Neanderthal site more than 30 km from the original site of origin (Soressi & d’Errico, 2007 as cited by Morriss-Kay, 2010, p. 164). One could argue that these early humans believed these fossils held special meaning to the individuals who picked them up and transported them to their domiciles. Feliks (1998 as cited by Morriss-Kay, 2010, p. 164) has speculated that these fossils were recognized by early humans as comparisons to living invertebrate, fish or plant life similar to their own environment. Therefore, they held a symbolic “meaning” in some way that has been lost to us, but was so important to the individual that picked them up and carried with them.

Of all the animals in the world, hominids are the only animals in existence today that are capable of a verbal spoken language and capable of creating symbolic languages that include art, music, math, and other complex forms of communication today (d’Errico, et al., 2003, p. 2; Zaidel, 2013, pp. 217-218). Studies have shown that to create image, analogy, or metaphor from imagination required “a seminal evolutionary change in the neural structures underpinning perception” (Morriss-Kay, 2010, p. 158).

Morriss-Kay (2010, p. 159) writes “there is no consensus on how to define art” and quantifies art through esthetics to synthesizes art meaning. Berrocal includes “art-for-art’s-sake” hypothesis, shamanism and hunting magic in his ideas of artistic development (2011). However, none of these explains a function for art succinctly. One interesting hypothesis is mnemonic. As AMH’s evolved, their brains became so complex, and information so important for survival, a system was needed to contain the necessary information (d’Errico et al., 2003).
D’Errico et al. (2003) argues that when humans began to know more than they could recollect, they began to devise a memory system. This would explain the reason for symbolic storage creation. Humans began to develop a cognitive system that would help the individual store information externally. Examples of this system enabled them to “record, store, and recover information” (2003, p. 31). This makes art making to hold a very practical application.

D’Errico links this system to language, but also notes that these memory devices were used before writing evolved (d’Errico et al., 2003, p. 32). Figure 1.3 includes illustrations by d’Errico et al. (2003, p. 34) that demonstrate this early memory system with artistic utilization of symbols. Figure 1.3 (a) is a rhinoceros bone from the “Solutréan levels of Solutré site” and are inscribed with notches indicative of an external memory system. Figure 1.3 (e) is a “Magdalenian antler from la Marche shelter” that includes a memory system with “miniaturization” of illustrations and marks. D’Errico hypothesized this artwork was created at the “end of the Upper Paleolithic” period. D’Errico et al. concludes this to be indicative of “the moment when complex codes are systematically adopted” (d’Errico et al., 2003, p. 33).

Artificial memory systems were implemented to help early humans keep track of needed information (d’Errico, 2003, p. 33). Art creation was the beginning of the formation of letters and alphabets and of written language. These modes of communication are in use in all cultures throughout the world today in the form of symbols, icons, logos, letters, math and music to name a few. AMH’s would only need these devices within a social system predicated on communal living.

Archaic artistic style, much like artistic style today is an indicator of a space in time with the understanding of core cultural icons that have been shared immemorial. Mural making and rock art motifs have been studied in terms of function, of information transmitted, and adaptation
and change within the cultural structure. Rock art was regarded as a tool to transmit information within the social group, and also to communicate to clans outside of the social structure (Berrocol, 2011, p. 2, 3). Symbolic cognition and expression of personal ornamentation and use of tools suggest intention to identify and mark objects as belongings, and as a signal of group dynamics (Zaidel, Nadal, Flexas & Munar, 2013, p. 219).

Archaic symbols are easily recognized as symbolic artwork. The same archaic symbols can be irrefutably used to create a style within a timeframe. The symbol of the ‘sun wheel’ for instance, is a common archetype throughout the world. More commonly it is called the swastika or sauvestika. The Anglo-Saxon meaning was fylfot=many-footed, or tetraskelion. In Crete, the Greek Islands, the Germanic tribes, Pre-Columbia Indians, Eskimos, Native Americans, Tibetans and African cultures; all created this symbol within a different timeframe and many had different meanings for the same symbol. It meant luck, or misfortune, fertility, union, or union of male and female. In China it is called lei-wen; meaning thunderbolt (Verstockt, 1987, pp. 16, 77-80). Most individuals throughout the world would now recognize the once common and diverse archaic swastika symbol as having only one specific meaning and worldview today.

An example of a social ‘stage’ or worldview could include the study of visual art style within a timeframe. Adolph Hitler’s teleological position exploited this archaic motif as a part of a social stage both metaphorically and figuratively toward his own guiding fictional finalism. Hitler understood the transformative power of image and used the swastika to symbolize a past, present and future world view. He used it to create a social style. The swastika is now linked to the evils of fascism and all its implications. Many cultures throughout the world have banned this symbol from being used. This fact alone illustrates the transformative and powerful influence - and at times the oppression that an archaic symbol can imbue.
Another hypothesis, the “Shamanist hypothesis” has been built on the predication that rock art was created and based on social significance and shamanistic practices. In early studies of rock art in Europe and South Africa, Bleek hypothesized rock art was illustrative of “indigenous myths, daily-life scenes, folk-lore, customs or superstitions” (Berrocal, 2011, p. 2). The Shamanistic hypothesis was developed to synthesize analogical evidence and archaeological interpretations that would merge meaning and unify Structuralism and Functionalism (Berrocal, 2011, p. 2).

Universalism hypothesis was merged into the Uniformitarian hypothesis (Lane 2006; as cited by Berrocal, p. 6), whereby a process is assumed to have underlying universal similarities in both past and present applications and have uniform features. An example of this would be the assumption that the brain structures of Homo sapiens sapiens 45,000 years ago have similar neurological structures of Homo sapiens sapiens today, therefore the ‘neuropsychological model’ compares and contrasts iconographic similarities studied within the context of the formal iconographic analogous similarities that are rooted in the ritualistic uniformitarian system (Berrocal, 2011, p. 6). These hypotheses may also be used to suggest social and cultural similarities.

Shamanistic theory merged functionalism and structuralism toward a view of social struggle, and it was a key concept to mural art and interpretation of symbols. History illustrates the emphasis on religious and shamanistic art versus non-status aesthetic art. Winkelman describes shamanistic history as both prehistoric and contemporary (Winkelman, 2010, pp. 458-459).

Figure 1.4 illustrates the key concepts of Lewis-Williams and Dowson’s Shamanistic hypothesis (1988, pp. 206-207), and is underscored by a neuropsychological model that includes
altered states of consciousness (p. 201). This model engages the use of entoptic phenomena to elucidate the idea that art rock and visual patterns vis-à-vis can be created by stimulating *Phosphenes* within in the eyeball. This includes using pressure, and *form constants*, that are produced within the optic system, but are outside of the eyeball. Migraine headaches and other visual phenomena are also considered form constants (p. 202). Altered states of consciousness should be considered outside of *phosphine* and *form constants* in the interpretation of rock art (Lewis-Williams and Dowson, 1988, pp. 201, 206 - 207).

Dronfield describes entoptic mechanisms generated in the eyeball as phenomena influenced outside the normal visual system (Lewis-Williams and Dowson, 1988, p. 202; Dronfield, 1996, p. 373; Winkelman, 2010, p. 460). These images can occur during migraine, after ingesting mind-altering substances, epilepsy, (Dronfield, 1996), and other external and internal phenomena. It has been theorized that these zigzag and crisscross patterns have developed into symbolic communication patterns similarly throughout all cultures and consistently throughout time (Morriss-Kay, 2010, p. 161). These involuntary byproducts of the visual system also suggest a physiological origin (Vartanian, 2012, p. 303). According to Lewis-Williams and Dowson (1988, p. 203), there is a case to be made that many art-motifs were created and imagined with the aid of mind altering substances used in Shamanistic rituals.

Lewis-Williams and Dowson considered there to be three stages after ingestion of mind altering substances as important to the development of Shamanism and art creation. During hallucination the individual experiences entoptic phenomena that can be seen either with the eyes open or closed and are located in the scope of vision at reading distance, are saturated with color, recede and advance and cannot be controlled by the participant. In the second stage, the participant tries to make sense of the phenomena through *perceptual representation* (Lewis-
Williams and Dowson, 1988, p. 203). The third stage of hallucination includes powerful emotional experiences, varied sensory stimuli including vivid colors, vortex, rotating tunnels, geometric patterns and forms that may iterate, include iconic hallucinations, or bring about a loss of insight, (p. 204) and synesthesia, the ability to see music, or hear color. Disassociation can occur and the participant may lose their sense of self and merge into their own imagery (p. 211).

Lewis-Williams and Dowson (1988) use this hypothesis to argue that shaman, when in a trance-like state use altered states of consciousness to gain mystical insight. This insight is used to cure illness and restore health, embark on ‘extracorporeal journeys’, control the weather, or commune with or control animals. Shamans are an important part of many cultures in the far and near past (p. 205), and in fact, Shamanistic rituals are still in practice in many cultures today (Winkleman, 2010, p. 463). According to Heinze, a scholar on shamanism, Shamanism can be found in many geographic locations around the world and have many commonalities. They are part of the social structure, they hold a “higher” position that connects and interprets the “divine”. Unlike shamans of the Paleolithic era, shamans of the 20th century must navigate a much more complex world (Heinze, 1991b, pp. 194-195). They enter into ASC, are a service to their constituency and “are mediators between the sacred and the profane” (Heinze, 1991a, p. 24).

Shamanism theory linked an association between rock art and shamanistic practices that created a ‘chain of inferences’ to the social context and practices used archaically; as well as in modern society today. This description of social context drew from Social theory, System theory and Marxism. Rock art and Shamanism uncovered important information that was “interpreted as a locus of conflict”. Lewis-Williams, as cited by Berrocal (2011) hypothesizes “Rock art and rituals were ultimately considered social devices intended to release social tension, drive
negotiations among different groups, alleviate conflict and negotiate status” (Berrocal, 2011, p. 8).

As mentioned earlier, shamanistic activity can include alpha-male or female posturing that encourages practices of vocalization or “Glossolalia”. *Glossolalia* (Newberg, Wintering, Morgan & Waldman, 2006, p. 67) means “speaking in tongues”. This release is comparative of this type of verbalization. Examples of this shamanistic mammalian behavior can be compared to modern religious practices such as Christian Evangelistic rituals, Pentecostalism, and the Charismatic Movement, but is not limited to the Christian religion.

In whatever way these artistic and social skills were developed, rock images and mural art are scattered throughout the world, and have been documented starting at about 45,000 years ago. The coupling of art and language appear simultaneously within approximately the same time frame, and scholars interpret the emergence of both to be associated with the development of the ability for precision and formal structure and the ability to form meanings (Wade, 2006, as cited by Zaidel, 2010). Both language and art rely on reference and symbolic cognition but Zaidel notes they are also dependent on the development of tight socially interdependent groups (Zaidel, 2010).

The patterns located in European Upper Paleolithic caves further illustrate evidence indicative of symbolic meaning, (Morriss-Kay, 2010, p. 162) that are socially oriented and demonstrative of the idea of social action. In fact, the creation of mural art and the practice of shamanism *are* parallel to modern times and very much in practice today.

The point being, those individuals within shamanistic societies continue to be socially dynamic and continue to have an effect on social relations (Lewis-Williams & Pearce, 2004, p. 199). Further, Lewis-Williams and Pearce agree with Alfred Gell, that “image-making is a
device ‘for securing the acquiescence of individuals in the network of intentionality’s in which they are enmeshed’ (Lewis-Williams & Pearce, 2004, p. 200; Jacobs, Renken, & Cornelissen, 2012, p. 1).

Simply stated, rock art images are purposeful, and were used to influence social relationships. Dowson (1998) states, (as cited by Lewis-Williams & Pearce, 2004, p. 200), the person in the position of power interprets and uses images to establish hierarchy, and uses this hierarchy to develop or maintain social privilege, and political power.

This hierarchy of power can be observed today world-wide with the use of religious artifacts or visual art that provokes social action or political or religious agendas, though television and web site propaganda, billboards, newspapers, magazines. These images are used in every modern medium that the power broker can imagine to exert power and control within society.

Shamanism has cross cultural and world-wide implications that are rooted in diverse contemporary spiritual healing practices (Winkelman, 2010, p. 458). Shamanistic and ritualistic practices of hunter-gatherer cultural constructs world-wide reveal “biogenetic foundations” that illustrate the foundation of human spiritual practices. Winkelman suggests that Shamanism was created from “ancient phylogenetic roots of ritual as a mechanism for communication and social coordination” (Winkelman, 2010, p. 462).

While the features of shamanism have attenuated, many of the core modalities are still practiced today. Depending on the culture, these include spiritual guidance and healing rituals and practices. Pre-eminent societal and community leaderships, soul flight, death and rebirth, hunting rituals, the transformation into animal form and sorcery are all being practiced in some form or other world-wide (Winkelman, 2010, p. 485). The word shaman has been used to
describe religious leaders, mystics, prophets, healers, political leaders and performance artists (Winkelman, 2010, pp. 458-459).

Adler said it best in this quote, “The primal energy which was so effective in establishing regulative religious goals was none other than that of social feeling. This was meant to bind human beings more closely to one another. It must be regarded as the heritage of evolution, as the result of the upward struggle in the evolutionary urge” (Adler, 1957, p. 462). Shamans can also be viewed as the healer in modern cultures in the form of contemporary psychologists, psychotherapists, counselors, doctors and the like. The shaman had, and still has in modern communities today, a central role as the healer (Berrocal, 2011, p. 11).

The Aesthetic theory fits in well with other archaeological theories too. Creating reflective images and creating art is a “uniquely human activity associated fundamentally with symbolic and abstract cognition”, (Zaidel, 2010, p. 181). Zaidel further extrapolates that the Aesthetics theory is bound by evolutionary biological motivation of courtship, decoration and sexual selection. Zaidel states that art has a lack of functionality notwithstanding the conceptualization of pleasure for the viewer and process and pleasure of the originator (2010, p. 179, 180). On this, the researcher and Zaidel must disagree.

The functionality of art and decoration lies in its power to communicate thoughts and ideas, and evoke emotion. Art must have meaning and purpose or it is superfluous and unnecessary. Art is all around us, and surrounds us in obvious and subtle ways in our daily lives that enliven and satisfy our artistic purposeful and esthetic needs.

So what drives this urge to create artistically? Sexual courtship and mate selection as Zaidel stated, mimesis, ritual, community, competition and communication (Morriss-Kay, 2010)
and memory management and refinement tools (d'Errico et al., 2003) all have a part to play in artistic creation.

**Modern Art, Social Action and Mural Making**

According to Berrocal (2011, p. 6), ethnographic analogy has little criteria with which to define symbolic iconography except for simple comparisons. Berrocal states the importance of constructing formal analogies depends on establishing direct matches between two objects. In the case of rock art, the analogy is based on iconographic similarities; hence her use of the term “formal iconographic” which is applied to similar iconographic motifs that have a connection in one way or another. A similar origin for both motifs is then inferred from this resemblance. However, resemblance can be subject to different interpretations” (p. 6) that depend on many variables including society, culture and cultural continuity and verbal accounting (p. 7), style, framing and use.

Berrocal further agrees with the 2006 work of Lane, an ethno archaeologist who describes the uniformitarian analogy in most circumstances is based “on the use of underlying assumption of universalism.” Berrocal elucidates even further, that formal uniformitarian analogy can be looked at as a “variation of a formal iconographic analogy” due to iconographic likenesses that are rooted within the uniformitarian structure. Berrocal cites Lewis-Williams comparison that “In the case of shamanism, this principle is that *Homo sapiens sapiens* have similar brain structures and nervous systems”, similar brain structures equate to similar nervous systems. Berrocal links formal uniformitarian analogy to the “neuropsychological model” hypothesis (Berrocal, 2011, p. 6).

Figure 1.4 illustrates similarities between entoptic phenomena, San Rock art and Paleolithic art. The comparisons are strikingly similar and the uniformitarian line of thought
works well to compare and link formal iconographic themes and motifs (Lewis-Williams and Dowson, 1988, p. 206-207).

This line of reasoning is useful when discussing Rhoda Kellogg’s widespread and thorough study of children’s drawings. Although Kellogg was neither an archeologist, paleontologist nor a neuroscientist, she was a psychologist and nursery school educator. By 1970 when Kellogg’s first book was published, Kellogg had collected over 300,000 nursery school drawings that were dated, given a sequence number, described by subject, included the child’s age in months and the child’s name on the back of the drawing. At that date in time a further 100,000 drawings had yet to be catalogued. Through lectures at universities and art schools, Kellogg collected 5,000 drawings from all over the world that represented a variety of cultures. Her examination of somewhere in the range of two million drawings helped shape her hypothesis that all children follow the same graphic development (Kellogg, 1970, p. 2-4, Kellogg, 1979, p 2-3).

Today, Kellogg’s collection is housed at the Golden Gate Kindergarten Association in San Francisco. Access has been granted to the Zurich University of the Arts in Zurich Switzerland’s Departments of Cultural Analysis and Cultural Studies, and Art Education ICA, and permission granted to upload 7,900 graphic images of children’s drawings by children age 24 to 40 months. This includes 255 microfiche cards with approximately 29 drawings per page. The university created a web site to demonstrate Kellogg’s classification system to give academics and other interested individuals access to her archive (http://www.early-pictures.ch/kellogg/archive/en/, 6/15/2014). In total, Kellogg had collected children’s art from thirty countries around the world and approximately two million art examples are now owned
and housed by the Rhoda Kellogg Child Art Collection and the Golden Gate Kindergarten Association (Kellogg, 1979, p. 2).

According to Kellogg, the children today begin the creative artistic process almost immediately. By the tender age of 2, the average child will begin this evolutionary communicative urge simply by picking up a crayon and scribbling, much to the delight and encouragement of their proud parents. Kellogg’s hypothesis that every child during this “discovery mode of symbolization, follows the same graphic evolution” (1970, p. 2) has been shown to be an accurate description of child development around the globe. Kellogg categorizes these early developmental milestones as “basic scribbles” (1970, p. 15). These “scribbles” are what Berrocal would identify as “formal iconographic” images (Berrocal, 2011, p. 6). In figure 1.5 (Kellogg, 1970, p. 273) the children’s scribbling develops very quickly to form sophisticated logographic, pictographic and ideographic imagery. These drawings are compared to symbolic images created throughout the world by children and demonstrate the consistent age progression and drawing ability by children to imagine iconographic motifs throughout their growth and development.

Although the researcher finds many human developmental theories cogent, and agree that they have much merit, the drawings by children are very similar to what Lewis-Williams describes as being developed by adult shamans through entoptic phenomena. Figure 1.4 (Lewis-Williams and Dowson, 1988, p. 206-207, 209), and Figure 1.5 (Kellogg, 1970, p. 273) compare and contrasts the similarity between identified entoptic phosphine patterns of adults, Neolithic rock and Paleolithic art and the “scribbling” of children, as illustrated in Table 1.1 (Kellogg, Knoll & Kugler, 1965, p. 1129). The researcher elucidates the dynamic visual link between children’s drawings and adult drawings in the neuropsychological model linking prehistoric art.
Kellogg was aware of the similarities between early pictorial motifs by prehistoric Homo sapiens, Neanderthals and her collected drawings by children. Kellogg clarified an important point; archaeologists, anthropologists and art historians have historically ignored the work of “child-art-motifs” (Kellogg, 1970, p. 208) to the detriment of academia and the scientific community. Kellogg reasoned that scholars compared the role of art to economics, social relations, and mythology (Kellogg, 1970, p. 209), yet ignored comparison of child art to ancient rock art as being unimportant or not connected. These children’s drawings are consistent and can be compared very closely to mural rock paintings and drawings as illustrated in Lewis-Williams and Dowson’s comparisons in Figure 1.4. The similarities between Figure 1.4 and Table 1.5 by Kellogg, Knoll, and Kugler (1965, p. 1129) as well as Kellogg’s classification system Figure 1.5 (Kellogg, 1970, p. 273) should be argument enough to reconsider further research toward discovering a clearer link between Phosphenes, prehistoric art making and children’s drawings (Kellogg, Knoll and Kugler, 1965, pp. 1129-1130; Kellogg, 1970, p. 273) from a neuropsychological model.

Kellogg grasped the connection of child art motifs to theories that others missed or dismissed. She saw the connection between children’s drawing and Gestalt theory and its emphasis on form and physiologic organization. Kellogg underscored Jung (1875-1961) and the importance of these drawings to the concept of archetypal symbols, and observed the importance of innate children’s art motifs in comparison to archaeological primitive and prehistoric art (Kellogg, 1970, p. 11). Kellogg believed the idea that cultural paradigms could shift toward a major impact in the areas of psychology, education, esthetics, sociology, anthropology and other areas of study (Kellogg, 1970, p. 12) if quantified holistically.
The paradigm is moving toward reconsidering anthropological studies with focus on family structure and lifestyle. Once thought insignificant, AMH and Neanderthal children were also disregarded as important study material. Prehistoric children and their care are gaining more attention in academia (Spikins, Hitchens, Needham & Rutheford, 2014, pp.111-112) toward an understanding that Neanderthal and AMH had a fuller, richer lifestyle then considered in the past. Archaeologists have begun to look at how AMH and Neanderthals modeled to their offspring using child sized artifacts including miniature bows, arrows, hand axe and “dolls” (p. 126). Kellogg’s opinions align with Spikins et al. claim that “scarcely anyone shows enough concern for direct observation of spontaneous work of children” (Kellogg, 1979, p.11). Spikins et al. argues there is evidence of close attachment with “unusual focus on infants and children in burial” and “close attachment and particular attention to children” (Spikens, et al., 2014, pp. 111-112). Spikens et al. reassessed archeological digs in a new light toward looking at the family of origin. Research on Neanderthals, their creativity and intellect are now being reexamined and reconsidered as being as complex and creative a society as is considered AMH’s. This attachment and attention to family structure was necessary and the loving bonds of attachment were demonstrated within the family and cultural structure in AMH’s and Neanderthals.

How ironic that in comparison, Neanderthal and AMH used similar social systems and structures. In order to live in groups, the development toward a communicative mode was vital for survival. Adler stated that all humans were weak in comparison to other animals. Homo sapiens needed each other in the battle for self-preservation. Homo sapiens were forced to cohabitate and communicate because the physical attributes of AMH’s were not strong enough to live alone (Adler, 1957, p. 35).
Kellogg’s knowledge of repetition in patterns and ‘gestalt’ organization in children’s art illustrates the dynamic psychological basis of perception that originates in the nervous system (Kellogg, 1979, p. 9-11) and can be compared quite succinctly to the neuropsychological model (Berrocal, 2011, p. 6).

Remarkably, Carl Jung would also be on the cusp of understanding the neuropsychological model as researchers know it today. Jung’s interest in psychology and archaeology also drove him to the study of myth and religion (Ellenberger, 1970, p. 680). His interests included Gnosticism, alchemy, eastern philosophies, (p. 680), and shamanism of primitive societies such as the Pueblo Indians of New Mexico in the U. S. and African tribes on Mount Elgon (Ellenberger, 1970, p. 674). His examination runs parallel with many of the archeologist hypothesis discussed within these pages. His hypothesis for the development of analytic psychology includes archetypes and the collective unconscious. Jung’s understanding of the human psyche, individuation, and dream analysis (Ellenberger, 1970, p. 703) aided him in his preponderance toward the connection between visual motifs, archeology and archetypes (Ellenberger, 1970, p. 705).

Jung’s curiosity about the Cartesian relationship between psychic energy and physical energy and the mechanism that joins the two was puzzlement to him. Psychic energy Jung believed was predicated on instinct. Instinct is an intrinsic fixed behavioral pattern, and according to Jung, instinct can be transferred from one instinctual pattern to another through, for example sublimation. The unconscious, according to Jung developed autonomously with the conscious mind and he considered them as complementary. Jung believed the unconscious mind was the “seat of universal primordial images” or archetypes. He believed these archetypes developed from the collective unconscious and were universal, but Jung did not claim to know
the exact mechanisms. Without the ability to measure psychic and physical energy and its connectivity, Jung was at a loss to determine the source of archetypes (Ellenberger, 1970, pp. 704-706).

Kellogg clarifies this universal and unconscious archetypical mechanism through her collection of child drawings. Within the last few decades humans have pondered how to quantify and measure art, image and art activity. Modern science is illuminating this internal process that Jung instinctively understood but could not measure. Through modern technology such as fMRI and other technical advances in neuroscience and Neuroaesthetics work, this image of the collective unconscious is becoming clearer. Researchers have now entered the realm of being able to measure psychic and physical energy through imaging techniques such as fMRI, EEG, and MEG.

Art and art therapy is now being measured in novel ways to clarify and quantify cognition. Evidence is mounting that art viewing and art making has a therapeutic benefit. Today Art Therapy interventions are a measurable modality that is being remedied through modern technical approaches. Brain imaging can now illustrate with precision and reliability how, why, and where in the human brain these adaptations occur that create art and how humans value art through aesthetics.

With this new information, insight into the development of the creative brain can now be researched further by virtue of Neuroaesthetics. Neuroaesthetics is “the study of brain responses to the perception of beauty” (Lacey et al., 2011, p. 420).

Lacey et al. (2011) hypothesized that by virtue of artistic status alone, the visual cortical regions of the brain within the ventral striatum would be activated by esthetic preference of art images over non-art images (p. 420). Art viewing and art making using scientific applications
involves activating and recording sensory and intellectual stimulation within the brain. One such mechanism is functional magnetic resonance imaging (fMRI).

Yacubian et al. (as cited in Lacey et al., 2011, p. 420) concluded that the reward circuit of the brain is contained within the ventral striatum (VS); and within the VS is an area of the brain where lies the nucleus accumbens and also extends into the ventromedial putamen and caudate. Dutton (2009; as cited by Lacey et al., 2011, p. 420) describes art experience as pleasurable to the physical senses as well as to the intellect. Lacey et al. postulates that neural responses to art should activate the reward circuit including the ventral striatum (VS), and within the VS the nucleus accumbens, the ventromedial putamen and the caudate (Lacey et al. 2011, p. 420), as well as area in the brain that are interconnected including the medial prefrontal and orbitofrontal cortex (OFC), “and the amygdala and dopaminergic midbrain nuclei” (O’Doherty, et al., 2007; Heekeren et al., 2007; O’Doherty, 2004; as cited by Lacey, 2011, p. 420).

Lacey et al. (2011, p. 421) proposed that the pleasure of art alone involves activation of the brain “based on artistic status alone”, and not driven by non-art images.

According to Hagtvedt and Patrick (2008; as cited by Lacey et al. 2011, p. 421) the ‘art infusion’ effect, driven by marketing studies indicated consumer products were more favorably evaluated if the product is associated with art images integrated into the packaging, advertisements, or products. Identical products with control images that were not ‘art’ classified were less favored. The perception of status alone was enough to sway the study participants and influence their behavior. Hagtvedt and Patrick suggest art images are evocative and powerful suggestive devices that are derived from a “content-independent transfer of art-associated perceptions of luxury and intrinsic worth to the product with which the art is associated”.
Lacey et al.’s original study was motivated by the ‘art infusion’ effect discovered by Hagtvedt and Patrick (2008; Lacey et al. 2011, p. 430) and are assumed to be predicated on the psychological queues triggered by symbols of affluence and status. Lacey et al. in their study did indeed show a correlation to the neural processes of visual art to “artistic status alone” that triggered an “instantiate reward processing” to art images alone.

This suggests that status and affluence are important social factors toward the selection of artistic imagery. Shamans, healers, and religious figures as outlined previously may have played a pivotal role in the development of intrinsic artistic motivation and artistic work based on the influence of status and power. According to Lacey et al., art selection is triggered by reward processes in the brain and art status alone triggers ‘instantiate reward processing’ that the brain responds to for ‘art for art’s sake’ (Lacey et al. 2011, p. 433).

On one small point Lacey, et al., and the researcher must disagree. *Art for art’s sake* is a misnomer. There is a large body of evidence in the beginning of this thesis that suggests that there is *always* purpose to the aesthetic of art. To not have purpose makes little sense.

Art creation is a purposeful act, as indicated by Lipps research on “sympathetic empathy” (Franklin, 2010, p. 160), and Lee’s work in aesthetic imitation and aesthetic *einfühlung* (Jahoda, 2005; Lee, 1912; as cited by Franklin; 2010, p. 160), d’Errico et al.’s art as memory system (2003, p. 31) and Zaidel’s work on neuroscience, culture, aesthetics and sexual selection (2013, p. 217).

To further clarify the idea that art is purposeful, and can be quantified, Jacobson (2010, p. 186) an aesthetic psychologist created a framework that would incorporate seven key concepts into the structure of aesthetics processing. Figure 1.6 illustrates these key components involve 1) the individual personhood, 2) the situation, 3) Diachronia; this includes the events such as
evolution, and reason, and origins of human aesthetic behavior 4) Ipsichronia, to mean culture and social events, 5) the mind; cognition, emotion, attitudes and prototypes 6) is connected by the body through neuro and brain biology and neurosciences, and, 7) has creative content, (Jacobsen 2010, p. 187).

The framework for how and why visual art functions in human beings is an important factor in the development of affective art intervention modalities. Thoughts and feelings are involved in decision making in the human condition. Regulation of affect toward reducing the feelings of inferiority or shame, and increasing self-esteem, recognition, goal directedness and the sense of belonging are important factors in art therapy and social action interventions. Feelings associated with physical, emotional, and cognitive disabilities of every kind can be mitigated through therapeutic interventions.

The creation of artwork can be used as a tool to diffuse conflict or elucidate concepts. People who use art to communicate have a higher than average ability to use visual analytical skills (Kozbelt & Seeley, 2007, p. 80). The idea that art and the psyche are connected can be found as far back as Aristotle who questioned the link between creativity and melancholia (Prokopoff, Freiherr zu Ptlitz, Brand, Sullivan, Baker, Cooper, & Fehl, 1984, p. 8; Carson, 2011, p. 145; Kyaga, Lichtenstein, Boman, Hultman, Långström, Landén, 2011, p. 373). The use of art in the remedial recovery of mental wellness has been utilized since 1801 by Phillipe Pinel, a French psychiatrist, who wrote a Medical Treatise on Mental Disorder or Mania focusing on the topic of two “psychotic artists” whom he had studied. Another important figure in history was Hanz Prinzhorn who published the influential book on art and psychotic disorders in 1922, the first of its kind (Prinzhorn, p. 2011, p. 158).

The Effects of Belonging and the Actions of Superiority
Creating art in ancient society is akin to modern societal actions. Adler wrote that an individual’s thinking, feeling, and action, play an important role toward the development of communal life. Speech and communication in general, are necessary only if an individual relies on community; communication would not be necessary otherwise. Adler stated that “Our very thoughts and emotions are conceivable only when we premise their universal utility”. Adler stated that the most important function of the individual is the ability for community adaptation (Adler, 1957, p. 37). In fact, Adler stated that in the history of human habitation, all humans lived communally. Archaeologists can now confirm this trait in AMH’s unequivocally.

Social interest and connectivity are essential to the health and wellbeing of human interaction. A sense of belonging is essential. Adler understood the need for human connectivity and recognized that social belonging was essential to survival. Adler understood that a sense of belonging was the path to a satisfied and meaningful life. Shifron remarks that in Adler’s Individual Psychology, “the individual is a whole system” (Shifron, 2010, p. 11).

Living within a whole system then, means the individual must still act and interact within a communal framework. In fact, Adler states that “communal life seldom allow themselves to be influenced by the individual”. If this is so, then how does an individual, whole onto themselves navigate through a cultural and social system that they are reliant upon? Adler suggests that in order to survive within the group, the individual must take on the “logic of the group”, and do so as if the group held the “ultimate absolute truth” (Adler, 1957, p. 34). Social interest is more than important for communication. If not connected to a community an individual could be shunned, (1930/1970, as cited by Carter-Sowell, Wesselmann, Wirth, Law, Chen, Kosasih, van der Lee, & Williams, 2010, p. 68).
Adler defined individual *Gemeinschaftsgefühl* or community feeling as when an individual has empathy through understanding of another by seeing, hearing, or feeling the “heart” of that person. This reflection of connectedness is essential to communal relationships (Adler, 1957, pp. 49, 59, 60); similar to the way that *einfühlung* is important for “emotional projection”. *Einfühlung* is the ability to transfer and project feelings and emotions into an object (Lee, 1912; as cited by Franklin, 2010, p. 160-161). Epley, Akalis, Waytz, and Cacioppo (2008) (as cited by Gere & MacDonald, 2010, p. 95) found that when participants in a study on belonging were exposed to stimuli of projected future loneliness, or a “future alone” reported “stronger beliefs in supernatural agents” or described pets as having more anthropomorphized human attributes. Gere and MacDonald (2010) suggest this to be a coping mechanism to provide a social outlet (p. 95). This mechanism may also be a way to have a “safe relationship” that is less threatening then interpersonal relationships. However, according to MacDonald et al. (as cited by Gere & MacDonald, 2010, p. 107), “avoidant attachment is related to perceptions of low opportunity for reward”. As a defense mechanism, social avoidance aggravates “deeper fears of rejection” toward a possible development of chronically unsatisfied and unfulfilled social desire for a sense of belonging.

Social action incorporates critical inquiry and helps the participant develop a sense of direction and purpose. The participant utilizes a duel role as observer and participant in order to reflect on societal action. As both participant and observer, the action transforms toward *Gemeinschaftsgefühl* thus removing stigma. Social action and art therapy used together can be used to assist the participant transform and overcome negative cultural experiences (Kapitan, Litell, & Torres, 2011, p. 64).

**Striving for Recognition and Effects of Feelings of Inferiority and Shame**
Strong emotions such as the feeling of inferiority, superiority or shame are important emotions that effect regulation. They are complicated emotional mechanisms that are interwoven to develop and regulate intrinsic mechanisms and external stimuli. These attachment mechanisms are the foundation for the individual’s success or failure to connect and build interpersonal relationships (Smith, 2009, p. 241).

Smith defines shame and inferiority as two distinct emotions, shame being the first negative emotion in a child’s development. Smith defines the difference between the two emotions; shame often immobilizes and inferiority moves an individual to strive for goal directedness. Smith considers both tools for striving toward superiority, and (Smith, 2009, p. 241-242) both are important reflective tools. Shame is the first negative emotion to develop in the child with self-conscious awareness of guilt. Recovering from shame depends on the individual resiliency to experiencing the sense of belonging. The ability to recover from these strong emotions forms the motivational basis toward developing adaptive functioning, developing a sense of inclusion, or negatively, the desire to withdraw or the need for aggression (Smith, 2009, p. 242).

According to Sigmund Freud (1856-1939) (as cited by Smith, 2009, p. 243) loss of self-esteem is perceived as a failure “in the eyes of the parent”, and later through the individual’s own ‘internal standards’. Ostracism is not only painful to the individual, according to Williams, ostracism threatens four basic needs: self-esteem, control, belonging and the individuals need for a meaningful existence. Ostracism threatens these four basic needs simultaneously and has a critical effect on the sense of belonging (Carter-Sowell, 2010, et al., p. 68). In 1890, Victorian era culture had suppressed natural drives and promoted “false prudishness”, dualism and shame. Freud’s uncovering of human drives was necessary to uncover “physical, pagan, and natural
drives of life” needed to move society toward a less repressed lifestyle (Kauders, 2013, p. 338) and toward a more natural attitude about human sexuality and acceptance of differences in others.

Hall (2010) describes the effects of ostracism and inferiority of people with Intellectual Disabilities (ID) in two reports, one from the United Kingdom in 2001, “Valuing People: a new strategy for learning disability in the 21st century’ and ‘The Same as You?’ by the Scottish Executive 2000. According to Hall, people with ID’s describe their experiences as marginalized, vulnerable and socially excluded; “their voices are rarely heard” (Hall, 2010, p. 49). Conversely, people with ID’s also show a lack of desire and/or a lack of ability to strive for ways to experience inclusion (Hall, 2010, p. 51). This is due to negative experiences including personal, institutional and social discrimination (Hall, 2010, p. 52) and ostracism.

Abjection (Hall, p. 52) is a form of ostracism. Discrimination, according to Hall, is the difference (Hall, 2010, p. 52) that people experience, usually within the dominant culture, in the form of discrimination. The difference is enhanced by a negative feeling of ‘anxiety, nervousness or fear’ (Sibley, 1995, p. 5 as cited by Hall, 2010, p. 52). This can lead to ‘repulsion’ by the primary group, a threat to the sense of self, and the desire to ‘expel the abject’ (Hall, 2010, p. 52). Sibley identified the same abjection holds true for those with mental illness (MI) as well (Hall, 2010, p. 52).

Negative emotions, lack of acceptance and rejection, or threats to belonging lead the blunting, stunning, or dampening of the emotional system (DeWall & Baurmeister, 2006 as cited by Gere & MacDonald, 2010, p. 100).

Other researchers have studied the effects of threats to belonging and physical pain by measuring the correlation between physical and social pain (Gere & MacDonald, 2010, p. 102).
DeWall and Baumeister (2006 as cited by Gere & MacDonald, 2010, p. 102) found that individuals that had a threat to their belonging exhibited both emotional and physical numbing, and an increase to pain tolerance. This phenomena is similar to how Victor Frankl, in his seminal book *Man’s Search For Meaning*, describes this feeling of rejection as a “blunting of emotions and feelings. . . soon surrounded himself with a very protective shell” (Frankl, 2008, p. 55). Frankl adds that apathy is a main symptom of self-defense (p. 40). Frankl observed and documented his findings during his time while in a Nazi concentration camp.

Cortisol release under stress is a function that triggers energy for the “fight or flight” response, and it has been shown to be released during social threat and threats to belonging (Gere & MacDonald, 2010, p 104-105).

Negative factors include the perception of rejection and intense reactions can have a variety of negative consequences including the inability to maintain lasting and meaningful relationships that fulfill the need to belong. The insecure individual is not secure in the ability to trust a partner’s positive regard and believe their partners suppress negative feelings about them. Other effects include expectation of rejection, increases in social anxiety and withdrawal (Gere & MacDonald, 2010, p. 106). Other defenses include low reward perception, and the perception that the defense mechanism of avoidant individuals to avoid social situations that they may feel will add to their feelings of rejection, which in turn can become a chronic and self-defeating strategy (Gere & MacDonald, 2010, p. 107).

Interventions for individuals who have intense feelings of “belonging uncertainty” in stressful situations can dissipate negative feelings through normalization and comparison of “others” that have had similar experiences, thus reducing the feeling of “aloneness” toward “belongingness” as a group (Gere & MacDonald, 2010, p. 108).
In 1919 Hans Prinzhorn (1886-1933), an art historian and German psychiatrist was asked by Karl Wilmanns to come to the University of Heidelberg’s psychiatric hospital to expand an assemblage of miscellaneous patient artwork began by Emil Kraepelin. Prinzhorn increased the university’s collection of art by the mentally ill by gathering over 5,000 pieces of art and 450 monographs from approximately 450 asylum patients throughout Germany, Italy, Switzerland, Austria and The Netherlands (Prinzhorn 2011, p. 5).

Prinzhorn investigated the connection between artistic creativity, individual expression, mental illness, its connection to cultural issues and its influence on society at large (Brand-Claussen, Jadi, Douglas, 1997). Artwork created by “normal” persons collected from German prisons was used as a control (Brand-Claussen, Jada, Douglas, 1997, p. 8). Prinzhorn interviewed the artists and asked for feedback about the patients works of art. It is both, art collection and psychological study of individuals who were both socially excluded and psychologically incarcerated literally and figuratively (Brand-Clausen, Jada, Douglas, 1997, p. 11).

The artists and their artworks were displayed at receptions. Recognition transformed patients self-negativity of “shameless” and “nonsensical” pieces into ‘artistic productions’ or ‘artistic works’, thereby transforming the person’s sense of isolation and exclusion into a sense of belonging and normalization; as well as transforming the art into something worthwhile and valuable (Brand-Clausen, Jada, Douglas, 1997, p. 12).

Moreover, the inmates, many of them trained in art, could use their artistic talents to escape the shame and humiliation of being labeled insane. Their talents helped them communicate their world view, reduced the effects of inferiority and enlighten the world within a framework of a “cultural critique”. Prinzhorn’s psychological work brought about a cultural shift that brought “insane scribblings” into light as important and equal in professional
artistry. He transformed the patient into someone perceived as a gifted artist with talent for creating art that was profound insightful and meaningful (Brand-Clausen, Jada, Douglas, 1997, p. 14).

Prinzhorn’s efforts are very much in line with present art therapy social action. Golub underscores the principles of art therapy social action as one of participation, collaboration, and validation that act as a political action. It is about sharing the power of community action for the benefit of the acting community and the community at large through social justice and social transformation (Golub, 2005, p. 17).

Yet meaning can change in the blink of an eye. Naumburg, as art therapist understood that the meaning of visual symbols must rely on the individuals own interpretation (Rubin, 2010, p. 59). As mentioned earlier, up until the 1930’s, the swastika had many meanings in various cultures that spanned thousands of years; the Nazi regime would change this symbolic and cultural perception forever.

Since there is no real “truth”, only truth as an individual experiences and perceives-truth is a distortion of reality. Friedrich Nietzsche (1884-1900), considered the ability to recognize the importance of “logical fictions” and “untruth” as indispensable to living a life that places itself beyond good and evil; not in judgment, but to view truth as a distortion without bias (Nietzsche, 1886, p. 6). Therefore the “ultimate absolute truth” (Adler, 1957, p. 34) can be tricky and therefore must be viewed as an individual’s perception, group or singular since truth is a perception and not a fact. Community feeling can easily become fragile and shatter if Gemeinschaftsgefühl is not a part of the equation.

John Dalberg-Acton (1834-1902), in a letter to Mandell Creighton in April 1887, stated “Power tends to corrupt, and absolute power corrupts absolutely” (Dalberg-Acton, 1907, p.
His statement illustrates succinctly how corrupt power created fascism and how Hitler and his Nazi’s began to think themselves omnipotent. Therefore, ultimate absolute truth is too rigid of a construct to work effectively when change is inevitable, and social interest is very different from conformity. An individual who is part of a healthy group has a sense of security (Curlette & Kern, 2010, p. 30) that allows for development of ideas and illumination without threat of losing one’s place in the group. What happens though, to group dynamics when a crisis occurs? As stated before, in order for “absolute truth” to continue, the system must agree as a whole (Adler, 1957, pp. 35-36). Therefore, adaptation to group think is essential for security (p. 36) but can cause chaos in the aftermath of social change.

Since society and culture is always evolving, or society and cultures can clash, illumination of “errors of thought” within the constructs can and will cause conflict (Adler, 1957, p. 36). Adolph Hitler’s (1889-1945) attitude was a prime example of his need for superiority and for his depreciation tendency toward others. Hitler’s attitudes and behaviors were exploited to enhance his sense of self-esteem and superiority by finding faults, problems, or shortcomings with other people, situations, or races through abjection (Hall, 2010, p. 52). This tendency between self and others involves highly biased or antithetical apperception that results in a view of self-superiority. Hitler had no Gemeinschaftsgefühl or community feeling. To have empathy through understanding of another by seeing, hearing, or feeling the “heart” of someone else is essential for harmonious cohabitation. This reflection of connectedness is essential to communal relationships (Adler, 1957, pp. 49, 59, 60), or einfühlung, which according to Lee, allows the observer to “instinctually feel and intentionally project oneself within or into something outside one’s self” (Lee, 1912; as cited by Franklin, 2010, p. 160-161).
During the formative years when fascism was evolving and Adolph Hitler was gathering momentum, Hans Prinzhorn was gathering material for his book on mental illness *Bildnereider Geisteskranken* or *Artistry of the Mentally Ill*. In 1921 Prinzhorn left the university and in 1922 his book was published (Prokopoff, et al., 1984, p. 2; Prinzhorn, 2011, p. 5). The first section of his book consisted of his academic material based on Klages’ theory of expression (Prokopoff, et al. 1984, p. 2) and the archetype-soul and substance-soul. Klages’ theory hypothesized that “the living body is the phenomenon of the soul; the soul is the meaning of the living body (Stein-Lewinson, 1938, p. 164) and is manifested through “representation” of the archetypical “guiding image” (p. 171). The middle section consisted of monographs of ten artist patients, their lives and illnesses. The last section of his book rationally addressed the relationship of the artistic endeavors of his patients to the times (Prokopoff, et al., 1984, p. 3). In chapter V. *Das schizophrenic Weltgefühl und unsere Zeit* or *The schizophrenic World Feeling and our Time* (Prinzhorn, 1923, p. VIII; http://translation.babylon.com/german/to-english/) Prinzhorn connected the social climate to the treatment of mental patients and all its social implications.

Prinzhorn’s book would examine the links between creativity and the rational mind, and the art created by patients with mental disturbances. This book would be shared among the likes of Surrealists Jean Dubuffet, Paul Klee, Oskar Schlemmer, Alfred Kubin, Max Ernst, Paul Éluard, and Andre Brenton. Many of these artists were in turn influenced by eminent psychologist Sigmund Freud (Brand-Claussen, Jadi, Douglas, 1997; Prinzhorn, 2011, p. 6).

In July of 1933, the German government would institute the Law for the Prevention of Progeny with Hereditary Diseases and call for the sterilization of all persons whose illnesses were considered hereditary. This law covered those with mental illness, learning and physical disabilities, epilepsy, blindness, deafness, and severe alcoholism. The Third Reich began to use...
propaganda against the disabled, classifying them as “life unworthy of life” or “useless eaters” and stressed their burden upon a society struggling and in the midst of a financial depression (United States Holocaust Memorial Museum, n.d.).

In the fall of 1933, Wilmanns, Prinzhorn’s replacement was accused of insulting Hitler and was summarily dismissed from the Heidelberg clinic. Carl Schneider, a pro-Nazi became the Heidelberg Clinic scientific director and the director of the hospital’s Nazi “mental-patient extermination programme” (Brand-Claussen, Jádi, Douglas, 1996, p. 18). Under Schneider’s direction patient artifacts were used in exhibits to mock the mentally ill or physically handicapped. He compared the mentally ill to Modernist artists whom Hitler despised. It was under Schneider’s direction that patient art was contributed as material for the infamous *Entartete Kunst* or *Degenerate Art* exhibits. Entartete Kunst was meant to mock, humiliate, belittle and dehumanize its artistic creators due to their Jewish lineage, disability, their lack of conformity, and bold brutalist art; art very different from the pedestrian art that Hitler so appreciated (Prokopoff, et al., 1984, p. 3). Between 1931 and 1938, the Nazi propaganda machine used Prinzhorn’s patient art as an example of ‘degenerate art’ to mock and reject modern artist work (De Zegher, 2000, p. 4; Prokopoff, 1984, p. 13). In the infamous *Degenerate Art* exhibit of 1937, work from the Prinzhorn collection was used as propaganda to compare modernist artists to the mentally ill and illustrate their supposed perversions to further dehumanize and target these groups (Prokopoff, et al., 1984, p. 3).

In October of 1939, Hitler empowered physicians to sentence the incurable mentally and physically disabled patients to “mercy death”. This mandate was meant to cleanse Germany of the financial burden of people considered genetically defective and burdensome to society (United States Holocaust Memorial Museum, n.d.; Prokopoff, 1984, p. 3).
Schneider was the “Chief Assessor” of the euthanasia program at the Heidelberg Clinic (Prokopoff, et al., 1984, p. 3). Schneider used inmates without compunction as living experiments. The doctor experimented with many inmates at the Heidelberg Clinic in order to perform cranial autopsies to “find” the mental illness he thought he could examine in the brain (p. 19).

Many inmates, including Josef Heinrich Grebing (1879-1940), were sent to exterminations centers on Schneider’s orders (Brand-Claussen, Jádi, & Douglas, 1996, pp. 18, 84). Grebing, a talented artist created the artwork in Figure 1.7 (pp. 87, 92). His artwork illustrates remarkable logographic and pictographic artwork. Grebing, a Catholic, was originally sent to the Heidelberg Clinic for “dementia praecox”. Grebing was later “transferred to extermination centre” by Schneider in 1940 due to his mental illness (p. 84). Grebing most likely died at the death factory in Dachau, or one of many extermination sites scattered throughout Germany (Brand-Claussen, Jádi, & Douglas, 1996, p. 84).

Is it any wonder that Grebing would try to make sense of this horrifying world? Grebing used symbols throughout his art work to process his internal and external world. As illustrated, he wrote copious text and created purposeful iconographic symbols recorded in his art notebook from 1915 through 1921 while at the clinic. This notebook was filled with cyphers and keys - religion being the main subject throughout his work (pp. 87, 92).

In Figure 1.8, Grebing’s Raubmörder Zeitrechnungs Calender – Scharfrichter Calender 1928 (Murderer’s Chronological Calendar-Headsman’s Calendar), Grebing illustrated the horrors that were in his mind in the sanitarium (p. 87). Yet, ideas such as these do not arise from within a vacuum. The notion of killing the incurably ill was proposed sometime in the1920s by Alfred Hoche and Karl Binding. They co-wrote and promoted a book printed in Germany that
justified the cost-effectiveness of elimination of “useless”, “idiots” and “crippled” people (United States Holocaust Memorial Museum, n.d.).

Grebing’s work is prophetic on many levels. The murderer’s calendar (Brand-Claussen, Jadi, & Douglas, 1996, p. 87) illustrates what Grebing imagined, thought, heard or read within the confines of the asylum or possibly outside its walls. The Heidelberg clinic patients were exhibiting their work at art shows with Prinzhorn. Longed-for information from the outside would have been met with welcomed ears. Grebing’s art would forewarn of murderous times to come. His work illustrates the clash and conflicting paradigms of Grebing’s internal and external world as well as shifting cultural constructs in a tumultuous time. Comparatively, Grebing’s symbolic artwork is a succinct model of Jung’s vision of the archetype in all its glory and at times its horrifying reality (Ellenberger, 1970, p. 680). Whether conscious or unconscious, Grebing created a symbolic warning that used symbolic art as expression that matched his thoughts about the surrounding political, cultural and socioeconomic environment that was unfolding around him.

There is a strong foundation that utilization of symbolic art is an evolutionary process that has evolved out of an amalgam of social necessity viewed through the lens of the study of psychology, archaeology, ethno archaeology, paleontology, art and neuroscience and in Neuroaesthetics, anatomy, and through the study of culture-historical archeology. The depiction of this evolutionary path lends itself well to the many psychological models that are synchronous to this evolution including Piaget’s theory of cognitive development, Klages’ theory of expression, Adler’s theory of individual psychology, Freud’s theory of the id, the libido, and defense mechanisms, and Jung’s theory of the archetype and the collective unconscious. In fact,
Jung’s theory of the collective unconscious as an evolutionary process is an intriguing hypothesis that fits very well within the artistic constructs of this study.

In the 21st century worldview, many societies have come to understand and use artistic tools with great effect to right political and social wrongs or in therapeutic modalities through art and social action. Yet, there is still work to be done. Integration and diversity have many social challenges as long as there is fear of the unknown, and power struggles that negatively affect the weak and oppressed. Social belonging and adaptation are predicated on social behavior and are conditional to the surrounding environment and the individual value to the social group. Adler suggested that societal evolution can only progress when society considers itself “inseparably tied up with being good” and that societal mistakes can be traced to lack of social interest and pathological errors (Adler, 1964, p. 138).

Society is continually adapting and correcting through social, political, economic, and cultural queues. In a study of Australia’s indigenous peoples, a sense of belonging was created through social action by the reintegration through cultural public space art markers. Shunned through immigration of Western civilization, Australia’s indigenous people began to voice their desire for cultural belonging and recognition. This project helped develop a sense of social inclusion, and created a contemporary sense of personal and civic identity. The project was created to bring back a sense belonging and to nurture a spiritual and cultural renewal. The project helped the community as a whole develop a sense of self through a process of reconciliation, social understanding and the sense of a cultural identity (Malone, 2007, p. 158).

Other studies by Campbell and Jovchelovitch (as cited by Madyaningrum & Sonn, 2011) indicate that community participation can be defined as a social achievement rather than a social state, which brings forth societies awareness of a groups social identity.
representation and power to make changes through awareness (Madyaningrum & Sonn, 2010, p. 360).

In 2006, an arts initiative commissioned by the Scottish Executive, the National Programme for Improving Mental Health and the Scottish Arts Council developed a platform to promote mental health through the arts. Through the merging of evidence based art therapy modalities, and collaboration of community arts programming, including health organizations, individual recovered patients, artists and mental health care practitioners, they developed projects to help individuals express the mental illness and recovery and the goal of achieving social inclusion (Parr 2006).

Parr emphasized through a study that was formulated by framing the construct of “inside” and “outside” art, and the relation to art based on the predication that this boundary still exists today within and outside of society (Parr, 2006, p. 151). Although Parr emphasizes and delineates the difference between inside and outside art, one developed for the use within art therapy and the mental health field, the other context is used through collaboration with “cultural insidedness”, whose goal is to remove barriers of outsider exclusion through community and public art with the goal of empowerment, inclusivity, bonding, a sense of belonging but not necessarily bridging (Parr, 2006, pp. 153-154).

Probyn’s belief, as related by Parr, that the desire for people to “belong” and the processes of belonging ‘propel’ the individual as it develops the social relations through intervention (Parr, 2006, p. 163). Yet, social action and art therapy are a dichotomy. One investigates the inner workings of the psyche to work toward change, and the other strives for social change via social action (Rossetto, 2012, p. 20). Gray compares art therapy as a spectrum with clinical art therapy on one end of the spectrum and non-guided studio approach on the other.
end. Naumburg applied art with “brief, spontaneous art making” and was most comfortable using art to help the client bring forth the “unconscious” into consciousness (Gray, 2012, p. 113).

Kramer (1987, as cited in Gray, 2012, p. 113), applied the studio approach, and allowed the participant to create with little feedback from the therapist. Kramer supported the studio environment and encouraged participants to bring the unconscious thoughts into the conscious periphery toward an individual process that was not hampered by verbalization.

Gray (2012, p. 113), much like Probyn, also stresses there must be an understanding of the distinction between art therapy and social art action. It is an important distinction to mediate, but it is also important to note that both can help the individual broach important issues toward resolution.

This sharing of information and material begins the “collective transformation” that occurs through art and social action (Golub, 2005, p. 17). Golub further states that art if used for therapy “is isolated and incomplete. Art simply as a vehicle for social good at the expense of the individual risks becoming propaganda”. This the researcher can agree upon. Golub goes on to say that “social action for the sake of action or ideology is misguided” (p. 17). The art therapist must consider all the actions that provide for a complete and holistic experience.

Golub, an art therapist emphasizes the importance of Paulo Freire and his philosophy of the “pedagogy of the oppressed” as central to her work as a community-facilitator and art therapist. Freire’s concept of conscientização or ‘critical consciousness’ (Freire, 1996, as cited in Golub, 2005) is divided into two functions; product and process. Freire looked at consciousness in levels of query that included naming, reflecting and acting (Golub, 2005, p. 17).

Naming asks the probing question “What are the most dehumanizing problems in our lives? Should they be this way? How should they be?” Reflecting directs the questions inward.
“Why do these problems exist? Who or what is to blame? What is our role in the situation?”

Acting calls to action “What can be done to change this situation? What should be done? What have we done or will we do?” Golub emphasizes that Freire’s *Pedagogy of the Oppressed* takes conflict and reflection and synthesizes the response into activism. She states “Reflection without action is ‘verbalism.’ Action without reflection is ‘activism’ or action for action’s sake”.

Combined, they become “praxis”, and praxis “transforms the world” (Freire, 1996, as cited by Golub, p. 18). This is precisely the type of praxis that the American’s with Disability Action Mural is meant to create (Sermoneta, 2000).

**The Purpose of the Americans with Disabilities Act Mural**

*The Americans with Disability Act (ADA) Mural* was funded and developed by Integrated Arts, a now defunct non-profit organization whose mission was to increase opportunities for people, disabled or not, to express themselves through creative arts and to come together in common cause. Osha Neumann and Frances Valesco were lead facilitators and muralists of the original project. The *ADA Disability Mural* was commissioned by Integrated Arts to celebrate the 10th anniversary of the Americans with Disabilities Act in the year 2000. The theme of the art action was to create a ‘civil rights’ history by art participants in order to tell their own civil rights stories using painted art tiles and recorded stories. It celebrated everyday lives and shared experiences of disability through art. Blind or sight impaired individuals teamed up to produce audio-recordings of the artists describing their tiles. This added another participatory level that allowed access to the art to people who were blind or have low-vision (Sermoneta, 2000).

The social action of the *ADA Mural* can be compared to the social action and therapeutic interventions developed by Franz Prinzhorn as mentioned earlier in this text. It also fits well with the context of the philosophy of Paulo Freire’s ideology of critical consciousness, conflict
reflection, synthesization and action (Golub, 2005, p. 18). The principles of art therapy and social action are mirrored through active participation, collaboration, and validation that acts as a political action focused on access (Golub, 2005, p. 17) and an invitation toward cultural revolution (Freire, 1993, as cited in Golub, 2005).

Artists take on an important role in postmodern artistic and social statements. Judy Chicago (1939- ) and street artists such as Keith Haring (1958-1990), and Bansky (unknown), to name a few, would go on to defile and define the artistic and social climate of the 1980’s through to the present. These artists would redefine art social action as modes to express moral and ethical social statements of the day (Lucie-Smith, 2000, p. 8-9).

Judy Chicago’s most well-known collaboration The Dinner Table (Chicago, 1979, p. 12) and the Birth Project are art actions that express the repression of women’s issues (Chicago, 1985, p. 4). Judy Chicago is the contemporary model of art therapy and social action and her work is collaborative in nature and is indicative of the repression of women’s issues. On the other end of the spectrum was Keith Haring (1958-1990), who tended to create social and political mural statements independently. The Cold War, apartheid, AIDS, the Viet Nam War – these were all important social issues of the times and were important to Haring (Haring & Fairey, 2010, 4% location 175). AIDS was especially a significant theme after Haring was diagnosed with AIDs himself. His devil sperm motifs were a powerful statement in a time when everyone feared the AIDS virus, and no one knew or understood the mechanism of the disease. Keith Haring would die of AIDS in 1990, an anarchist to the very end (Haring & Fairey, 2010).

Image creation or ‘codification’ by activists run parallel to ‘thematic investigation’ and are vital toward ‘decoding and critical analysis’ used for symbolic and thematic image making (Freire, 1993, p. 95). Freire’s decoding runs parallel to “formal iconographic” images and motifs
rooted in Uniformitarian hypothesis (Berrocal, 2011, p. 5) and can be used to compare and contrast iconograph ideology. This thematic investigation can also be utilized within a hermeneutic phenomenological examination by synthesizing images to arrive at unifying and identifying social understanding (Rossetto, 2012, p. 20).

In Valesco’s VSA MN speech dedicated on October 23, 2013, she details the strategy for developing the ADA Mural. In 1998, Paul Karlstrom, the Western Regional Director of the Smithsonian’s Archives of American Art, as well as a member of the board of the non-profit Integrated Arts developed a concept to celebrate the tenth anniversary of the Americans with Disabilities Act with a mural. Karlstrom asked Frances Valesco to be the mural coordinator (Valesco, personal communication, October 23, 2013). Valesco and Neumann would become lead muralists (Sermoneta, 2000). The ADA Mural would be the first collaborative community artwork of its kind created by those with and without disabilities. The ADA Mural project according to Valesco was originally designed to “express the range of experiences and emotions of people touched by disability” (Valesco, 2008, para. 4). This project was set to be completed in the year 2000, with the lofty goal of installing the mural in a building dedicated to Ed Roberts, international leader and educator of the independent living and disability rights movement. Ed Roberts was the first student with “significant” disabilities to attend the University of California. Roberts was awarded the MacArthur for his work in advocacy and independent living. The Ed Roberts campus was built in 2001, and the ADA Mural was installed in a dedication ceremony April of 2011 (Valesco, personal communication, p. 2).

Osha Neumann, co-facilitator of the ADA Mural is a well-known San Francisco artist and a self-proclaimed anarchist. His early home environment shaped his ability to embrace anarchy as a tool for social change. His Jewish parents escaped the horrors of the Holocaust by
immigrating to New York in 1936 (Neumann, 2011, p. 13) just as fascism was wrapping its iron fist around the German nation. Neumann was born to Franz and Inge Neumann (2011, pp. 7-8), one year before Heidelberg inmate Joseph Heinrich Grebing was transferred to the “extermination centre” due to his mental illness (Brand-Claussen, Jádi, & Douglas, 1997, p. 18, p. 84), and three years after Neumann’s family came to the United States. Neumann’s parents, Jewish intellectuals moved to Washington D.C. where his father Franz worked for the government collecting intelligence on Germany. After the war his father accepted a post as political science professor at Columbia University (Neumann, 2011, p. 13).

For Neumann, home life was “as an enclave of intellect…the model of a life of reason” (Neumann, 2011, p. 16). But under this upper crust of intellect, lay festering doubts about love, acceptance and belonging. He and his mother Inge struggled, she for control and he for acceptance, love and a sense of belonging (Neumann, 2011, p. 18). When his beloved father died in a car accident, the young Osha was left alone, adrift, and unloved (Neumann, 2011, p. 22). According to Adler, Neumann’s family constellation and negative family atmosphere would have a profound effect on his self-esteem (Oberst & Stewart, 2005, p. 198).

His remaining years before college were miserable with pathetic and self-imposed self-loathing promulgated and cultivated by his mother. To her he was;

“dirt and disorder. Either I was unusually filthy or my mother was unusually obsessed. My mother’s constant complaints nurtured my sense of personal vileness. All my bodily impulses were bad, I was the turd laid in the living room of reason, the damned spot on the rug that would not be cleansed. In a world divided between fascists and antifascists I became: the dirty little Jew as fascist” (Neumann, 2011, p. 18)
This self-depreciation according to Freire is the classic symptom of oppression; transference of the oppressors own intrinsic beliefs that are repeated until the oppressed believe the message too (Freire, 1996, p. 45). It is unfortunate that his unhappy home life ran parallel to his emerging sexual feelings. As a young adult, Neumann’s private logic (Oberst & Stewart, 2005, p. 200) turned to self-sexual satisfaction as a way to transform and sublimate his negative thoughts and feelings about himself and his environment into positive feelings. Not yet a fully formed young adult, Neumann’s error in judgment that he was worthless would make his struggle for self-acceptance much more difficult to grasp. He did not consider his vast intellectual and creative strengths as a worthy gift to the world. He turned his misery inward as the anarchist contained within began its slow and disturbing metamorphosis (Neumann, 2011, p. 25).

Neumann finally left his vociferous home life for undergraduate study at Swarthmore College in Philadelphia in 1957 (2011, p. 27). But socially, Neumann suffered. He found an abandoned freight elevator at the college and preferred to live within in seclusion. In this environment he “inhabited the woodwork” unbeknownst to faculty, staff and students (p. 28) and indulged in sadomasochistic fantasies (Neumann, 2011, p. 92).

Even with the detriment of his social awkwardness, and signs of mental illness, Neumann excelled in academia. He was fortunate enough to travel abroad in his junior year to the London School of Economics. It was while in London that Neumann discovered the art of protest. He and others gathered at the South African Embassy to protest the South African massacres. Another protest shortly thereafter would find him arrested, booked and released for the first time. Soon after coming back to the United States and to Swarthmore he graduated from college without incident (Neumann, 2011, pp. 29-30).
Neumann enrolled in the graduate history program at Yale in 1962. Yale was not for him (Neumann, 2011, p. 31; Neumann, 2014, p. 111). Neumann dropped out after discovering masturbation and doodling to be a much more enjoyable pastime than studying history (Neumann, 2011, p. 31). Adler would define Neumann’s behavior as a “useless side of life/wasting orientation” manifested with self-defeating behavior (Oberst & Stewart, 2005, p. 203). He withdrew from Yale and sometime after enrolled in the Brooklyn Museum School of Fine Arts (Neumann, 2011, p. 36) during which time Neumann studied, created art, and began writing part-time for *Art News Magazine* (2011, p. 38). Sometime later he taught for a short time at the School of Visual Arts in Manhattan (Neumann, 2014, p. 79). It was a peaceful productive time, yet also the calm before the storm.

By 1967, Neumann’s anarchic countercultural political leanings would become fully formed (Neumann, 2011, p. 41). Neumann became a founding member of the New York street gang “Up Against the Wall Motherfuckers” shortened to the “Motherfuckers” (Neumann, 2011, p. 7). Neumann’s sense of peace through art was trumped by purpose through the countercultural revolution of the time (p. 65). But a balanced life was not part of his equation at this time and Neumann gave up his sense of peace for revolution and “jettisoned the art” for anarchy (p. 44).

In 1967 he participated in Angry Arts week at St. Patrick’s Cathedral along with twenty-two other demonstrators in protest of the Vietnam War (Neumann, 2011, p. 47). The Lincoln Center for the Performing Arts was targeted as a point for dumping garbage during the New York garbage strike of 1968 (Neumann, 2011, pp. 64-65). The Pentagon and the Foreign Policy Association and Secretary of State Dean Rusk came shortly thereafter (p. 75), and then Columbia University followed (p. 80). The Democratic National Convention of 1968 in Chicago was a
firestorm of conflict and it was there that Neumann became an “unindicted co-conspirator” of the Chicago 7 Conspiracy Trial (Neumann, 2011, p. 102). Neumann himself writes he “was all rage and rejection” (Neumann, 2011, p. 91) as his identification and transformation as a “Motherfucker” became complete (Neumann, 2011, p. 57).

Freire argues that the oppressed become oppressors or sub-oppressors at the beginning of the liberation struggle (Freire, 1996, p. 27) and this includes “the dialectical conflict between opposing social forces” (p. 28). For Neumann, this process of transformation from sub-oppressor to authentic liberator could only be achieved by ‘liberation by praxis’, (Freire, 1996, p. 60) but this is a long developmental process. Yes, it takes action to create change, but this is only a part of the equation. Neumann’s call to social activism through symbolic metaphor by papering the city with anarchistic posters, and flyers was an invitation for others to participate in ‘cultural revolution (p. 139) through “steering, conquering, and invading” (Freire, 1996, p. 138).

Neumann would continue to protest for almost a decade and rant against injustice through protest, both peaceful and violent. Oppression is predicated on ‘overwhelming control’ according to Freire and is “nourished by the love of death, not life” (Neumann, 2011, p. 58).

By the late 1970’s, Neumann was living in San Francisco and was struck with the vibrant murals by the Chicano artists in the Mission District. His hero’s would be David Alfaro Siqueiros, José Clemente Orozoco, and the great Diego Rivera. It was at this time that Neumann had his own epiphany. He picked up his brushes after a decade of barren artistic creativity and started to paint again. Neumann had decided to become a mural painter (Neumann, 2014, p. 2, 3).

Still the lure of protest beckoned to Neumann. In 1982 he demonstrated against nuclear weapons research at Lawrence Livermore laboratories. Other protests would eventually follow as
before (Neumann, 2011, p. 136). Neumann writes “Political resistance goes hand-in-hand with cultural resistance” (Neumann 2014, p. 72), and in time Neumann would break the bonds of social sub-oppression to be reborn into the ideal of autonomy, responsibility and liberation of the oppressed (Freire, 1996, p. 29) through his own freedom (p. 31) and through the utilization of praxis (Freire, 1996, p 107). In 1984 Neumann enrolled in law school (2011, p. 137), he was 45 at the time (Robinson, 2006). From 1984-1992, Neumann sat on the Berkeley’s civilian police review commission much to the dismay of the police department (p. 138) and developed into an individual who could use Freire’s pedagogy as a tool toward change.

Life has not been easy for Neumann. In 1987 he was diagnosed with autoimmune disease, and then again in 1997 he would be diagnosed with prostate cancer (Neumann, 2011, p. 138). This, three years before the ADA Mural project would begin. Since then, he has continued to create art with a sense meaning and a sense of purpose. Neumann lives day to day in the process of social reformation. He serves the homeless through “art, legal advocacy and activism” (Robinson, 2006, Street Spirit). Neumann has his own disability struggles but to a large degree, he has control. He no longer has “sadomasochistic fantasies” as are detailed in his memoir (2011, p. 140), although at times he still has times of “crippling obsessiveness”.

Then in 2005, Neumann had another life crisis, a cancerous blood disorder (Neumann, 2011, p. 138). Through it all, Osha Neumann still creates art. It is his peaceful place in a world of hard work and activism.

For Frances Valesco, co-facilitator of the ADA Mural, there were similar influences due to the political and social impacts of the 1960’s. Valesco had much different goals and took a very different path from anarchy. While living in Los Angeles in 1965, Valesco was witness to the smoke and fire of the Watts as an observer, not as a protest participant. Valesco was further
influenced by the idea of conflict transformation through community art building from the aftermath of the Watts riots (Fowler, 2008, p. 67, Valesco, 2013, p. 1).

The ADA Mural is an excellent example of art and social transformation in action. Valesco brought healing and catharsis to the project and added structure, stability and purpose. Valesco also brought longevity to this art and social action which is an ongoing process throughout the country.

Now called The Disability Mural, Valesco compares this art and social action as one that bears a resemblance to The Names Project, AIDS Memorial Quilt. But there the comparison ends. Whereas, The AIDS Memorial Quilt is a collective expression of grief, The Disability Mural on the other hand, is “a celebration of the lives and contributions of people with disabilities” (Valesco, 2008, para. 4).

The Disability Mural has been presented in a range of settings including the Berkley City Hall, the Oakland City Hall, the Richmond Arts Center, the Mission Cultural Center in San Francisco, and the Olive Hyde Gallery in Fremont. Figure 1.9 is a virtual web page composite of a few of the mural tiles (http://www.edrobertscampus.org/galleries/the-disability-mural/) that are now on display and permanently housed in the Ed Roberts Campus, in Berkley CA (Valesco, 2011a).

Since its original inception, Valesco has continued to facilitate mural workshops that have culminated into 32 indoor and outdoor mural exhibitions of The Disability Mural throughout the San Francisco Bay Area. While Valesco and Neumann co-facilitated the original ADA Mural project to assist those with disabilities to expand their experiences and explore their emotions, they were careful to design the project using Universal Design format that “allows for complete accessibility no matter what the physical abilities of the artist are” (Fowler, 2008, p.
Valesco is now the Mural Program Director of *The Disability Mural*, at the Center for Accessible Technology (CforAT) in Berkeley CA. Various tiles from *The Disability Mural* are permanently displayed at the Bay Area Rapid Transit (BART) Ashby Station in Berkeley, California and at the Ed Roberts Campus (ERC), also in Berkeley California (Valesco, 2008). *The Disability Mural* is not only a prime example of art and social action, but the project is ideal for information sharing and networking on a global platform.

Information sharing begins the “collective transformation” that occurs through art and social action (Golub, 2005, p. 17). Freire’s concept of *conscientização* or ‘critical consciousness’ is divided into product and process.

Further, the benefits of praxis and participation have far exceeding the initial action of *The Disability Mural*. This art action fosters and encourages the concept of belonging, and brings together a segment of population that has a more difficult time accessing people, places or material. This project helps with the development of the “ego identity”, refined through experiential knowledge of one’s self derived through social relations, and “personal identity”, the experience of the core of consistent self-perception that does not change over time (Stickley 2010).

The collective identities are derived through group interaction and are significant toward development of the individual identity. In fact, Tajfel argues that Social Identity Theory and social identities are not static, but are created by the individual to fit within many “social identities”, and therefore one individual will have many identities to accommodate numerous societal roles (Stickley 2010).

Social Identity development is but one benefit the writer can credit Neumann and
Valesco with through their facilitation of art and social action through the ADA Mural. Helping individuals nurture and develop their ego and personal identities through art and social action is an important benefit.

**Extension of the Disability Mural: Duluth, Minnesota**

In 2005, Frances Valesco met Bridget Riversmith while both were residents at the Hungarian Multicultural Center’s artist retreat in Budapest Hungary. Riversmith, an artist with a disability has been a VSA Minnesota teaching artist, an Arts Ambassador for VSA Minnesota and a supporter of this organization for many years. After the retreat, Riversmith with Valesco’s permission, continued The Disability Mural vision with a Disability Mural project in Duluth Minnesota in 2011. Riversmith was a co-founder of the Arrowhead Alliance of Artists with Disabilities, and was the art director of the Disability Mural Project in Duluth Minnesota. The researcher met Riversmith under the tutelage of Executive Director Craig Dunn as a VSAMN visiting artist to help outstate art and disability organizations develop and thrive. Riversmith organized and facilitated the first Disability Mural in the Midwest in Duluth Minnesota. Ms. Riversmith facilitated 24 workshops to produce 360 mural tiles. As Riversmith related in a personal communication about the Duluth Disability Mural project, Riversmith set out to reach as many people as possible through the use of Universal Design principles and modalities (B. Riversmith, personal communication, January 3, 2014).

Riversmith’s project goals were to inform and educate individuals about the framework of universal design, promote inclusiveness, and recognize contributions by and of people with disabilities. Riversmith achieved her goals with the culmination of a one-day exhibit of over 300 participants of the Duluth Disability Mural project (Riversmith, 2011, March 18).

**Extension of the Disability Mural: Twin Cities and Saint Cloud, Minnesota**
In 2013, VSA Minnesota Executive Director Craig Dunn was allocated funds to continue creating art for the Disability Mural project through the National Endowment for the Arts, the Minnesota State Arts Board though the arts and cultural heritage fund and the voters of Minnesota. The VSA MN disability mural was modified with Valesco’s approval to accommodate VSA MN’s grant criteria. Two major modifications were made to the original Disability Mural. 1). A storytelling component was added and a professional writer was selected to facilitate the activity. 2). primary goal to find responses to the question “What does arts access mean to me?”

The goals of VSA Minnesota project were to engage people with disabilities and those individuals significantly affected by disability. This could include individuals with family connections to someone with a disability or individuals with professional connections to someone with a disability – client or otherwise (Dunn, personal communication email attachment, Dec 10, 2013).

This project was designed to create an installation art mural of art tiles designed by those with visible and invisible disabilities or by individuals in the mental health or caregiving professions. It also created a feeling of social inclusion. Adler stated, “Social feeling is the crucial and deciding factor in normal development” (Gere & MacDonald, 2010, p. 93).

In the art therapy and mental health field, there is another reason to use art as a therapeutic intervention. There is a strong correlation between creativity and psychopathology (Carson, 2011, p. 144; Kyaga, Boman, Hultman, Långström, & Langdén, 2011, p. 351; Kéri, 2009, p. 1070).

The link between creativity and mental illness has been contemplated for thousands of years. It was Aristotle after all who held the belief that “no great genius has ever existed without
a strain of madness” (Prokopoff, Freiherr zu Ptlitz, Brand, Sullivan, Baker, Cooper, Fehl, 1984, p. 8; Carson, 2011, p. 145, p. 145; Kyaga, Lichtenstein, Boman, Hultman, Långström, Landén, 2011, p. 373), and melancholia. Plato believed that philosophers, poets, and thespians were imbued with “divine madness” (Carson, 2011, p. 145). These great thinkers were on to something.

Kyaga, et al. (2011, p. 351), performed a nested case-control longitudinal study of 300,000 Swedish registers between 1973 and 2003 of people with schizophrenia and bipolar disorder and their healthy siblings. The study suggested a positive “familial cosegregation” of both schizophrenia and bipolar disorder with creativity (p. 351). They also found that subjects with unipolar depression and their relatives did not show a consistent pattern for creativity (p. 377).

Creating art therapy interventions would be an important argument toward art modalities and art therapy interventions to individuals with bipolar disorder, schizoaffective and schizophrenia who practice creative activities.

There is a shared vulnerability model that exists between creativity and psychopathology. Studies have shown that the rewards of engaging people with mental health disabilities with creative activities does much more than remove barriers (Carson, 2011, p. 144) Figure 1.10 illustrates the shared vulnerability model. Carson suggests that individuals with mood disorders, schizophrenia, schizotypy disorders and addiction disorders would benefit from creative therapies even though they may not exhibit creative proclivities, because their intrinsic “creative modes of thought” could help the individual to discover ways to “find a voice” and process thoughts about their disabilities or toward finding a way to communicate creatively using their intellectual and emotional processes (Carson, 2011, p. 151).
Levine, Perkins and Perkins (2005, as cited in Roberts, Carmic & Springham, 2011, p. 147) acknowledge partnerships between non-health organizations and a variety of health care organizations are joining to help facilitate healing from a community approach that includes operating interventions within social contents (p. 147). This also includes facilitating services for social inclusion of caregivers to help reduce stigma (Roberts, Carmic & Springham, 2011, p. 147), and create a sense of pride for the participant as well as for the caregiver. This activity is a “normalization” that is beneficial for the participant and the caregiver.

Although mediating mental health interventions was not the original intent of the Disability Mural, the benefits of art and therapy can be quantified for benefits through activities such as these.

As for the writer’s part, the researcher/artist either facilitated or co-facilitated 18 workshops from June, August and September of 2013. The researcher/art facilitator independently assisted individuals to create 219 mural panels and drove 615 miles to 18 workshops in the Twin Cities metropolitan area. These art panels are a small part of the total project and all art tiles can be seen online at http://vsamn.org/mural/.

The goal of the researcher/writer and art facilitator was to observe, facilitate and encourage access to art materials for people with disabilities, their families or those in the mental health field. All were invited to participate and contribute to the idea of access and meaningful art.

All total, forty-two workshops were held between June 15 and September 8, 2013. Host sites ranged from public libraries and public retail or public non-profit sites, to private closed non-profit organization sites. All sites were handicap accessible. A VSA Minnesota Disability Mural & Story Project Evaluation Report was submitted by Mary McEathron, Ph.D., and Ann
Mavis, M.A. (Dunn, personal communication email attachment, Dec 10, 2013).

Between June 15 and September 8, 2013, forty two workshops were held with over 850 participants and these participants produced 1022 12”x12” Masonite tiles. Although the researcher and artist facilitator cannot comment about the project evaluation findings due to IRB constraints, this information will be available to future researchers.

Evaluators McEathron and Mavis met with project director Craig Dunn in April of 2013. Unfortunately, Riversmith resigned as project co-director due to travel considerations and a new co-director was found in the person of Char Diamond Coal. Ms. Coal was brought in about half way through the project to curate the finished mural project.

The VSA MN Disability & Storytelling art installation was exhibited in two locations. City Center in Minneapolis Minnesota was the exhibit site for the Twin Cities VSA MN Disability & Storytelling Project, and Gallery Saint Germain in St. Cloud, Minnesota was the site for the outstate artwork (Dunn, personal communication email attachment, Dec 10, 2013).

According to Moon (2006, as cited in Vick, 2011, p. 156) and Maclagan (2009, as cited in Vick, 2011, p. 156), “outsider art” has captured the interest of the art market in part due to the interest in art produced by those who have developmental, physical or mental health disabilities. Maclagan (2009, as cited in Vick, 2011, p. 156) expresses this interest as “a mixed blessing”. Vick warns that motivations such as voyeuristic appeal, charitable sentimentality, can have a negative effect, and distort the delicate balance that “can affect the artist’s own psychology as well as the aesthetic quality of their work (Vick, 2011, p. 156).

Moon stressed that consideration of the possibility of exploitation and abuse must be well-thought-out in order to lesson any negative impact (Vick 2011, p. 153). Vick (p. 156) underscored that “very deliberate, collaborative consideration must be devoted to the question of
what-if any-personal information enters the public space of the exhibition”. Personal details of disability and other personal information “must be thoroughly discussed” (Vick 2011, p. 156) including confidentiality protocol in all aspects of the project.

Exhibiting work is an important factor when considering the individual benefits to the participants. Participants with disabilities must be protected. Vick (2011) wrote that when exhibiting “outsider art” facilitators must balance the benefits of public exhibition against any “unintended problems for clients” (Vick, 2011, p. 153). This includes the possibility of “outing” a participant. People with disabilities may want discretion and security, as well as a sense of autonomy, pride and acknowledgement of accomplishment in work exhibited in public.

As referenced earlier, Parr (2006, p. 153-154) encouraged collaboration and engagement within “cultural insidedness” framework that can remove barriers of exclusionary outsider perception through community and public art with the goal of empowerment, inclusivity, bonding and a sense of belonging. Moon as cited by Vick also states “potential emotional gains” can be made from allowing for public exhibition that including the “reduction of stigma and bias” (Vick, 2011, p. 153).

Benefits of art therapy and social action in exhibition also extend to family caregivers (Roberts, Camic & Springham 2011, p. 146). Roberts et al. suggests there is evidence that therapeutic art viewing through social inclusion to caregivers can reduce stigma and increase wellbeing (p. 147). Roberts et al. wanted to explore how caregivers were impacted by viewing art that was germane to caregiving in a gallery context (p. 148). According to Roberts et al. (2011), citing Liebenberg, (2009), “reciprocity” and “mutual co-construction of meanings of images” by co-participants help smooth hierarchies and strengthen and improved connections.
Glassman (1998) as cited by Kapitan, Litell, and Torres (2011, p. 64) marks that community art projects on a macro level help the participants look outward toward community and social action, but also inward to engage the artist. In the case of The VSA MN Disability Mural engaged the participants in dialogue about the collective message of accessibility to art experiences on many levels.

As a group art intervention, The Disability Mural in all its iterations demonstrates the idea that when people come together “to practice critical inquiry” the groups develop the ability to reflect on the idea, create their own impression, and model their own interpretation of their personal situation, and work toward “healing and reconciliation” (Kapitan, Litell, & Torres, 2011, p. 64), as well as the possibility toward bonding with others. The Disability Mural and socially engaged projects like it can turn “a traumatized community…from tragedy toward shared experiences that restore collective identity” (Kapitan, Litell & Torres, 2011, p. 65). There is a delicate balance between social exclusion and conversely social inclusion. This includes the need for protection versus the need for autonomy; the need for a feeling of safety versus insecurity and fear.

Sandmire, Gorham, Rankin, and Grimm (2012) studied art making and anxiety and concluded that “the finished artistic product tends to be regarded as less important to the maker than the process of doing the work itself” (pp. 72-73). According to Csikszentmmihalyi (1997, as cited in Sandmire, et al., 2012, p. 73) it is the “trance-like state” of “flow” and its process, that is more important to the reduction of anxiety and less important than the art itself by the art maker. Of this I can concur. This state of “flow” has also been felt by the researcher when creating art. It is a powerful tool that offers relaxation and a peaceful state of mind as artwork is being produced and processed.
Distraction from sadness through art making is also beneficial by elevating mood (Drake & Winner, 2012, p. 255). Drake and Winner examined art activities that used either distraction or venting. Consistent with other studies (Drake & Winner, 2012, p. 259), positive affect raised significantly higher using distraction than the venting condition. Developing strategies to sustain a positive mood has many benefits. Pain reduction, a strengthen immune system, recovery from illness, and greater resiliency (Fredrickson & Cohn, 2008; Drake & Winner, 2012, p. 259).

Finally, the participant artwork would be the construction of a web site that would allow the art creator to view their artwork on VSA MN’s web page at http://vsamn.org. Figure 1.11 illustrates the webpage and the researcher/artist facilitator’s contributed artwork.

Ryu (2005), an artist and technical constructionist writes “Human desire for interaction has been continuously manifested from the primitive ritual to contemporary cyberspace. Our interactive routines have continued, from micro to macro scale, in order to confirm our existence in everyday life; this universal repetitive pattern of human activity is ‘the ritual’” (p. 105).

The use of interactive technology is a device that unites the human desire to interact and connect with others (Ryu, 2005, p. 105). For those who are homebound, disabled, in hospitals or mental health facilities, it is very difficult to connect in a constrained world. Yet it is this very connection to others that humans crave. By linking events through technology the original feelings can still be captivated. For those individuals with limited accessibility to transportation, or lack the ability to leave their home, posting the individual’s art on the internet continues the interaction between artist, art, and community, and continues the memory of the art making and pride. It continues the dialogue of the activity, the involvement in the art exhibit, and the continual access to the participants. The web page with all participant artwork, keeps the connection to the experience fresh in the mind of the viewer.
Ryu further states that humans desire social interaction, the chance to interact, and also for “self-recognition” (2005, p. 109). For those who have limited social interaction, the chance to create dialogue about their art, and the pride of being able to show people what they have created, even though the art exhibit is far in the past, instills a sense of pride, dignity and builds autonomy that can be experienced over and over.

**Limitations of the Study**

The project was developed to work within the confines and guidelines of grants through the Minnesota State Arts Board, and the Arts and Cultural Heritage Fund from the National Endowment for the Arts. Problems that arose included participant confidentiality issues that included an unsecured web site. As stands today, protocol would have to be developed and implemented that are required by Independent Review Board standards to ensure confidentiality.

Although the Disability Mural structure was not developed as a research project it has a vast research potential with thousands of art tiles available to study.

The grant also allowed for the development of a web site at VSA MN that will have a lasting effect on the participants. Not only has a mind-body connection been made, and the development of group autonomy, but the participants will be able to view their artwork online. For those with limited mobility, this is an important aspect of the VSA MN project. It is a continuation of the connectivity to the positive experience. The web site will help the individual recount the memories of visual interplay between the environment and their relationship with others toward a continued sense of belonging (Hass-Cohen, 2008, p. 21). The Disability Mural in its continuance has the potential to be used as a study within an ethnographic analysis, comparative formal iconographic connections and analogies within a social, cultural, style, and framing structure (Berrocal, 2011, pp. 6-7).
Assumptions

Humans have evolved toward artistic social activities that hold deep meanings through symbolism. These images are consistent throughout the history of AMH’s, and are validated by prehistory findings. These creative purposeful representations of endogenous visual phenomena have remained unchanged throughout past and present systems since at least 40,000 years ago (Dronfield, 1996).

Community participation of art and mural making can help to change internal views as well as societal views. Research shows that Art Therapy with its concrete representations, and its mind-body connections, contribute to internal feelings of control and mastery (Hass-Cohen 2008, p. 21).

The Disability Mural has purpose and meaning to those who participated, and for those who have a personal connection. Yet, a much larger picture of psychological and psychosocial benefits of mural making have surfaced that are supported through scientific investigation and empirical validation.

Operational Definition of Adlerian Terms


Antithetical apperception: Rigidity of a thinking style that incorporates a new perception or idea into existing meanings without consideration of possible variables (Oberst & Stewart, 2005, p. 197).

Biased apperception: The process of recognizing or attributing value to a perception through the filter of a person’s life goal (p. 197).
Depreciation tendency: Attitudes and behaviors used to preserve or enhance a person’s tenuous sense of self-esteem or superiority by finding faults, problems, or shortcomings with other people or situations. It is comparison between self and others that involves highly biased or antithetical apperception that results in a view of self-superiority (p. 198).

Family atmosphere: A familial environment created by family member communication and family dynamics (p. 198).

Family constellation: The family infrastructure predicated on member’s interactions and birth order (p. 198).

Fictional finalism: Adler’s epistemological position that people contact the world through their subjective perceptions and constructions of it (pp. 198-199).

Life Style: A broad term that encompasses what is typically meant by the term ‘personality’.

The style of life can be observed from how people attempt to attain a sense of completion and belongingness while also meeting the life tasks of relationship, work, and community (p. 199).

Organ inferiority: Adler’s theory that psychological distress emanated from a weak or malfunctioning bodily organ. It is an awareness or emotional experience of inferiority of one’s self, and the attempt to overcompensate and overcome. Failed attempts of overcompensation or compensation result in the development of neurosis (p. 200).

Social Interest: Essentially, the German concept of Gemeinschaftsgefühl or community feeling.

To have empathy through understanding of another by seeing, hearing, or feeling the “heart” of someone else. This reflection of connectedness is essential to communal relationships (Adler, 1957, pp. 49, 59, 60).
**Teleological View:** An individual’s beliefs, emotions and behaviors that are influenced by anticipated future goals and expectations (p. 202).

**Useless side of life/wasting orientation:** A lifestyle in which the individual fails to engage in “meeting the tasks of life (work, relational intimacy, and social interest) (p. 203).

**Operational Definition of Terms**

**Aesthetics:** The processes of sensation defined by the derivatives anesthetic (the absence of sensation) and synesthetic (involuntary co-sensation), and are descriptive of the study of Neuroaesthetics. Another meaning of aesthetics is based on the humanities, philosophy and art history (Jacobsen, 2010, p. 184).

**Cohen’s d:** Is a calculation used to determine effect size. It is used to calculate the difference between two means. It is often used in conjunction with t-test and ANOVA results as well as in meta-analysis.

Below are two types of calculations used in Cohen’s d:

\[
\frac{\text{mean difference}}{\text{standard deviation}} \quad \text{or} \quad \frac{M_2 - M_1}{\text{pooled standard deviation}}
\]

(Wikiversity, 2015)

**Diachronia:** The perspective of biological evolution, cultural evolution, fashion, and temporal stability. Diachronia takes into consideration changes in time (Jacobsen, 2010, p. 186).

**Einfühlung:** The German word for emotional projection of the sensory ego that saturates perception with intense feelings that are projected into an object. The object then becomes the “embodied simulation” resulting in “we-centric” experiences (Franklin, 2010, p. 161).
Entoptic phenomena: Involuntary products of the visual system. This includes zigzag, crisscross patterns, parallel lines and nested curves suggesting a physiological basis (Morriss-Kay, 2010, p. 158; Lewis-Williams and Dowson, 1988, pp. 202-203).

Ipsichronia: The process of perspective that focuses on comparisons of time, including culture, social processes and systems, and sub-cultures (Jacobsen, 2010, p. 186).

Neuroaesthetics: Neuroaesthetics is a multi-disciplinary field in research that studies the experience of art and behavior using modern technology such as fMRI, electroencephalography, event-related brain potentials (ERPs), positron emission tomography (PET) and other non-invasive devices (Jacobsen, 2010).

Phosphenes: Visible light patterns within the eye created through stimulation via pressure, hallucinogenic drugs, or through electro-encephalographic stimulation (Kellogg, Knoll, & Kugler, 1965, p. 1129) and are Ent-ophthalmic (Lewis-Williams and Dowson, 1988, p. 202).

Region of Interest: (ROI). An analysis of fMRI data that involves interpretation of complex signals to extract discernable patterns. ROI is used as a control for Type 1 error. ROI is used to test regions that have been studied and measured (Poldrack, 2007, p. 67).

Implications

From the beginning of AMH’s cognitive development, art making has been an important aspect toward the development of the whole individual through group dynamics. This individual and social development of AMH’s is predicated on the desire to procreate, and to survive within society through collaboration and a sense of belonging.

Literature Review
Collaboration was essential for survival as evolution and natural selection created collective strengths and weaknesses in AMH’s. Art and mural making were developed to assist communication and complex thought. Understanding the evolutionary pathway of symbolic art is a significant step toward understanding AMH’s intrinsic need for a communal sense of belonging, security and a sense of safety in the modern world.

Overview of Literature Review

The research review provided an overview of the evolutionary biogenetic structures and foundation for ritualistic AMH behavior predicated on theoretical rationale. These theories and hypothesis include the field of psychology, archaeology, neuropsychology, art and neuroscience, anatomy, molecular anthropology and the science of aesthetics.

Understanding Human Nature

Alfred Adler’s (1957) work originally published in 1927, involves his seminal theoretical work about Individual Psychology that describes human behavior beginning with the “soul”. Adler defines the soul as a living organism that has the ability of free motion. Today it is common knowledge that the soul as Adler believed it to be, is not limited to human beings. Evolution has devised a plan to continually enhance the development of life. Adler’s definition of psychic life is composed of “aggressive and security-seeking activities whose definitive purpose is to “guarantee the continued existence of this earth” (p. 29). Additionally, Adler writes his theoretical hypothesis as a way to encourage practical application of his principles of human behavior. Of the many aspects of his Individual Psychology, communal life, the structure of life and the world, feelings of inferiority, organ inferiority, and the science of character traits are very relative to the Disability Mural.

Mental Health, the Arts and Belonging
Parr (2006) describes the historical outsider art collected by asylums such as the Glasgow and Crichton Royal Asylums of Scotland, The Hans Prinzhorn collection of insane art, and the Royal Bethlam Hospital psychotic work. Parr weaves together the history of psychiatric art, modern ideology of insider versus outsider art, the potential of art therapy interventions, and the design of therapeutic art to the social context to belonging through community arts projects. Parr references work by Probyn (1995, p. 156, 1996, p. 19, as cited by Parr, p. 153). Probyn reasons that the sense of belonging is situational, dynamic, is not stable, and is contingent and motivated by a longing to belong, rather than the idea of identity as a stable force and state of mind. It is also dependent on what is possible during a certain time, place, within the construct ideology, and with individual groups, cultures and connectivity’s.

**Adler’s Need to Belong as the Key toward Mental Health**

Shiftron (2010) uses case files to illustrate Adler’s psychology and the need to belong. Shiftron describes the “hidden goal” of the need to belong through her utilization of early recollections and dreams. Shiftron uses the holistic system, to examine the many parts of the system that are necessary to feel whole. If a part of the system is disrupted, the holistic system can disintegrate and behavior that was once helpful can become detrimental, and destructive to the wellbeing of the person. Shiftron utilizes Adler’s concept of *social interest* to illustrate the importance belonging to the family, in relationships and in the world of work. Shiftron uses early recollections as a type of metaphor to winnow out current emotional states and to discover the individual’s goals toward feeling a sense of belonging.

**The Importance of Meeting the Need to Belong**

Curlette and Kern (2010) assert that Adler’s concept of the need to belong is complemented by the idea of social interest. Social interest and belonging foster security and a
sense of community. This, according to Curlette and Kern, is a belief that is cultivated during the formative years, when a child feels a sense of belonging within the family structure. Curlette and Kern explore the two scales on the BASIS-A Inventory that pertains to belonging in relation to Adler’s work on Individual Psychology. Curlette and Kern use the scales Belonging/Social Interest (BSI), and Being Cautious (BC) and illustrate that how an individual fits in to a group, including how they relate to their family of origin is relational to how an individual adapts and responds to feeling a sense of belonging.

Art and Brain: Insights from Neuropsychology, Biology and Evolution

Zaidel (2010) describes research linking the ‘pleasure center’ in animals with behavior including appetite, survival and goal attainment. Zaidel elucidates the process and progress that H. sapiens made from body decoration and personal ornamentation viewed as social group stratification and group identity during the Upper Paleolithic period 45,000 – 35,000 years ago. Zaidel interprets evolutionary changes in H. sapiens and links this to the development of symbolic cognition and language. Zaidel explains the practice of art lies in the neuroanatomy and biochemistry of the brain that has increased regional specialization that controls behavioral developments that include art production. Zaidel postulates increased art practice to interdependent social groups. Art production and language development evolved simultaneously. Art and language are linked by symbolic and referential cognition. The difference between art and language lies in arts communicative power that is infinite, ambiguous, and less rigid than language. Zaidel argues that art is a much more sophisticated representation of the mind than language.

The Evolution of Human Artistic Creativity
Morriss-Kay (2010), details the evolution of human capacity to develop goal-directed physical action that is evidentiary of artistic social communication and action. Morriss-Kay traces the beginning of creative intentional embellishment to Africa, nearly 400,000 years ago by Homo erectus at the Tan Tan site to the Upper Paleolithic Mural Drawings of the European Upper Paleolithic Homo sapiens who decorated the caves at the French Lascaux site. Art surrounds the modern individual with ubiquitous artistic material imbued with meaning. Morriss-Kay ponders the question “art is a wonderfully enjoyable aspect of human culture but not essential to survival, so why did artistic creativity arise?” Morriss-Kay hints at an answer. The neurological function that allows humans to visualize through “the mind’s eye” had a functional application. It allowed for 2 and 3D conceptualization of tool making, an important function for hunting and gathering. The developing human neurological changes allowed for imagination, understanding, logic and the ability to understand scenarios that are no longer visible. These are all needed to create art, and communicate visually.

**Beauty and the Brain: Culture, History and Individual Differences in Aesthetic Appreciation**

Jacobsen (2010) explores the differences in esthetics based on history, culture and personal taste. Jacobsen ties together the neurological aesthetic processes that are shaped by content, person, situation, body, mind, Ipsichronia and Diachronia. Jacobsen compares the neuro-cognitive psychology of aesthetics empirically using functional magnetic resonance imaging and physiological data to subjective individual self-reporting. Jacobsen compares and contrasts Neuroaesthetics involving electroencephalography, ERP, magneto encephalography, fMRI, position emission tomography, with subjective experience and external observation to define the area of Neuroaesthetics.
Promoting Mental Well-Being and Social Inclusion Through Art: Evaluation of an Arts and Mental Health Project

Secker, Longhran, Heydinrych and Kent (2010) describe a mental health and arts program created in the United Kingdom focused on the presence of self-worth, optimism, inclusion and on sense of achievement. Evaluation methods consisted of focus groups and mental health outcomes were measured using questionnaires. Results of the evaluation indicated significant improvements in the areas of well-being and social inclusion. Researcher used paired t-tests assessing differences between time 1 and time 2 mean scores.

Exploring the Meaning of Participation in a Community Art Project: A Case Study on the Seeming Project

Madyaningrum and Sonn (2010)’s thematic analysis identified three themes of art therapy and social action. This included “giving a voice to the silenced”, connecting and joining social ideology, and recreating stereotypes and challenging the ideology to normalize and develop a new and inclusive social structure.

Community arts participants developed criteria to evaluate their own experiences rather than what policy makers deduced the needs of the community were. This study provided participant’s feedback and point of view, and were being directed by the participants identified needs. Topics explored were social identity, social representation and power. The project was developed to cover the themes of history, identity, culture and belonging. The researchers used thematic qualitative analysis that involved coding verbatim text, and categorizing subjects that shared central features. The findings did not show the art activity as central to the participants, rather, the act of participation was the central value and meaning for participants. For some participants, feeling valued and forming interpersonal connections was most important. This
surprised the researchers, and has given researchers new insight into the motivation of participation.

**A Hermeneutic Phenomenological Study of Community Mural Making and Social Action**

**Art Therapy**

Rossetto’s 2012 hermeneutic phenomenological study of interview data of eight community artist facilitators was focused on the worldview of community mural making model. The community mural making world view in its present view surfaced as the major theme. Traditional Western worldview is focused on the future. Participant orientation toward the present reflected the participant’s investment in community youth, societal and historical issues, and social action and justice. The study participants were also focused on present problems, attitudes and personal and social situations. Present carefully organized account of empirical research relevant to your study or project chronologically summary paragraph.

**Conclusions**

Art expression has been part of human activity for thousands of years and is unique and important to cognitive activity and intellectual development, social inclusion and cohabitation. Art is used to express conflict and resolve problems. Art has more intrinsic value and is more desired that mere images. Art and social action encourage social inclusion toward the reduction of marginalism; it encourages cultural and spiritual strengthening, and helps develop identity – individual and group. It at times involves a process of reconciliation, social understanding and the development of cultural identities.

**Project Summary**

**Setting**
All information about the methodology of the original *The Disability Mural* has been written by Frances Valesco on her website BlogSpot [http://thedisabilitymural-valesco.blogspot.com](http://thedisabilitymural-valesco.blogspot.com). Much of The Disability Mural process and information goes back as far as the year 2000. The blog begins in 2008 and continues through to the present. Valesco welcomes ongoing participation and gives specific information on how to create individual tiles. This includes permission forms, visual and written directions. Photographic documentation of the social art action is encouraged and Valesco is open to process suggestions (Valesco, 2008).

Valesco’s blog contains the instructions for anyone to participate and contribute to the mural. This project is ongoing and is available to anyone through Valesco’s blog. *Thedisabilitymural* blog gives descriptions and directions about how to create mural tiles. Tile displays are also on Valesco’s blog (Valesco, 2011b) The project used Universal Design principles to ensure equality and equity for all participants who work with a variety of visible and invisible disabilities.

The *VSA Minnesota Disability Mural & Storytelling Project* was a way for the researcher and artist facilitator to research the potential health, wellbeing and psychological benefits of a participatory art activity designed to invite, engage and celebrate the disability community through access to art programming. Workshops were scheduled throughout the Twin Cities and St. Cloud region. A variety of art material including brushes and collage tools were supplied to accommodate a variety of disability. All participants with disabilities, family members, or anyone with an association with someone with a disability were welcome to participate.

**Results**

**The Genesis of Cultural and Social Belonging**
In order to support hypothesis of AMH’s proclivities toward cultural and social belonging, archaeologists must carefully uncover science based evidence that supports their findings. Figure 4.1 is an example of artifacts discovered in the Blombos Cave in South Africa (Zaidel, Nadal, Flexas & Munar, 2013, p. 101). This collection is categorized as Toolkit 1 (Tk1) (Henshilwood, d’Errico, Niekerk, Coquinit, Jacobs, Lauritzen, Menu & García-Moreno, 2011, p. 221; Nadal & Skov, 2013, p. 2) and is described by Henshilwood et al. as a “workshop” by Middle Stone Age (MSA) (2011, p. 219) *H. sapiens* (p. 222).

Henshilwood et al. (2011) estimated that these artifacts are 100,000 years old (ka) based on single-grain optically stimulated luminescence (OSL) dating and thermoluminescence (TL) dating (2011, p. 219). Nadal & Skov (2013) report that within the Blombos Cave, approximately 25,000 years after AMH left Tk1 on the floor of the cave, AMH’s used ochre pigment to engrave the walls of this very same cave (Henshilwood, d’Errico & Watts, 2009 as cited by Nadal, Skov, 2013, p. 1).

In Figure 4.2 Leder et al. (2004) illustrates his model of aesthetic appreciation and the process of aesthetic judgments (p. 492) as a predictive model developed to describe cognitive processes. Nadal & Skov use this model to argue that psychological aesthetics can benefit from the study of Neuroaesthetics (2013, p. 4).

Nadal & Skov (2013) name four particular approaches toward understanding the psychology of art and aesthetics. These involve the study of psychology, neuroimaging, neurology and evolution (p. 9). By amalgamating and fields of interest and interchangeable use of modalities and theorem’s, science can move toward superior integration and interdisciplinary understanding of the human creative condition (Zaidel et al. 2013; as cited by Nadal & Skov, 2013, p. 9)
Psychology of Aesthetics, Neuroaesthetics, and Neuro-Cognitive Brain Research

What archaeologists and paleontologists began, neuroscientists can further through the discovery of brain based imaging. Brain imaging can now illustrate with precision and reliability how and why the human brain has adapted and reacts in order to explain and quantify behavioral and neurological theories.

Jacobsen et al. (2009, p. 189), used fMRI to investigated neural correlates of aesthetic judgments consisting of neuroanatomical questions comparing and contrasting evaluations between aesthetic vs. symmetry judgment, and symmetry vs. aesthetic judgment.

Jacobsen et al. (2009, p. 189), found that using fMRI contrasts indicated aesthetic judgment contrasting aesthetic versus symmetry judgment within the brain specifically activates in the frontomedial cortex, as well as posterior cingulate, left temporal lobe, and the temporoparietal junction of the brain.

Results of the FMRI results from Jacobsen et al. (2009, p. 190) “Group-averaged (n= 15) statistical maps of significantly activated areas for aesthetic judgments as opposed to symmetry judgments (upper panel) and for symmetry as opposed to aesthetic judgments (lower panel). Z-maps were threshold at $z = 3.09 (P< 0.05$ corrected). Bar charts show percentage signal changes in two regions of interest [dorsal frontomedial cortex (dFMC) and intraparietal sulcus (IPS)] as measured during the judgments ‘beautiful’ (B), ‘symmetric’ (S), ‘not beautiful’ (NB) and ‘not symmetric’ (NS); $%SC$, percent signal change.”

Jacobsen et al.’s (2009, p. 189) findings indicated that aesthetic judgments of “symmetry” and “complexity” are significant in regards to judgment of beauty. Beautiful judgments had an impact on the blood oxygenation level-dependent (BOLD) signals, in the frontomedial cortex, the left intraparietal sulcus known within the symmetry network within the
brain. Jacobsen also concluded the “behavioral results confirmed the influence of stimulus symmetry and complexity on aesthetic judgments”.

Referring back to Sathian, et al., and the researcher’s conclusion that artistic status produces an “instantiate reward process” that responds to “art for art’s sake”; Jacobsen’s evidence suggests that there is always purpose to the aesthetic of art. Viewing art is a purposeful and powerful neural act that affects the brain in the area of aesthetics and symmetry judgments, self-reflection, and subjective evaluation.

**Art and Neuro-Psychology**

Neuroaesthetics scientists Lacey, Hagtvedt, Patrick, Anderson, Stilla, Deshpande, Hu, Sato, Reddy, and Sathian, (2011, p. 421) were interested in the ‘art infusion’ effect discovered by Hagtvedt and Patrick, (2008; as cited by Lacey et al., 2011, p. 421). They sought to explore how artistic status of images engages reward circuitry in the brain (Lacey et al., 2011, p. 420). Predicated on the investigation by Hagtvedt and Patrick that positive psychological queues are triggered within individuals by symbols of luxury, affluence and status (Hagtvedt & Patrick, 2008; as cited by Lacey et al. 2011, p. 430), Lacey et al. tested the hypothesis involving brain responses and how artistic images versus non-art images are more positively evaluated and have a definite influential status. Lacey et al. tested their hypothesis using event-related functional magnetic resonance imaging (fMRI) while participants viewed art and non-art images similar in content and aesthetics (p. 420).

According to Lacey et al. this study suggests that reward processing makes a specific contribution to the neural processing of visual art, that artistic status alone is enough to instantiate reward processing, and that the brain thus responds to ‘art for art’s sake’. The findings
reported complement earlier studies describing activity in reward-related brain regions during esthetic judgments (Lacey et al. 2011, p. 420).

In the present study, esthetic preference was uncorrelated with activity in art-selective regions and did not drive reward-related activity. Lacey et al. used functional magnetic resonance imaging (fMRI) to test their hypothesis. Figure 4.3 is an example of the visual stimuli used in the testing (Lacey et al., 2011, p. 422). Fifty art images were matched with similar non-art images (p. 421) to number 100 image sets in all (p. 423).

Lacey et al. (2011) used Granger causality analysis (GCA) to assess effective connectivity (p. 423). GCA according to Lacey et al. is effective to “infer causality between two time series by cross-prediction – if future values of time series $y(t)$ can be predicted from past values of time series $x(t)$, then $x(t)$ can be said to have a causal influence on $y(t)$” (Granger, 1969 as cited by Lacey et al. 2011, pp. 423-424). GCA is a common calculation method in a ‘bivariate manner’ using regions of interest (ROI) as a beginning point to investigate input and output feedback (Lacey, 2011 p. 424). Due to a small sample size consisting of eight subjects (p. 421), the investigators applied “a multivariate implementation of GCA to fMRI data …that included task-specific analyses” (Lacey et al. 2011, p. 424). Lacey et al. utilized a “recursive network reduction method that eliminates ROIs that do not contribute significantly to overall connectivity, thus aiding interpretation” (Deshpande et al., 2008 as cited by Lacey et al. p. 424).

Due to the temporal resolution of blood oxygenation level-dependent (BOLD) (p. 423) being constrained by the repetition time (TR), the time series data is poor as reported by Lacey et al. (p. 423). According to Deshpande et al. (2010 as cited by Lacey et al., 2011, p. 423) “time-lagged analyses are susceptible to zero-lag correlations leaking into the connectivity estimates” Lacey et al. reportedly addressed this “by modeling the zero-lag effects and excluding them from
the computation of causal influences; we call this correlation-purged Granger causality (CPGC)” (Lacey et al. 2011, p. 424). Their hypothesis that when viewing art images, compared to non-art images, brain activity would be stimulated in the ventral striatum (VS) was verified (p. 424) and robust (p. 425).

Table 4.1 lists Lacey et al. data that “calculated the effect sizes and confidence intervals for the VS activations”. Lacey et al. did this through extraction of “the baseline-referenced z-transformed beta weights for each VS ROI in each condition” for each of the 8 subjects (p. 425).

According to Lacey et al. (2011) the “subject-wise analysis demonstrated that Cohen’s d was 1.18 (95% confidence interval [CI] .94 – 1.33) for the right VS and 1.08 (95% CI .81 – 1.37) for the left VS” (p. 425).

Item-wise analysis indicated “Cohen’s d was .48 (95% CI .27 – .7) for the right VS”, while the left VS data was .64 (95% CI .43 – .86). Activation of the VS indicated a large subject-wise effect and a medium item-wise effect with “narrow confidence intervals that are clearly distinct from zero”. Lacey et al. (2011) concluded that based on the calculations shown the data support the “hypothesis that art images selectively recruit VS activity” (p. 425).

Figure 4.4 illustrates temporal resolution of blood oxygenation level-dependent (BOLD) (Lacey et al., 2011, p. 423) signal differentiation between art>non-art contrast. The art subject and item-wise analyses is indicated by the yellow line, and non-art is indicated by the aqua colored lines. Each viewing was 14 seconds in length. Lacey et al. are the first to study the neural processing and connectivity and its relationship to processing reward circuitry of visual art versus non-art (p. 426, 429). This study by Lacey et al. supports the hypothesis that “the VS responds specifically to the artistic status of the images and argue against the idea that the art-selective activations were associated with esthetic ratings” (p. 429).
The finding that artistic status alone activates reward centers is interesting (e.g., Zaidel, 2005; Dutton, 2009 as cited by Lacey et al., 2011, p. 428) in according to the researchers, production and appreciation of art may be related to the evolution in humans of mechanisms that were important for survival of the individual and species. It has been suggested that visual artists, consciously or otherwise, have learned to exploit the evolved characteristics of human visual perception (Ramachandran, 2004; Zaidel, 2005 as cited by Lacey et al. 2011, p. 428).

This suggests that human evolution prized status and affluence as important social factors toward the making and selection of artistic imagery. Shamans, healers, and religious figures as outlined previously may have played a pivotal role in the development of intrinsic artistic motivation and artistic work based on the influence of status and power. According to Lacey, art selection is triggered by reward processes in the brain and art status alone triggers ‘instantiate reward processing’ that the brain responds to for ‘art for art’s sake’ (Lacey et al. 2011, p. 433).

**Social Action and Social Engagement, and Social Intervention**

Dissanayake as cited by Franklin (2010, p. 161) believed human artistic practice was hardwired in humans to encourage social connections. Communal artistic ritual and physical engagement with art, including how humans use their hands with art materials is important to the process of aesthetic imitation, or mimesis, in order to experience “sympathetic empathy” (Franklin, 2010, p. 160).

Attachment theory, art and empathy are integrated in the discovery of the mirror neuron system (Franklin, 2010, p. 160). Research into mirror neurons suggest evolutionary changes in primates and humans that evolved into the ability for the brain to accommodate for an “as if” scenario between the observer and the observed object that “accesses the mind and feeling states of others” (Franklin, 2010). This according to Gallese as quoted by Franklin (p. 160), opens up
the emerging study of neurological mirroring structures toward the understanding of “the first unifying perspective of the neural basis of social cognition”, and Theodore Lipps research on “sympathetic empathy” as quoted by Franklin (2010, p. 160), and “resonance based on isomorphism” that emerges from viewing art as understood by Arnheim (1966) as quoted by Franklin (2010, p. 160). This state of aesthetic *einfühlung*, according to Lee, allows the observer to “instinctually feel and intentionally project oneself within or into something outside one’s self” (Franklin, 2010, p. 160).

In fact, the underpinning of creative processes has exhibited itself to be so resilient, that artistic creation can endure in spite of extensive brain damage, regardless of laterality, localization of damage or etiology. Zaidel, Nadal Flexas and Munr suggest this to mean the brain’s aesthetic reaction lacks a specific area in the brain (Zaidel, Nadal and Munr (2013, p. 103).

**Creativity and Mental Illness**

Researcher Szaboles Kéri studied the relationship between individuals with a high intelligence quotient, creativity and mental illness. Kéri’s research lead him to question the evolutionary benefit to humans for retaining a genetic polymorphism within the gene pool that is associated with severe mental disorders (Kéri, 2009, p. 1070) and creativity (Carson, 2011, p. 144; Acar & Sen, 2013, p. 215).

Researchers have now discovered a link between creativity and genetic polymorphisms in the neuregulin 1 gene (*SNP8NRG243177/rs6994992*) in individuals those who carry the *T/T* genotype (Kéri, 2009, p. 1070; Carson, 2011, p. 144; Acar & Sen, 2013, p. 216). While neuregulin 1 gene (*SNP8NRG243177/rs6994992*) is linked to high intellect, creativity and superior academic performance, the *T/T genotype* has been linked to psychosis risk and “altered
prefrontal activation” (Kéri, 2009, p. 1070). This altered activation or “shifts in mental states associated with mood may facilitate creativity” (Carson, 2011, p. 146). Other researchers have also linked this polymorphism of the genotype with individuals with bi-polar disorder, schizophrenia (Kyaga, Lichtenstein, Boman, Hultman, Långström & Langdèn, 2011, p. 377) schizotypy (Acar & Sen, 2013, p. 214) and alcoholism (Carson, 2011, p. 146) as well as to creative intellectual processing (Kéri, 2009, p. 1070; Acar & Sen, p. 214; Carson, p. 149; Kyaga et al., 2011, p. 377).

In 2009, Kéri studied the link between genetic polymorphism and severe mental disorders to positive psychological functions such as creative personality traits, divergent thinking and intellect (p. 1071). The study compared the neuregulin 1 promoter polymorphism to creativity in 200 healthy participants of Hungarian with Central European ancestry who scored high on intellectual and academic performance tests. All participants were evaluated using the Structured Clinical Interview for DSM Disorders, Clinician Version developed by First, Spitzer, Gibbon, & Williams, 1996, as cited by Kéri, (p. 1070 ), and were free from psychiatric or neurological disorders. IQ was measured using the Wechsler (1981) as cited by Kéri, (p. 1070 ), socioeconomic status (Hollingshead Four- Factor Index as cited by Kéri, (p. 1070 ), and schizotypal traits (Raine, 1991 as cited by Kéri, (p. 1070 ). Participants were also administered the Creative Achievement Questionnaire developed by Carson, Peterson, & Higgins, (2005) as cited by Kéri, (p. 1070 ), and the “Just Suppose” subtest of the Torrance Test of Creative Thinking (1974) as cited by Kéri, (p. 1071). The Creative Achievement Questionnaire measures aspects such as creativity, creative personality traits and divergent thinking (p. 1071).

Subject DNA was extracted and genotyping was completed using TaqMan Bioassay (Applied Biosystems, Foster City, CA) for SNP8NRG243177/rs6994992. Two control single-
nucleotide polymorphisms were also used; Neuregulin 1 gene rs10954867 and rs7005288. These polymorphisms are attached within the same neuregulin 1 gene SNP8NRG243177, but do not effect gene expression and are not related to psychosis, making them an ideal control. Kéri determined the association between genotypes and creativity scores through analyses of variance (ANOVAs) and hierarchical regression analyses. Kéri set the level of significance to $\alpha < .05$ (2009, p. 1071).

Kéri used a “linear-trend ANOVA, including the neuregulin 1 promoter genotypes, revealed significant main effects for each creativity measure”.

The Creative Achievement Questionnaire results are as follows:

“$F (1, 197) = 14.79, p = .0002$; originality: $F (1, 197) = 8.08, p = .005$; flexibility: $F (1, 197) = 7.71, p = .006$; fluency: $F (1, 197) = 6.02, p = .02$.”

Quadratic trends analysis by Kéri revealed no significant main effects for any measures of creativity ($p > .1$), (Kéri, 2009, p. 1071). Kéri demonstrated the highest creativity scores in the T/T genotype group, the lowest creativity scores in the C/C genotype group, and middle-ranking scores in the C/T genotype group. Mean effect size values were expressed as “(Cohen’s $d$):

\[ d_{T/T>C/T} = 0.43, \quad d_{T/T>C/C} = 0.67, \quad d_{C/T>C/C} = 0.24 \]” (Kéri, 2009, p. 1071, 1072).

Kéri next calculated “hierarchical regression analyses” to discover how the separate neuregulin 1 promoter genotype T/T, C/T and C/C contributed to creativity measure. Kéri used “two contrast codes for the linear and quadratic aspects, which together represented the differences among the three genotypes” (2009, p. 1072).

The analysis was designed to investigate the effect of the three genotypes T/T, C/T, and C/C. “The coefficients for the individual contrast codes indicated the size and significance of the linear and quadratic trends”. The first step of the analysis revealed that linear or quadratic aspects
alone did not reach the level of statistical significance ($p > .1$), but the models continued to be significant. The potential mediating variables added included IQ, socioeconomic status, schizotypal traits and gender and were entered into the analysis, and the coefficients were reevaluated.

The completed model revealed that both contrast codes were significant for each creativity measure—Creative Achievement Questionnaire:

“$F(2, 197) = 9.10, p < .001, R = .29, R^2 = .09$; originality: $F(2, 197) = 4.06, p < .05, R = .20, R^2 = .04$; flexibility: $F(2, 197) = 3.92, p < .05, R = .20, R^2 = .04$; fluency: $F(2, 197) = 3.22, p < .05, R = .17, R^2 = .03$”.

Next, Kéri included gender, IQ, schizotypal traits, and socioeconomic status in the regression analysis. This was done to examine the remaining effect after controlling the variables. The variables expressed did not contribute significantly to creativity measures ($p > .1$), and the models remained significant. The completed model was to remain significant as the Creative Achievement Questionnaire equations demonstrate:

“$F (9, 190) = 3.85, p < .001, R = .28, R^2 = .08$; originality: $F (9, 190) = 2.06, p < .05, R = .17, R^2 = .03$; flexibility: $F (9, 190) = 2.12, p < .05, R = .19, R^2 = .04$; fluency: $F (9, 190) = 2.10, p < .05, R = .16, R^2 = .03$.” (Kéri, 2009, p. 1072).

Kéri then calculated semi-partialss. These were the $R^2$ changes when the genotype was included in the potential mediators. The calculations showed significant changes in creativity measures on the Creative Achievement Questionnaire. These changes are as follows:

“$R^2$ change = .07, $F (1, 194) = 17.04, p < .01$; originality: $R^2$ change = .03, $F (1, 194) = 4.90, p < .05$; flexibility: $R^2$ change = .03, $F (1, 194) = 5.61, p < .05$; fluency: $R^2$ change = .02, $F (1, 194) = 4.35, p < .05$.”
Kéri’s original question of the advantage of genetic variation in gene expression would be answered in the ANOVAs and regression analyses. The calculations showed no similar associations to the polymorphism of *neuregulin 1 gene* (SNP8NRG243177/rs6994992) (T/T), in the case of the two control polymorphisms (rs10954867 and rs7005288; p > .1).

In addition, Kéri observed no effect of any genotype on IQ, Schizotypal Personality Questionnaire scores, and demographic measures (p > .1), and also no significant difference between gender (p > .1).

Kéri is careful to note that participants were “a relatively homogeneous sample with high intellectual and academic performance, as reflected by the IQ scores, years of education, and socioeconomic status” (2009, p. 1072). Kéri stressed that future research would be needed for study and hypothesis comparison.

In conclusion, Kéri has shown that “the biologically relevant promoter polymorphism of the neuregulin 1 gene has a significant impact on creativity”. The T/T genotype, that was previously shown by researchers Hall et al., (2006); Kéri, Kiss & Keleman, (2009), McIntosh et al., (2008) (as cited by Kéri, 2009, p. 1070) to be linked to altered brain structure, and has an impact on brain function and psychosis risk. This genotype was also associated with the highest achievement, and creative scores. In fact, reduction of the prefrontal functions has been hypothesized by Seeley et al., (2008; as cited by Kéri, 2009) to lead to “creative peaks of highly functioning people, even if they are in the presymptomatic state of severe neurodegenerative illnesses” (Kéri, 2009, p. 1072).

Since Kéri’s study in 2009, research has uncovered new neuroscientific evidence that has led to the development of the shared vulnerability model by Carson, (2011, p. 144-151). Keri questioned how a specific polymorphism can lead to higher creativity. Carson developed a
hypothesis that connects creativity and psychopathology as shared vulnerability model (Carson, 2011, p. 147), and to shared neurocognitive vulnerabilities (Carson, 2013, p. 175).

According to Carson, a possible link to higher creativity may be reduced cognitive inhibition, which is related to schizotypal features and increased creativity in people with high intelligence (Carson, Peterson, & Higgins, 2003; as cited by Carson, p. 147). The prefrontal cortex is important to cognitive inhibition and creativity, and there is evidence that the promoter polymorphism of the neuregulin 1 gene affects the functioning of this brain region (Hall et al., 2006, as cited by Carson, p. 150). This information is paramount to the ongoing process of developing effective treatment models, particularly for those with schizophrenia, bi-polar and schizoaffective disorder.

Discussion

Conclusion

There is a large body of evidence that indicates art-making is an intrinsic action that has evolved over the millennia and has contributed to the development of AMH’s. These theories and hypothesis were merely touched upon as an introduction to the evolutionary and developmental path of AMH’s for the purposes of exploring the development of art-making by AMH’s. At its core is Darwin’s theory of Evolution and the many archaeology, paleontology, ethnographic, anthropology, ethno-archaeology, and culture-historical archaeology domains, as well as the emerging study of molecular anthropology.

There is also a large body of evidence of the historical importance of mural making in the context of mental health and wellbeing, social engagement, social action and social intervention. This social development is corroborated through numerous psychological, social and cultural theories including Adler’s theory of individual psychology, Freud’s theory of the id, the libido,
and defense mechanisms, Jung’s theory of the archetype and the collective unconscious, Piaget’s theory of cognitive development, and Klages theory of expression.

The purpose of this thesis was to argue the Disability Mural project is more than merely a group art project. The Disability Mural was and still is a valid vehicle for exploring psychological and social meaning through social action. The Disability Mural contributes toward understanding cultural constructs in general, as well as toward creating an environment where art making can have a positive therapeutic outcome for participants. What does accessibility to art mean to underserved or marginalized individuals when participating in a group art intervention? Plenty according to neuroscience.

Major Findings

There is mounting evidence through DNA research and through the use of brain based imaging that neuroscience can be a valuable tool toward the discovery of therapeutic modalities. Gene research is beginning to pinpoint exact genes that influence behavior, and the polymorphisms that are responsible for psychopathology. Neuroscience allows the researcher to quantify and study behavioral and physical changes in the brain without harming the research participant.

Implications and Recommendations

While the science of neuroscience is in its infancy, it is primed toward uncovering vast stores of information that can be connected to many areas of study. Studies in neuroscience are paramount toward developing effective treatment models, particularly for those with mental illness or other psychopathology.

Future Development
The Disability Mural could proceed in many areas of study. The project in its continuance has the potential to be used as a study within an ethnographic analysis, and comparative formal iconographic connections and analogies within a social, cultural, style, and framing structure (Berrocal, 2011, pp. 6-7).

Visual information gathered through comparisons of art tiles by projects developed by Valesco and Neumann, Riversmith and Dunn may show interconnected similarities that may have cultural and social significance. A Hermeneutic Phenomenological or Formal Iconographic study would be a cogent and appropriate study example. Much material exists about the Disability Mural. Project Evaluation Reports and art tile images can be accessed as public information through VSA Minnesota. There were many opportunities to expand the understanding and social significance of this large body of work. One problem that surfaced was the lack of knowledge of security protocol that would keep participant information secured. A breech in security was discovered and dealt with quickly (Dunn, personal communication, January 5, 2014). Steps would be needed to ensure confidentiality of participants. In the end, the project and its participants came together to experience a rewarding positive experience individually and as a whole.

**Conclusions**

According to Lacey, art selection is triggered by reward processes in the brain and art status triggers ‘instantiate reward processing’ (Lacey et al. 2011, p. 433). As mentioned in this text, there is a large body of evidence that suggests that there is *always* purpose to art. Art creation is purposeful, as indicated by Lipps research on “sympathetic empathy” (Franklin, 2010, p. 160), Lee’s work in aesthetic *einfühlung* (Franklin; 2010, p. 160), d’Errico’s art as a functioning memory system (2003, p. 31) and Zaidel’s work on neuroscience, culture, aesthetics
and sexual selection (2013, p. 217). Art is a tool created as a social and intrinsic device that has an impact on the social, the psychological, and the physical well-being of the individual within society.
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### Appendix A: List of Figures

#### List of Figures

<table>
<thead>
<tr>
<th>Figure</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1.1 Reconstructing phylogenies and phenotypes</td>
<td>122</td>
</tr>
<tr>
<td>Figure 1.2 Prehistoric Decorative Chatelperronian Shell Ornaments</td>
<td>123</td>
</tr>
<tr>
<td>Figure 1.3 Artificial Memory System of Upper Paleolithic Objects</td>
<td>124</td>
</tr>
<tr>
<td>Figure 1.4 Entoptic Phenomena Comparisons to San, Coso and Paleolithic Art</td>
<td>125</td>
</tr>
<tr>
<td>Figure 1.5 Classification Systems: Evolution of Children’s Drawings</td>
<td>126</td>
</tr>
<tr>
<td>Figure 1.6 Psychology of Aesthetics Framework</td>
<td>127</td>
</tr>
<tr>
<td>Figure 1.7a Josef Heinrich Grebing Colour Chart</td>
<td>128</td>
</tr>
<tr>
<td>Figure 1.7b Josef Heinrich Grebing Notebook</td>
<td>128</td>
</tr>
<tr>
<td>Figure 1.8 Josef Heinrich Grebing Raubmörder Calendar</td>
<td>129</td>
</tr>
<tr>
<td>Figure 1.9 Campus for Adaptive Technology Disability Mural Tiles</td>
<td>130</td>
</tr>
<tr>
<td>Figure 1.10 Shared Vulnerability Model between Creativity and Psychopathology</td>
<td>131</td>
</tr>
<tr>
<td>Figure 1.11 VSAMN Web Page Disability Tiles</td>
<td>132</td>
</tr>
<tr>
<td>Figure 4.1 Blombos Cave Toolkit</td>
<td>133</td>
</tr>
<tr>
<td>Figure 4.2 Model of Aesthetic Experience of Art</td>
<td>134</td>
</tr>
<tr>
<td>Figure 4.3 Examples of Art versus Non-Art Images</td>
<td>135</td>
</tr>
<tr>
<td>Figure 4.4 Ventral Striatum Activity</td>
<td>136</td>
</tr>
</tbody>
</table>
Figure 1.1. “Some examples of potentially functionally important genetic changes along the human and chimpanzee lineage…Placement do not indicate chronological order (Bradley, 2007, p. 344). Gene FOXP2 reference, Hauser & Bever, 2008, as cited by Zaidel (Bradley, 2007, p. 344; Zaidel, 2009, p. 181). Printed with permission from John Wiley and Sons. Revised to show symbolism and music development (d’Errico, 2003). Figure reconstructed by Costandine, D. 2014).
Figure 1.2. Prehistoric Decorative Chatelperronian Shell Ornaments

Figure 1.2. Decorative Chatelperronian shell ornaments. The first six shells from the left were excavated from Grotte du Renne. The two Chatelperronian shell ornaments are from Quincay. Scale as underlined = 1 cm. (d’Errico et al., 2003, p. 3) Printed with permission from Springer New York LLC. Printed with permission from Springer New York LLC. Journal of world prehistory by SPRINGER NEW YORK LLC. Reproduced with permission of SPRINGER NEW YORK LLC in the format Thesis/Dissertation via Copyright Clearance Center.
Figure 1.3. Text verbatim. “(a) Engraved rhinoceros rib from the Solutrean levels of Solutré site bearing a sequence of 53 notches. Microscopic analysis of this sequence, based on experimentally established criteria, (b) indicates the presence of 13 sets of notches (c) made by different tools; (d) schematic rendition of the broken pendant from the Epipaleolithic levels of Tossal de la Roca, Valencia, carrying on both sides four sequences of incisions made by different tools; (e) tracing of the marks and of two horses on the Magdalenian antler from La Marche shelter; (f) schematic rendition of the marks. Capital letters indicate groups of marks carved by the same point. Arrows indicate the turning of the object between sub-sets of marks made by the same tool.” (d’Errico et al., 2003, p. 34) Printed with permission from Springer New York LLC. Journal of world prehistory by SPRINGER NEW YORK LLC. Reproduced with permission of SPRINGER NEW YORK LLC in the format Thesis/Dissertation via Copyright Clearance Center.
### Figure 1.4. Comparison Between Entoptic Phenomena and Cave Mural Art

<table>
<thead>
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<th>ENTOPTIC PHENOMENA</th>
<th>SAN ROCK ART</th>
<th>COSO</th>
<th>PALAEO LITHIC ART</th>
</tr>
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<td><img src="image38" alt="Image" /></td>
</tr>
</tbody>
</table>

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Figure 1.6. Psychology of Aesthetics

Figure 1.6. An illustration of a framework for the Psychology of Aesthetics (from Jacobsen, 2006; Jacobsen, 2010, p. 186). The topic is viewed from seven different vantage points, which are not mutually exclusive. These are called: Diachronia, Ipsichronia, mind, body, content, person and situation. Eventually, this work can converge on a unified theory of processing aesthetics. Diachronia is the perspective that takes change over time into account. Ipsichronia is the vantage point focusing on comparisons within a given time slice, i.e. comparisons between cultures, sub-cultures or social systems. Figure created by researcher Costandine, 2015.
Figure 1.7. Selected Art from Hanz Prinzhorn’s book Bildnereider Geisteskranken (1923, Berlin, Verlag Von Julius Springer)

Figure 1.7 a. Colour Chart, Josef Heinrich Grebing (1879-1940); Claussen, Jadi, Douglas, 1996, p. 87)

Figure 1.7 b. Josef Heinrich Grebing, Notebook, 1915-1921. Pencil, pen, ink, body colours, 13.7 x 8.2 cm. (p. 92). Beyond reason: art and psychosis; works from the Prinzhorn Collection by BRAND-CLAUSSEN, BETTINA. Reproduced with permission of HAYWARD GALLERY PUBLICATIONS in the format Photocopy for internal/external business use via Copyright Clearance Center.
Figure 1.8. Selected Art from Hanz Prinzhorn’s book Bildnereider Geisteskranken (1923, Berlin, Verlag Von Julius Springer)

Figure 1.8. Raubmörder Zeitrechnungs Calender – Scharfrichter Calendar 1928 (Murderer’s Chronological Calendar-Headsman’s Calendar), Josef Heinrich Grebing (1879-1940). (Jadi, Douglas, 1996, p. 87) Reprinted with permission from South Bank Centre, Hayward Gallery Publications. Beyond reason: art and psychosis; works from the Prinzhorn Collection by BRAND-CLAUSSEN, BETTINA. Reproduced with permission of HAYWARD GALLERY PUBLICATIONS in the format Photocopy for internal/external business use via Copyright Clearance Center.
Figure 1.9. Ed Roberts Campus in the Ashby BART station in Berkeley CA.

Figure 1.9. Example of panels of the Disability Mural Tiles at the Ed Roberts Campus in the Ashby BART station in Berkeley CA. (http://www.edrobertscampus.org/galleries/the-disability-mural/) Waiting for permission to publish.
Figure 1.10. Carson’s Shared Vulnerability Model

Costandine based on Carson’s Shared Vulnerability Model (2015).
Figure 1.11. VSA Minnesota Disability Mural & Storytelling Project

Figure 1.11. Disability Tile Artwork by researcher Costandine 2013. Printed with permission by VSA Minnesota, The State Organization on Arts and Disability.
Figure 4.1. Toolkit 1 (Tk1) recovered at Blombos Cave, South Africa. B1 _ canid ulna with ochre residue on the tip; B2 _ seal scapula; B3 _ broken bovid vertebra; L1 _ quartzite cobble used as a hammer; L2, L3 _ quartz flakes; L4 _ quartzite slab with longitudinal streaks of red ochre used as a grinder; L5, L6, L7 _ quartz flakes; P1 _ small piece or red ochre rubbed on one face; S1 _ abalone shell (Haliotis midae). Figure created by C. Henshilwood and F. d’Errico (Henshilwood et al. 2011, p. 221; Nadal & Skov, 2013, p. 2). Science by MOSES KING, Reproduced with permission of AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE in the format Republish in a thesis/dissertation via Copyright Clearance Center.
Figure 4.2. Model of Aesthetic Experience of Art

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Figure 4.3. Art Versus Non-Art Hypothesis

Figure 4.3. Examples of art versus non-art representations. A1 and b1 is a pair of animate comparisons and a2 and b2 are inanimate comparisons (Lacey, et al. 2011, p. 422). NeuroImage by ACADEMIC PRESS. Reproduced with permission of ACADEMIC PRESS in the format reuse in a thesis/dissertation via Copyright Clearance Center.
Figure 4.4. Art Versus Non-Art Hypothesis

Figure 4.4. (Lacey, et al. 2011, p. 426). Time-courses of BOLD signal change in representative regions common to the subject- and item-wise analyses for the art > non-art contrast. Error bars: SEM. See list for abbreviations. Abbreviations: R VS: Right Ventral Striatum, L VS: Left Ventral Striatum, R OFC: Right Orbitofrontal Cortex, L hypoth: Left Hypothalamus, R IFS: Right Inferior Frontal Sulcus, L pCaS: Left Posterior Calcarine Sulcus. Image was inverted to better illustrate graph data using Adobe Photoshop (Costandine, 2015). NeuroImage by ACADEMIC PRESS. Reproduced with permission of ACADEMIC PRESS in the format reuse in a thesis/dissertation via Copyright Clearance Center.
**Appendix A: List of Tables**

**List of Tables**

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 1.1 Child Scribbles Compared to Phosphene Linnaeus Form Groups</td>
<td>138</td>
</tr>
<tr>
<td>Table 4.1 Calculations of Effect Size and Confidence Intervals for VS Activation</td>
<td>139</td>
</tr>
</tbody>
</table>
Table 1.1. Child Scribbles Compared to Phosphenes Linnaeus Form Groups

<table>
<thead>
<tr>
<th>FORM GROUPS of MUNICH PHOSPHENE-LINNAEUS</th>
<th>A</th>
<th>B</th>
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<td>68</td>
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<td>24</td>
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<td>28</td>
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<td>5</td>
<td>7</td>
<td>3</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>5 Combined Figures</td>
<td>51</td>
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Sum of numbers of recognizable phosphenes patterns (column A) and of recognizable scribblings (columns B to G)

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Percentage of scribbling form groups corresponding

| Column A: Number of phosphenes belonging to each phosphenes form group. | 100| 60 | 80 | 60 | 80 | 86 | 86 |
| Column B-G: Number of recognizable scribblings (out of 329) similar to each phosphenes form group, according to 6 different experiments. | 9 (R.K.) | 12 (M.K.) | 9 (J.K.) | 12 (E.L.) | 13 (H.R.) | 13 (W.G.) |

TABLE 4.1. Calculations of Effect Size and Confidence Intervals for VS Activation

Activations common to both subject-wise and item-wise analyses on the art > non-art contrast. Activations outside the ventral striatum are corrected for multiple comparisons in both analyses; x,y,z = Talairach coordinates; \( t_{max} \) = peak t value. Cluster size = number of activated voxels in region. Verified = number of individual subjects (total = 8) in whom activation was verified (p < .05 uncorrected). See list for abbreviations.

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<th>Region</th>
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<th>y</th>
<th>z</th>
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<th>Item-wise ( t_{max} )</th>
<th>Cluster size</th>
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Table 4.1. “Activations common to both subject-wise and item-wise analyses on the art > non-art contrast. Activations outside the ventral striatum are corrected for multiple comparisons in both analyses; x,y,z = Talairach coordinates; \( t_{max} \) = peak t value. Cluster size = number of activated voxels in region. Verified = number of individual subjects (total = 8) in whom activation was verified (p < .05 uncorrected). See list of abbreviations” (Lacey, et al. 2011, p. 425). NeuroImage by ACADEMIC PRESS. Reproduced with permission of ACADEMIC PRESS for a Thesis/Dissertation via Copyright Clearance Center.
Appendix A: Abbreviations


**Abbreviations**

- **amyg**: amygdala: Located in anterior area of the temporal lobe of the cerebrum it is an almond-shaped neural structure. It is connected to the hypothalamus, the hippocampus and cingulate gyrus. The amygdala is critical to the formation of motivation and emotional behavior and is part limbic system, .
- **CaS**: calcarine sulcus: Interchangeable with the calcarine fissure. A sulcus is the groove that is surrounded by the convolutions in the grey matter of the brain. in the mesial surface of the occipital lobe of the cerebrum.
- **CBL**: cerebellum: The posterior area of the brain that includes the cerebellum and the brainstem.
- **hypoth**: hypothalamus: Controls the autonomic nervous system.
- **IFS**: inferior frontal sulcus: The inferior frontal sulcus lies between the middle frontal gyrus and the inferior frontal gyrus. (http://en.wikipedia.org/wiki/Inferior_frontal_sulcus ).
- **IPS**: intraparietal sulcus is on the lateral surface of the parietal lobe, and is situated obliquely and horizontally.
- **OFC**: orbitofrontal cortex
- **VS**: ventral striatum
- **L**: left
- **R**: right
- **a**: anterior
- **i**: inferior
- **m**: medial
- **p**: posterior
- **s**: superior
- **v**: ventral
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Reconstructing phylogenies and phenotypes: a molecular view of human evolution
Appendix B: Permission Figure 1.2 & 1.3 CCC: 3374910460326
Appendix B: Permission Figure 1.4: Reference 0049539271, Grant Number 108771
Entoptic Phenomena, San Rock Art and Palaeolithic Art

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St Paul, MN 55107

Date: April 01, 2016
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Costandine THE HISTORICAL ASPECTS OF MURAL MAKING, ART THERAPY, AND SOCIAL ACTION IN RELATION TO THE DISABILITY MURAL PROJECT a dissertation for a degree at the Adler Graduate School, Chicago, Illinois.
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Ed Roberts Campus
510 841-3224
dbelser@cforat.org

cc: Frances Valesco, Eric Smith

3075 Adeline Avenue, Berkeley, CA 94703
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VSA Minnesota Disability Tile Artwork Web Page Facsimile

October 16, 2014

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I am writing to grant permission to Deborah D. Costandine to make references to VSA Minnesota, the Minnesota Disability Mural Project and her involvement with the project for her in-progress dissertation entitled, “The Historical Aspects of Mural Making, Art Therapy, Social Action, and the Disability Mural Project.”

I am pleased that her involvement during the summer of 2013 provided her with first-hand knowledge and experience which she has been able to use in the development of the paper.

I applaud her work and wish her the best as she brings her research-rich writing to a close.

Sincerely yours,

Craig J. Dunn
Executive Director
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