INVERSE INTUITION: REPURPOSING AS A METHOD TO CREATE NEW ARTIFACTS, TO INVENT NEW PRACTICES, AND TO PRODUCE NEW KNOWLEDGE.

by

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ABSTRACT

This dissertation argues that Digital Natives, rather than employing novel ways of thinking (such as those suggested by Walter Ong's concept of Second Orality), are in fact employing a way of thinking that has always existed: repurposing. Ruth Oldenziel discusses how, historically, women used "a kind of mental quality" enabling them to re-use objects in novel ways to accomplish more of life's tasks. My research led me to investigate how a wide variety of people, especially historically marginalized people, used this kind of mental quality. This dissertation explores repurposing's real world uses as well as its uses in narratives, specifically dystopia and apocalyptic narratives. Within these narratives, repurposing plays a similar role to repurposing in the real world, filling the gap between a survival mode of life and a science/technology driven society. The last part of this dissertation explores the place of repurposing among a myriad of current concepts concerning creativity.

This dissertation is dedicated to an end, to middles, and to new beginnings. To my mother (1944-2013) who passed away before the process was finished and who always pushed for me to combine the creative with the practical. To my daughter Amante who was and is a constant inspiration, and to my father who is my continual source of perseverance and determination. To my wife, Nikki, and our son, Warren “Tripp” Jones, III, who keep me focused on the future and on furthering my academic work.

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TABLE OF CONTENTS

LIST OF FIGURES

CHAPTER ONE: INTRODUCTION, AN OVERVIEW OF THE PROBLEM

In 2006, the Museum of Contemporary Art in Chicago hosted "Massive Change," an extensive exhibit created by Bruce Mau and over 50 scientists, thinkers, and leaders that sought to shift "the objective of the welfare of the human race from a utopian ambition. . . to a design project, a practical objective" (Mau 18). The premise of the exhibit (and the subsequent texts, films, and websites) asks one overarching question: How do we do more with less?

This question asks not only how we can utilize objects in new ways but also how we can think in new ways to support a massive change (Mau). Among the discussions ranging across many “economies,” as Mau calls them, from energy to markets, from images to information, from manufacturing to militaries, Mau expresses the need for new "critical faculties" that can "embrace the dilemmas and conflicts" of massive change. For such critical thinking to occur, the discussion and the solutions must come not from atomized areas of research but from discussions that "go beyond the design fields themselves and reach out to the broadest audience, to the people directly affected by the work of designers" (Mau 18). To me, such a collaborative discussion of how to do more with less has been occurring for thousands of years, yet throughout time, as well as currently, the discussion of how to do less with more has occurred in places and peoples that have been ignored.

This dissertation’s construction of those places and peoples’ ability to do more with less has similarities with the structure of W.J.T. Mitchell’s *Picture Theory*: “a collection, a progress report on an incomplete project.” This project can never be completed, the areas of life where *doing more with less* occurs is perhaps a tautology. Michel de Certeau suggests this “tactic” may

be a pre-foundation of life, occurring in such examples as pre-historic fish using camouflage. The discussion of the spaces where people are doing more was part of Michel de Certeau's project, and the project of collecting and showing the artefacts and objects that people have altered to do more with less can be found among many different websites; foremost among them is Pinterest. This dissertation overlaps with de Certeau's project and with the project of sites like Pinterest, but it extends beyond those projects into what Ruth Oldenziel refers to, but never discusses in-depth, as "a kind of mental quality" that people use when they repurpose, when they do more with less, when they re-use items in ways they were not intended or made to be used..

This collection of "a kind of mental quality" that occurs in a variety of places (from ancient to contemporary), a variety of people (from historically marginalized to mainstream), and a variety of narratives and theories aims to interrogate and attempt to answer four central questions. What areas of knowledge (such as creativity) help explain this "kind of mental quality"? In what peoples and what narratives has repurposing occurred or still occur? Why does there seem to be a prevalence of repurposing in genres concerning the end of civilization? Is repurposing a subset of a discourse that is already occurring, and if not within another existing discourse, how close is this "kind of mental quality" to similar discourses?

This dissertation, this collection of that "kind of mental quality," is the first stage in a trajectory toward a different understanding of digital literacy, or as Walter Ong calls it, "a second orality." While this dissertation draws many connections between digital literacy and that "kind of mental quality," it does not complete the project. That trajectory is to suggest, at some future end point, that the discussions of a new way of thinking, of a digital thinking, of a second orality,

of Ulmer's electracy, has existed pre-digital age and is only now surfacing to a wider population from the narrow and marginalized sectors through time and across the planet. This dissertation aims to connect points between repurposing and digital thinking with a forward eye toward that larger project.

Justification

Due to the Great Recession and a surge in non-traditional students into colleges, the student body of many classrooms has two different generations, each with their own broader learning paradigm. The addition of digital mediums (such as using the web for research and online classrooms to connect students and teachers) can be perplexing to either generation (the literate and the Digital Natives), as the usage of such digital mediums might be predicated upon a teacher's or a professor's literate or digitally literate sense of education. Confusion may arise in any number of situations. A professor might have a literate paradigm of education yet use digital mediums, which can be confusing for either generation. Or, a professor might be digitally literate and use digital mediums, thereby unknowingly neglecting the literate learners in the class. Or, a literate professor might not even use digital mediums, thereby possibly alienating everyone except the literate non-traditional student. Another set of problems occurs with the availability of digital mediums. Digital Natives who currently are entering into teaching positions might not have access to digital mediums for students in the classroom, and thereby they try to teach a

literate based class that is predicated on digital literacy, which can be confusing to both generations.

Not only is there a shift from a literate worldview to digital literacy but also there is a continued shift, as Jean-François Lyotard discusses, from a liberal education to "that of job retraining and continuing education" (49), a preparing of people for employment or for entrance into a specific institution, such as education, itself. With that change toward job training occurring in education, performance measures can too easily neglect critical thinking skills and focus on specific applied skills, thereby exacerbating the problem of students not learning critical thinking skills.

An even broader paradigm shift of *having less* has affected these internal educational matters: recessions around the world, concern for global warming, and rising oil costs with greater scarcity of resources. There is a connection between having fewer resources and critical thinking. There are historical instances of peoples doing more with less (as discussed thoroughly in Chapter Two), which this dissertation claims is a form of critical thinking that is moving beyond historical marginalized people and into the middle classes around the world. This dissertation also claims that such a form of thinking is a form of digital thinking; that is, I make the claim in this dissertation that what we currently refer to as digital literacy is a form of thinking that has existed for thousands of years among many different peoples all who have the same end, to reuse something other than its initial intended purpose.

Summary of Chapters

Woven through each chapter are three main theoretical points: understanding repurposing done (by historically marginalized people) as a global discussion, utilizing digital technologies toward a new educational poetics, and examining identity formation through an epistemology of doing. Together, they are an offshoot of counter-intuitive discussions (such as those of Stephen Johnson and of Malcolm Gladwell).

Chapter Two is a historical survey of groups who do more with less. A discussion of the traditional role of women as repurposers and the tension between repurposing and science/ invention leads to an itemizing of how repurposing has occurred in the Great Depression, and how repurposing now occurs among a variety of "economies": Ancient World, Story Telling, Indigenous Peoples, Economically or Socially Marginalized Westerners, and Post Colonial peoples. Whether we call that process adaptation, Redneck ingenuity, American ingenuity, bush punk, ghetto, or *jugaad*, repurposing occurs "when we take such activities as acquisition, maintenance, repair, use, and redesign seriously, [for then] women, children, workers, and 'people of color' reappear in all their diversity and importance," according to Pursell. Repurposing needs a "kind of mental quality," according to Tarbell, or as Antonio Pretti suggests of creativity, "a cognitive ability separate from other mental functions. . . . [that is] independent from the complex of abilities grouped under the word 'intelligence'," and this mental quality has "the workings of a collection of practices that produce specific cultural effects," according to Balsamo, to form "new ways of using old technologies," in Marvin's words.

Chapter Three focuses on how survival and dystopic/apocalyptic narratives reveal the place of repurposing in a society. For Bullen and Parsons, reading dystopic narratives "becomes an impetus to action" since dystopic narratives "can be read as empowering, mapping a trajectory from bystander to action" (138). This impetus to action relates to Lacan's *little a* and to Ricouer's *ipseity*, which is both our social historical context in which we live and our actionable creative initiative. According to Ricouer, ipseity is the "central truth about human agency" (van Hooft np). A social historical context is but one part of ipseity, and it is the other part of ipseity that irrupts into narrative: creative action. Since the social historical context, the dystopia futuristic, is unchangeable from an individual view, what is changeable, what can be affected is single moments of thinking in a different way, of using some item or idea in a different way, of reconfiguring, reforming, reworking some process that thwarts the destructive future or at least allows humans to survive beyond the dystopia. Repurposing is the irruption into the causal line of a new thinking, and it is viscerally in the pull of Lacan's concept of the *little a* and the search for the Real and pushed back against by the hyperreal.

People have been thinking in ways similar to those needed in digital literacy before even literacy occurred. They have done so, usually, as historically marginalized people, as those caught in a dystopic or survivalist environment, or as both. This chapter explores a variety of issues surrounding the change from literacy to digital literacy in order to draw connections between the *kind of mental quality* needed in the Process of repurposing and the kind of thinking that accompanies digital literacy. Chapter Four addresses if repurposing is a subset of a

discourse that is already occurring, and if not within another existing discourse, how close is this "kind of mental quality" to similar discourses?

Literature Review

This literature review focuses on framing the language used in five key areas that are central to this dissertation: creativity, inventors and artists, concepts of intuition, automaticity, and conductive logic and neurophysiology. Each section's summary of current and past works and synthesis of those central ideas as they relate to this dissertation seeks to address a common problem in interdisciplinary studies: language use. Words used in one discipline may have different meanings in other disciplines, and without a setting of terms, confusion could quickly result. Another difficulty with interdisciplinary research is rhetoric. Each discipline has, if not rigid perimeters guiding the use of rhetoric, parameters of rhetorical usage. Across disciplines, mood and tone shift over a wide range of expository styles. These problems with various discourses was illuminated by de Certeau concerning use of theory: "A particular problem arises when, instead of being a discourse on other discourses, as is usually the case, theory has to advance over an area where there are no longer discourses . . . . The theorizing operation finds itself at the limits of the terrain where it normally functions, like an automobile at the edge of a cliff" (62).

For this dissertation's literature review, I chose an MLA explanatory prose over the APA style of strict reporting of people, ideas, and sources. This choice is predicated on the MLA's

rhetorical device of connecting authors with subjects, whereas in APA the subject is to remain detached from the researcher. By not actively choosing a style, such as MLA, APA, CBE, Chicago, etc., for writing citations and as a general guide of rhetorical style, interdisciplinary research would be too scattered and ill-prepared to be a part of any discipline's growing body of knowledge. Enforcing a style onto all interdisciplinary research would reduce the efficacy of some research to reach and influence certain audiences. For this dissertation, to use an APA style of detached "objective" writing would associate the arts, creativity, and the non-scientific roots of repurposing with rigid scientific analysis and reporting. In effect, such a translation of this dissertation into an APA form would break from Coleridge's idea of organic composition and become merely mechanical composition. The active choice of an established citation and rhetorical style helps ameliorate some of the difficulties in interdisciplinary research. These difficulties with interdisciplinary research and writing stems from interdisciplinary studies not having a central discipline. There can be a freedom in interdisciplinary studies when no central degree shapes the discourse of subjects and rhetorical style. However, in some degrees that cross disciplines, such as Texts and Technology, the problem of rhetorical devices is heightened by the existence of such a central degree.

Texts and Technology, like any new discipline, must confront, or cope with, a tension of trying to establish its place among other disciplines and forming the parameters of its subject-matter while avoiding confining itself too rigidly. From kiosks to domestic appliances, from digital quilts to medical imaging, the breadth of subjects, and theories used to address those subjects, within Texts and Technology could suggest a scope of the discipline that is far too

broad: anything concerning digital technologies. I position my dissertation within Texts and Technologies and as a contribution to the parameters of Texts and Technology in a very similar way to those dissertation topics listed above (kiosks, domestic appliances, digital quilts, medical imaging): connecting interiorized mental and bodily states with a human body that interacts with digital technologies. Unlike those listed above though, I have not made those connections to a specific set of material items (kiosks, domestic appliances, medical imaging). My “subject matter” is a wide spectrum of a *method of fabricating* material items, rather than the material items themselves: repurposed items. A discussion of repurposing, as my research has led me, entails creative and critical thought, the established roles of artists and inventors, a sense of intuition, the ways we automatize learning, and forms of logic such as conduction.

Creativity

Suggesting that historical repurposing is *a kind of mental quality* used in digital literacy includes a discussion of creativity and how we are able to make leaps across domains of subjects and ideas. A literature review of creativity could cover nearly every academic discipline and has widely disparate definitions.

From psychotherapy, Silvano Arieti's focus on creativity centers on the use of a non-Aristotelian logic of a "primary process thinking," such as schizophrenics use and such as occurs in dreams where concepts are put into concrete forms. In this primary process thinking as creativity, connections are drawn by artists and poets between subjects through, usually, a single

part of the whole of those subjects. As Arieti describes in "From Schizophrenia to Creativity," unlike schizophrenics, creative people "match harmoniously the primary process with the secondary process [which is the normal process of thinking for people] . . . and from this fusion or matching, the creative process or what I call the tertiary process emerges" (504). Another psychotherapist, Antonio Pretti suggests there is a different form of thinking than typical thinking in creativity. Creativity is a "cognitive ability separate from other mental functions. . . . [that is] independent from the complex of abilities grouped under the word 'intelligence'" (np). Arthur Koestler's ideas also suggest a different form of thinking than rational "normal" thinking; he suggests that creativity happens at the subconscious stage due to a bisociation of "incompatible associative contexts" (qtd. in Haring-Smith 23).

Literature in the discipline of Business Leadership uses such definitions of creativity as "the ability to analyze current situations in light of what should be, [to] identify problems, and [to] conceptualize new avenues of change" (Goertz), "that which is practical, unique, and outcome oriented" (Amabile in Tierney), and "production of novel and useful ideas" (Bundy in Scontrino). Organizational Behavior perceives creativity as "connecting concepts" (Provost et al.); Psychology uses concepts such as "the interaction of disparate knowledge patterns by the use of both conventional and unconventional generative methods in a way that gives rise to useful, challenging, and illuminating new concepts" (Bundy in Scontrino). While those are one-line definitions, other fields use more complex definitions.

Robert Sternberg uses a collective theory of different thinking skills called the "augmented theory of successful intelligence." This theory, of which repurposing shares many

similarities, combines creative, analytic, and practical abilities with wisdom to suggest the stages of forming new thoughts into ideas and products and then disseminating those ideas and products. Creativity allows for the creation of new ideas and items, analysis helps determine if the idea or item is good, practical skills are needed to disseminate the idea or item, either through writings or through sales, and wisdom is needed to act ethically in that dissemination or production and delivery if items (327). Sternberg, though, is more concerned with adjusting standardized tests and adjusting learning outcomes of students to be prepared for those tests than in the process of how the creative moment happens. While Sternberg's ideas are not at odds with this dissertation, the aims of his work address a wider society and performance testing. This dissertation seeks to understand the genesis and implementation of the creative moment in repurposing as such relates to the use of digital technologies and critical thinking while Sternberg's ideas aim at the post-genesis moment of creativity and more on the performance of people's creative skills.

Performance centered discussions of creativity inform many areas of research in education, which is useful to this dissertation's connection of creatively repurposed items, digital thinking, and education. As an assessment tool in an Education discipline, Cowdroy offers in "Assessing Highly-Creative Ability", instead of a definition, a grid of creativity that has three phases of creativity: conceptualization, schematization, and execution.

Hierarchy of Creativity	Definition/description
Conceptualization	Imagined ideas
Schematization	Constructs, analogies, diagrams
Execution	Works of art, manuscripts, performances

Source: Cowdry, Rob and Erik de Graff

Figure 1: Three Phases of Creativity

Cowdroy and de Graaff suggests using this grid as a rubric for teaching and grading the stages of creative project rather than the artistry or aesthetics of a project, which in many non-art courses the teacher or professor may not have the training for such *artistic* evaluation. When giving artistic based projects, a subject in the course is usually the center of the project, but by teaching the grid above along side any other project rubric, people will learn more than the subject they are turning into a project. They will learn a process by which they can use creativity in other areas of life.

Another current writer, Robert Weiner, also aims at the items produced instead of the genesis of creativity, and by doing so takes almost an opposite position of this dissertation. One central point to this dissertation is that repurposing, a critical and creative form of thinking, has occurred mostly in historically marginalized groups, in those who had little access to new goods and services, either due to distance from those goods or from economic status. Robert Weiner suggests the opposite. Weiner's suggests that creativity was narrowed by lower economic people's conditions: "most people were limited to creating only within very narrow spheres of activity. Often enough, the realization of one's social limits was enough to prevent even the

fantasy of creating outside one's 'proper' sphere" (207). As we'll see in Chapter Two, the concept of *jugaad* is a value in India that means, basically, to repurpose, and the items they repurpose are well outside the "proper" sphere of their economic class. Weiner continues by suggesting that these restrictions on certain groups (he names *cockney* and *hillbilly* as specific examples) "required a creative response in order for the group affected to survive, but despite such creative responses, there is no doubt that creative possibilities were to some degree limited" (221). This dissertation interjects itself after the first half of that statement concerning creative responses to survive. From that point, while Weiner suggests a diminished creative capacity, this dissertation suggests a higher creative capacity than the mainstream groups in which the marginalized group lives. Further, this dissertation reconfigures Weiner's second goal of his book *Creativity and Beyond*: "The second goal of the book is to examine a variety of ideas about and expressions of creativity as well as the many ways in which creativity may be limited by material conditions or opposing values" (1). This dissertation suggests that the limiting of material conditions and the opposing of people's values actually inspires greater levels of creativity, which stand outside the scope of some writers.

Dean Keith Simonton studies the effectiveness, or in his words "eminence," of creative individuals. However, Simonton focuses mostly on "distinguished" or eminent people, which is the realm this dissertation does not address, except in an ancillary way. The "eminent" people he studies are part of the elite who marginalized people that this dissertation studies in order to make the point that historically marginalized peoples are highly creative in their use of repurposing.

A myriad of other ideas concerning creativity travel among disciplines. A survey of the popular discourses that surround creativity, art, and invention helps isolate some of the problems in understanding repurposing while exploring a variety of concepts central to discussion of creativity.

There is the view that creativity is seeing things in new ways, such as a gestalt change. The classic example of a gestalt change is the black and white image of two faces/ vase, where at first we see one image, and then another image. There is the idea that creativity is a flash of insight, an unknowable condition that just happens. That idea is not too far from Plato's idea of the madness of a poet: "For a poet is an airy thing, winged and holy, and he is not able to make poetry until he becomes inspired and goes out of his mind and his intellect is no longer his" (Plato, *Ion*).

Some believe creativity is genetic, some believe it is socially created, yet some others seek a combination of the two, a synergy of a recursiveness between genetic and socially constructed, such as Edward O .Wilson. Wilson espouses a "consilience" of human endeavor that is rooted in biology but influenced by culture: "What can we truly know about the creative powers of the human mind? The explanation of their material basis will be found at the juncture of science and the humanities" (223). Einstein viewed creativity as thought experiments, or as a neologism coined by Michael Ondaatjie, thinkering: to tinker with thoughts.

While many of these sources attempt to find the font of creativity, one view would be to look at the function and place of creativity. Creativity, though, seems to be more a function of being a human with a mind and body, rather than of a biologically derived trait we either have or

learn. What changes from person to person is how we *utilize* creativity in many fields of life—toward art, toward systematizing, toward literary endeavors, and toward fabrication of goods.

The emphasis of the word *utilize* seeks to spotlight a difference in *use* and *utilize*. To *use* something is to put that thing toward its intended purpose. When we *use* a drinking straw, we put it into a cup to suck forth fluid: its intended purpose. Michel de Certeau likewise had to contend with the problem of the word *use*. De Certeau suggests that using the word *use* "often designates stereo-typed procedures accepted and reproduced by a group" which is problematic due to the ambiguity of the word, itself: "The problem lies in the ambiguity of the word, since it is precisely a matter of recognizing in these 'uses' 'actions' (in the military sense of the word) that have their own formality and inventiveness and that discretely organize the multiform labor of consumption" (31). The word *utilize* can circumvent that recursive language of using *use* to understand uses of things or even uses of the word *uses*.

We can *utilize* a drinking straw in art (as, say, arms on a Styrofoam snowman) or as a storage container (such as for small beads in a craft drawer). The word *utilize*, though, misses my need for a term that describes collectively what happens internally during creative moments, externally with material items, and as an interface connecting those two, for two reasons. One reason is that, according to common usage, *use* and *utilize* are interchangeable, despite denotative differences. Another reason is that *use* and *utilize* merely point to an action and say little of what occurred as an interface between the internal mind and the external world at the moment of creativity.

By way of example, *recycling* is one such word that points to an action but speaks little about what occurs with or within people. Though *we* are the ones who recycle, the emphasis is mostly on the items that are recycled. A newer phrase alters that focus on the items and includes many other aspects of recycling that concerns the internal mind and the environment: carbon footprint. A carbon footprint refers to human interaction with not only material items but also the environment from which those items are extracted or in which they are used. I look at *repurposing* as not a moment involving an action with a thing, but as creative moments that occur within the mind, as an interface with the external world, moments that may have occurred from the beginning of humanity, or even earlier. To de Certeau, this tactic, as he calls them, may have existed before human history:

> Perhaps these practices correspond to an ageless art which . . . goes back much farther than our histories and forms strange alliances preceding the frontiers of humanity . . . they maintain formal continuities and the permanence of a memory without language. (41)

Though we can theorize a history of repurposing, another aspect of repurposing concerns *from where* creativity arises, there are discussions of how one may learn creativity. These range from "self-help" books and workshops to traditional apprenticing. The National Endowment of the Arts has a $40,000 grant to "help develop instate folk arts apprenticeship programs." This grant, however, relies on the conception of folk art as being a trainable, mentor to apprentice, experience. For instance, Taft Richardson creates sculptures from bones. He could show others the physical skills of how to attach one bone to another, but such a training might only allow an

apprentice to replicate Richardson's existing sculptures. As we'll see in Chapter Two, History, many items call forth a "Why didn't I think of that" response, and assuredly after observing any repurposed item, many people would find replication easy. But to have the creativity to look among a pile of discarded items and fabricate a new and unique item or art piece defies many of us. That problem of training creativity occurs in many fields of life.

Concerning guides to creative thinking, Amazon lists over 1,169 hardcover books published in the year 2013 as having "creative thinking" as a keyword. Creativity workshops occur across America from those helping artists to those helping boost the creativity of employees. An exact phrase of "creativity workshop" generated 75,000 hits on Google in 2009 and 310,000 hits in 2013. There seems an inexhaustible supply of articles discussing the need for employees who are creative or to advance the creativity of current employees, such as Goertz's article on "Creativity: an Essential Component for Effective Leadership in Today's Schools" in the *Roeper Review*. Even without those articles, we could assume a need through the sheer numbers of publications (1,169 books since December 2011) concerning creativity and the sharp rise in the use of the phrase "creativity workshop."

That creativity is wanted, if not needed, is clear, and much could be discussed concerning this need for creativity as a measure of our lack of creativity, but perhaps there is another way of looking at the need for creativity issue. Is the need perhaps an indicator that we have an awareness of what we don’t know—is creativity a symptom of a mass Dunning-Kruger effect?

The Dunning-Kruger effect suggests that people can be incapable of knowing what they don't know. We, of course, all can raise questions of which we would then have to seek out the

answers: Why is the sky blue? That is, to many children, a known question with an unknown answer, but they could seek and find the answer. We also have known questions but, as of yet, unsolvable answers: can we travel through space faster than the speed of light? However, according to Dunning-Kruger, we are unaware of unknown questions and their respective unknown answers. In other words, we are not cognizant of questions that we haven't even considered yet. A more blunt way of expressing Dunning-Kruger effect is that we are ignorant of our own ignorance.

Errol Morris, in his article "The Anosognosic's Dilemma," discusses this ignorance of our own ignorance through a news story of a man named Wheeler who, having once heard that lemon juice on skin prevents video and photographs from capturing a person's image on film, decided to rob a bank covered in lemon juice. Of course he was immediately apprehended. Morris points out that "If Wheeler was too stupid to be a bank robber, perhaps he was also too stupid to know that he was too stupid to be a bank robber — that is, his stupidity protected him from an awareness of his own stupidity." An individual's ignorance masking his or her own ignorance is understandable, but a collective Dunning-Kruger effect is a frightening concept: that masses of people can live together without correcting one another's ignorance. We can too easily believe in an assumption that either facts or collective groups can alter an individual's ignorance of ignorance. There is still a strong belief in the Enlightenment ideal that education will reveal one's ignorance and lift people out of ignorance. However, Joe Keohane in "How Facts Backfire" discusses how desperately we cling to ignorance even in light of facts:

> Facts don't necessarily have the power to change our minds. In fact, quite the opposite. In a series of studies in 2005 and 2006, researchers at the University of Michigan found that when misinformed people, particularly political partisans, were exposed to corrected facts in news stories, they rarely changed their minds. In fact, they often became even more strongly set in their beliefs. Facts, they found, were not curing misinformation. Like an underpowered antibiotic, facts could actually make misinformation even stronger.

Brendan Nyhan of Michigan State University believes that the degree to which people hold onto unsubstantiated facts in the light of real facts correlates to self-esteem and self-affirmation (Keohane). Those who feel secure and non-threatened change their views in light of facts as opposed to those who are insecure and feel threatened when confronted with facts. One way people might not stay enshrouded in their ignorance is through social interaction which gives people the opportunity to reveal one another's ignorance. Yet the Stanford experiments (as well as a host of other sociological experiments) reveals otherwise. Seemingly, then, relying on a collective to right the ignorance of others within that collective is not a viable counter-action to the Dunning-Kruger effect.

Combining Dunning-Kruger, Keohane's article, and Nyhan's views, we are a species of people who can be too ignorant to know we are ignorant and too defensive in that ignorance of our ignorance to change. If such were the case, civilizations should collapse, not rise, science should wane, not increase, and the future should turn into the idiot-scape of the iconic and cult classic film *Idiocracy*. I wonder then if there is some inverse to the Dunning-Kruger effect, and if

that inversion lies within the connection of self-esteem and creativity. As I suggested earlier, perhaps the need for creativity is an indicator that we have an awareness of what we don't know. Perhaps the call for creativity is an intuitive sense that we are all within a Dunning-Kruger effect and perhaps that sense stirs in us as an inkling that something is not being questioned that should be. I have felt this most of my life.

As I grew up, I heard quite often from others that I was creative. I had no drawing or painting skills; I had no ability at what most would call an artistic ability. I looked around me and found creative people and their artifacts everywhere, and all of that occurred while I grew up in pre-internet era, small towns without access to a wider culture of the arts. I never could understand the praise that I was "creative"; thoughts just popped into my head. Ideas just circulated and formed into "hey, I know what we could do." A rupture formed through the years: on the one hand, I was being told I was creative and on the other hand I could see that throughout the world (alive today and not just the grand masters of art from the past) were a lot more people who were truly creative, who were highly artistic. From that rupture, I began a search for *what is creativity*, mostly to be able to respond to the statement of "You are so creative." I needed the language and the ideas to say, "Actually, I am just _____; look over there at what she did; that's creative because creative means _____."

Through the years of investigation, what I have found is a wide host of texts, workbooks, workshops, and traditions, each outlining a way of honing one's creativity. Some I have found repugnant in their pretension of how to teach anyone to be creative (specifically I think of a book / workbook called *Think like a Genius*), others I have found as being, well, not *me* (books on

finding the poet within or the inner creative self did not ring true to a guy who was raised to hammer a nail straight rather than paint a sky in the perfect hue of blue). I have read books that others (close confidents and decades-long friends) have sworn by, that they professed had deeply helped them, and that had set them free to create, yet those very books did nothing for me. Therein lies the difficulty with creativity. We all have it, but how we might bring it out and what barriers or blocks prevent us from being creative seems as diverse and dependent on the person as is the ways in which people are creative. With the advent of the web, I was able to expand the quest for the grail of creativity and find other aspects of creativity and the arts rather than pedagogical tools.

Coupled with those discussions of creativity are the discussions concerning ego, how art helps one's esteem or self understanding. From course work in prisons that help rehabilitate people such as Art Behind Bars that has helped 7,500 inmates to child art therapy which ranges from psychological help to medical help, this discussion concerned how much art, or creativity, informs us of who we are, such as Tracey Councill suggests: "Participating in creative work within the medical setting can help rebuild the young patient’s sense of hope, self-esteem, autonomy (207). . . . Making art, the uniquely human act of creating meaning out of formless materials, can be a powerful vehicle for rebuilding the medical patient’s sense of well-being" (212). Learning of the uses of the creative arts to help real people with real problems appealed to my hammer-a-nail-straight, everything-toward-a-practical-use, worldview, but the literature on such programs always seems to have a sense of desperation, as if written in the style of Apologetics rather than as discussion of the topic. These apologetics carry the tone of trying to

validate the use of art rather than to show what was found within a study, and thus they seem to reinforce a positivist, if not scientistic, view. Whether intentionally or not, these discussions suggest art must have a purpose, and art often responds by yielding its purpose, of pointing to anecdotes of various social or medical programs to say why it is useful.

Various ideas and tensions concerning art and creativity spread farther than earlier pre-Internet popular discourse on art and creativity. On the Internet, every theorist and every philosopher becomes an unwitting support of someone's view on art, escalating tensions as to what is art, the place of art, and the reasons for art. These tensions, though, are not fabricated for the Internet; they have simply found new places on the Internet for expression. For example (one of but tens of thousands) the idea of politicizing art morphs from a Benjamin perspective to a personal view using Benjamin as a weak support. Walter Benjamin suggests that Art should be politicized to counter the aesthetics of politics. Briefly, this means that as regimes, in Benjamin's case he refers to Nazi Germany, use art to push their agendas, so then must art address politics. Why have art that involves a discourse of politics? Because without art addressing politics, politics becomes a hegemony of art and art becomes an arm of marketing and propaganda for politics. In this struggle between the politicization of art and art becoming political, positivism and scientism has crept in. Benjamin's ideas become a rationale as to why art is useful, such as one commentary on MassThink: "Art is thus not only democratized; more importantly, it gains political significance" (Ryan/Aless). Ryan/Aless justify "art." Yet, the new hegemony of art and creativity seems to be that of positivism. Few question the need for science courses; the questioning of the use of art courses or any course concerning creativity is continual. As a

response to those questions or as pre-emptive explanations, disciplines in the humanities have entered into, willingly or not, the control of a narrative concerning the place of art and creativity. Today, controlling the narrative is the mainstay of politics, media, and marketing; that control of the narrative has entered art when art seeks to explain its reason and its use. *What is art* is less of a general concern of the wider discourse concerning art and creativity than *Why art.*

In this dissertation, I view creativity and art as not just being part of being human but also as an inverse operation within us that reveals our ignorance of being ignorant. In other words, creativity is not an act by which we perform or interact with our world to form something new; creativity is a process (a process that interfaces an individual's internal connection between mind and body with the external environmental and social landscapes) that irrupts into the ignorance of our ignorance and reveals to use that we don't know something, thereby opening a space for us to investigate that unknown. As we shall see in Chapter Three, Dystopia Futuristic, that irruption occurs at a very visceral and emotional psychological level to break into a distension of ourselves, to use Debord's terms, that is a false consciousness, to use Sartre's terms, in a simulacra of a hyperreality, to use Baudrillard's terms. Suffice it to say here, concerning *what is creativity*, creativity has been removed from us, placed at a distance as if apart, not a part, of us. It is an alienation of ourselves through not the commodification of art or the person, but through a delusion that we are not creative people. Indeed, as a side anecdote, I seem to hear more and more from students the recurrent phrase "oh, I am not artistic," to which I ask, "So you aren't creative?" and they respond, "Well, I wouldn't say *that*." Creativity seems inexorably tied to our sense of who we are, in the same manner that many people might say that "I am not that smart"

while in the next breath denying that they are dumb. It is in the gap from "I am not this" to "well, I am not that (because that is a negative)" that I think people are caught. They are inculcated into the wider cultural view that art is, on the one hand, flakey or pretentious, on the other hand, interesting, but not needful, and on the third hand needful only in specific situations. Only in art and creativity can we have three hands.

This dissertation leads from two ideas among all of the above discussions of creativity: 1) we are all creative, barring any mental disability that psychologically or physiologically limits or prevents creativity, and 2) creativity is inexorably tied with self-identity. In one manner we can have a discussion that creativity is the marker between self-esteem and self-actualization. I linger on Maslow for a moment there, and only a moment, as this is not a psychological-centered dissertation, though this dissertation does enter the language of body cognition later on. A lay version of Maslow is that a person climbs the pyramid from basic survival to self-actualization, and the general conception is that if a self-actualizing person were to be thrown into a survivalist situation, some form of amnesia or anosognosis would occur and everything above basic survival would no longer matter. What occurs, though, is that the self-actualized is living across layers, embroiled in a survivalist milieu while still having that self-esteem and self-actualizing. In a non-survivalist milieu, a person would still have to contend with many different tensions concerning "what is art" that affect creativity's inexorable connection to self-identity.

Art and Craft

Any foray into discussion posts or bulletin boards on the Internet, and the tensions concerning art become readily apparent. There is a belief among the wider culture that high art occurs only in and for those enmeshed in a high culture and that the "evolved," as the bumper stickers announce, are the creative ones. Popular shows such as the Tosh.O and sites such as HighSnobiety reiterate that view of art as high culture through their ironic style of attacking high art. Any particular irony helps maintain the status of the thing it seeks to be ironic about; if the original item or idea fades from our cultural memory, the irony of that item or idea (ironically) is no longer ironic. Some discussion of high society and high art is not meant to be ironic, yet may seem so, such as Visitflorida.com that suggests "I could easily spend my days strolling galleries filled with high art and spend my evenings sampling the best of St. Petersburg's high society life" (Chalmers). Being cosmopolitan, or high society as the article suggests, maintains an American cultural imperative that one must be artistically-minded, or pretend to be artistically-minded, in order to be accepted by that cosmopolitan group, but that social more does not mean that one leads to the other, that strolling galleries leads to a life of creativity or that creativity leads one to strolling galleries of fine art.

Irony against "high art" not only allows "high art" to maintain a station above all other art, but such use of irony reveals a passive aggressive challenge to not only high art but also to anything high on a hierarchy (wealth) in a capitalist society. The dualism of Americans seeking practicality yet ever-reaching for wealth occurs also in American views of art and crafts. High art

is railed at as pretentious or useless, but craft is denigrated to quaint and simple (as discussed more, below). The dualism expressed in the tension of art versus craft is the desire for Americans to be wealthy; thus, the attack of high art is done mostly with ironic methods thus assuring high art maintains its status, which is needful because if one were to increase wealth and enter that higher hierarchical position to buy such art, that person would want it available to them.

If high art equals high society, then way down on the pecking order of the creativity hierarchical food chain are those who do "crafts," as if woodworking, needlepoint, quilting or the myriad of many types of craftsmanship are considered to be replicable art, and thus not the true creative spirit of high art. As a support for the popular argument of arts versus crafts we need look no further than thousands of Arts and Crafts shows across the nation in large and small towns. There is an "and" in the title—they are two distinct entities, arts *and* crafts. Craft usually is of a thing that does something, of which we have an *Everyday Use*, as Alice Walker problematizes. While the arguments may seem to be, as Walker shows in *Everyday Use*, the use *or* artistry of an object, such as quilts, I see the argument as one of positivism's encroachment on creativity, to have, if not verifiable proof of use and purpose, at least rational judgment as to how or why something is materially useful.

Another tension that exists in the separation of high art, folk art, and crafts is the objectification of folk artists and craftsmen as quaint, expressed ever so eloquently by Chuck Palahniuk when he his narrator discusses his own materialism: "I had it all. Even the glass dishes with tiny bubbles and imperfections, proof they were crafted by the honest, simple, hard-working indigenous peoples of... wherever." It is the ellipses that generates the ironic humor and

condensation one may be capable of when looking down on folk art or craft. The ellipses are that gap of which I formerly mentioned--the distension of a person from her own creativity. Alice Walker, *in Everyday Use*, reveals that same type of snobbery when Wangero suggests that those who are lower on a social and economic scale cannot appreciate artistry: "Maggie can't appreciate these quilts! . . . She'd probably be backward enough to put them to everyday use." This tension between high art and craft is not caused by merely one class, or one group. There is just as much assailing against high art from those who see it useless, and if not useless, then pretentious. This position holds that while something can be artistic, there is some art that is just meaningless. The following posts on stylecrave.com in response to "The 15 Most Expensive Paintings in the World" by Mike Payne reveal some of those views of art as useless or pretentious:

> From poster Tal Anish: "What a load of Pollocks !! I can think of many better ways to spend $140m... yachts, houses, jets, cars, oh and helping the poor and needy of course!"
>
> From poster Anon: "Fucking ridiculous. The most expensive painting is one of the worst paintings I've ever seen. Talentless bullshit."

Usually, this tension does not come from a rejection of ideals or of certain politics but a rejection of the suggestion that high art is better.

> From poster Vincent Van Gogh: "How is that Jackson Pollock painting better than my shit."

Sometimes the direction of this argument concerns the lack of representation in high art:

> From poster Becky: "I am tired of people bitching about Jackson Pollock. Everyone thinks he just chucked paint at a canvas but that couldn't be farther from the truth. His paintings were all about action, chaos, and movement. No, it doesn't look like anything, it doesn't have to. And if you've ever tried to paint with his drip-style you know that although you can come up with something interesting, it's not that easy to make paintings as captivating and energizing as his are. People who doubt it should really try to see some of his work in real life -- it is amazing."

Pollock, himself, seemed to stand against high art, as he suggests when responding to whether or not art should have a meaning: "It's just like looking at a bed of flowers. You don't tear your hair out over what it means" (Solomon).

The first tension, discussed above, is that art is an evolved sensibility and the second tension, as discussed above, separates arts from crafts. The third tension is a watered down popularized version of consumption, conspicuous consumption, and commodification. I am not denouncing the theoretical understanding of art through people's consumptive ends. There are of course many theorists and articles that discuss the intersections of economics, consumption, and art, which aid in our understanding of how those domains intersect, but here the tension I refer to is the lesser intellectual view that floats around coffee houses, that attacks high art with a denouncement of consumption, as if consumption, even conspicuous consumption, is a bad thing for a culture to have. This tension always rings in my ears as one of lofty intellectualism masked as popularism and a bigotry based on material items rather than a discussion of the place and role of material items in our lives, such as *a New York Times* article in December 2009 that cites a

2005 survey that "showed that four out of five Americans think the holidays are too materialistic" (Schulten). Many Americans continue a tradition of denigrating Christmas as materialism without any related, or counter, discussion that concerns theories on sociology and gift exchanges.

This tension with high art also can easily dissolve into attacks supported by Neo-Luddite ideas or anti-capitalist sentiments, rich with their own fears or a moral sense of what should be. I address the Neo-Luddites more in Chapter Three, Dystopia, Survival, and Repurposing, but here, the discussion concerns the use of creativity. These three tensions of art versus craft continue into another tension that has a long history and has shaped the American view of craft versus art: inventor versus artist.

Inventor Versus Artist

This dissertation does not seek to label and identify exact differences in those two terms; rather, the aim is to show how, as Ruth Oldenziel suggests, "an invention is an invention whether it be for house or mill-work, and the kind of mental quality it requires is the same" (Oldenziel 36). This dissertation focuses on the traditional distinctions of invention and artistry according to that *kind of mental quality*. Oldenziel and Ida Tarbell both detail discussions of the male dominance of science and similar terms, but here the aim is to understand the space that both Oldenzeil and Tarbell point toward, a space where technology and inventiveness are "not necessarily understood to be machine bound."

Traditionally, and even for many people today, there are discrete views of the inventor and the artist. An inventor has the air of science, of fabricating something that is useful to a people. An artist's art has no *use*. The inventor is hailed as scientific, which is an acceptable value. The artist uses no science. The inventors creation adds to our practical everyday lives. The artist's art does nothing for every day lived experience. The things invented directly shape our world, and such a shaping usually takes no theoretical thinking or critical analysis. Why air bags? They save lives; enough said. The artist, though, is looked at as having an ancillary role to the inventor. The artist either makes something that is not needed for daily lived experience or the artist adds to an invention, making it more enjoyable. The addition (the artistry), though, can be taken away, and the invention still has its place and use, but the invention cannot be eliminated while leaving the artistry in place; people find little to no use of an add-on without the original invention. The wider discourse concerns the perception of the noble inventor and inventions and the lesser place of art and artists. As we shall see in Chapter Three, the argument of inventor and artist is usually framed in their products, and specifically in "what does or can the product do?" Invention mostly answers in a Matter-based domain while artists mostly answer in a Mental or Process domain. As discussed further in Chapter Three, the tension is not really about inventor versus artist but the confusion of the domains.

Invention, as suggested later in Chapter Two, History, takes procedure, wealth of a lab or work area, and the time to produce experiments, all generated from the thought of trying to create a specific something for a specific purpose. Of course, many times inventions occur by accident, as one seeks one answer, a new method or thing serendipitously occurs. In *Happy*

Accidents: Serendipity in Modern Medical Breakthroughs; When Scientists Find What They Are Not Looking For, Morton Meyers suggests an "essence of serendipity." Serendipity refers to "searching for something but stumbling upon an unexpected finding of even greater value . . . it is a process in which a chance event is seized upon by a creative person who chooses to pay attention to the event, unravel its mystery, and find a proper application for it" (xiii). However, even that form of discovery occurs due to the inventive process, which needs place, time, and leisure.

Rousseau suggests that humans' first yoke was leisure: "The simplicity and solitude of man's life in this new condition, the paucity of his wants, and the implements he had invented to satisfy them, left him a great deal of leisure, which he employed to furnish himself with many conveniences unknown to his fathers; and this was the first yoke he inadvertently imposed on himself." The more we have of it, the more we work to secure even greater leisure. Thus we have this staging of existence from survival as primal living to a more secure and safe place where we have the time and leisure to pursue further knowledge, if not academic knowledge at least knowledge concerning the world in which they live. Throughout this dissertation, I suggest that before a person or society can have leisure of space and time for the inventive process, people must utilize old objects in new ways in order to create that leisure space wherein they can invent. The bridge over that gap from survival to invention needs *a kind of mental quality* that informs not only ourselves but also our reshaping of our material landscapes, which is the crux of this dissertation, and in as much, I would take a moment here to further paint a picture of those

landscapes, but I do so with a hypothetical historical moment, not through anthropological evidence.

Given that a person or peoples have a set amount of material items and thoughts on uses for those items in a survival or primitive situation, those people's civilization would be in stasis as far as developing their civilization. A synchronic analysis of these peoples would reveal they have x number of items and x number of uses for those items. Given the Dunning-Kruger effect, they would be ignorant of their own ignorance of how to further use existing items or to create new items. They might not even have an understanding of unknown questions. For instance, how can we store burning embers so we can carry them with us? For early peoples that thought occurred sometime in history, but it was not *a priori* to intelligence itself. In other words, there was a period of time that people lived when they were ignorant of that very question of carrying burning embers. To invent something to put the embers in, such as a clay vessel, takes time and leisure. Yet, the mere act of relighting or maintaining a fire impeded on that leisure time, and such a primitive situation (having x items with only x uses) would not allow them time for extensive experimentation into new items, or, in this example, new ways of storing burning embers. For those peoples to create a space for inventiveness to occur (in order to create that container for the ember), they would have had to have used what they already had, but find a new use for that previously existing object. They would have had to work with the same x number of objects but increased the x number of *uses* for those objects, thus opening a space of leisure wherein they could experiment for a better item, adding to the x number of items.

Between survival and leisure there is a liminal space of re-using old items in new ways. This appropriation of an object's use toward a different use than what it was intended is repurposing.

The rise and fall of economies and political systems can curtail leisure time and cause a disruption of inventiveness (loss of time, money, and leisure). Chapter Three, Dystopia, Survival, and Repurposing, further discusses how the change from a pure survival situation to a society that invents needs a period of repurposing. Chapter Two, History, discusses how if we want to make a distinction between craft and art, we need not look to the purpose of a product but to the repurposing introduced into the process. If the move is from survival through a liminal space of repurposing and into leisure/inventiveness, folk art dwells on the edge in the liminal space between survival of repurposing and inventiveness of art.

Folk art itself has a wide and varied meaning, but here I would like to focus on one form of folk art: steam punk. Immediately, the idea that steam punk is folk art might be disconcerting to those familiar with folk art. However, if we consider folk art to be informed by its ability to repurpose objects, steam punk is indeed a form of folk art. Steam punk concerns the revision of history as if the leap to combustion engines and nuclear power never occurred. This fictional alternate future is just as complex and technologically advanced; however, the machinery is just that, machine, steam driven or mechanistic. Steam punk, by way of example, is the Babbage machine exponentially advanced to handle the most complex equations that computers can handle today. Within steam punk narratives, themselves, the items are invented, but within our world, people create art with a steam punk style, and these are usually repurposed items formed together to create either static statues or actual moving art pieces. Within the steam punk genre

there seems to exist a tension across a spectrum, with futurism on one side, steam punk in the center, and industrialism on the other side.

Anything that is too cleanly metallic and appears to be formed from raw materials is cast as futurism; on the other side, if the object is strictly functional and drab in appearance, it is industrial. To *steam punk* something, as a verb, is to repurpose items and objects from other sources and incorporate them into the piece, centering the piece as functional (in the sense that the machinery allows us to see how it functions) and yet elegant enough through its reuse of other items to avoid futurism. In other folk art, not every piece and not every artist repurposes; however, many do, even if the repurposing is to use an old piece of wood to paint on or the bones of animals to create images of art. In Chapter Two, History, I discuss the variety of contemporary ways in which many historically marginalized people live in that liminal space between survival and leisure and from within that space create folk art.

Intuition

We learn emotionally as well as intellectually, and such an emotional learning is not merely the mind rationalizing experiences but a form of learning through the physical body. Body learning, or embodied cognitive, is not the muscle memory we hear spoken of in sports or music. Muscle memory is training to the point of perfect replication of movement and force. Embodied cognition is the body being part of the process of learning, where rational thought and sometimes even rational interfaces with the world are secondary to our perceptions, reflections,

and interactions via a limbic system. The discussion of such a limbic system, of embodied cognition, of body learning, is essential to the discussion of intuition; however, a summary of embodied cognition is best said in the words of Margaret Wilson:

> 1. Cognition is situated. Cognitive activity takes place in the context of a real-world environment, and it inherently involves perception and action.
>
> 2. Cognition is time pressured. We are “mind on the hoof ” (Clark, 1997), and cognition must be understood in terms of how it functions under the pressures of real-time interaction with the environment.
>
> 3. We off-load cognitive work onto the environment. Because of limits on our information-processing abilities (e.g., limits on attention and working memory), we exploit the environment to reduce the cognitive workload. We make the environment hold or even manipulate information for us, and we harvest that information only on a need to know basis.
>
> 4. The environment is part of the cognitive system. The information flow between mind and world is so dense and continuous that, for scientists studying the nature of cognitive activity, the mind alone is not a meaningful unit of analysis.
>
> 5. Cognition is for action. The function of the mind is to guide action, and cognitive mechanisms such as perception and memory must be understood in terms of their ultimate contribution to situation-appropriate behavior.
>
> 6. Off-line cognition is body based. Even when decoupled from the environment, the activity of the mind is grounded in mechanisms that evolved for interaction

> with the environment—that is, mechanisms of sensory processing and motor control. (626)

Usually intuition suggests a gut feeling, and often the word's usage suggests precognition or empathic mental ability, as if one feels something that happened to a geographically distant or temporally distant person. This dissertation does not follow into those usages of the word *intuition*. *Intuition* is the word used to suggest body learning, be that contextualizing information (such as preparing for a test in the very space that the test will be given) to learning how to cut wood through sound and feel of the process not through conscious control of body movement. Intuition is a moment of mental and bodily knowledge coming to bear on a situation and causing a flash of insight on how to cross domains of subjects or of ontological states (see Chapter Three for more on ontological states). However, this intuitive flash is not merely a spark of thought revealing something to our conscious mind; intuition is a continuing process, a process that *can* occur with automaticity, and as this dissertation suggests, the same kind of mental quality that is used in repurposing, an automaticity of intuitive learning, is the kind of mental quality needed to be digitally literate.

Automaticity

One aim of this dissertation is not only to discuss digital thinking as *a kind of mental quality* that has been and is used by historical marginalized people as a method to repurpose items and ideas, but also to show how that *kind of mental quality* is a continual process.

Automaticity is not repetitive movement such as muscle memory or the placement of fingers on a string. Automaticity occurs subconsciously (Goldstein, Irwin). Automaticity is the performance of skills without conscious attention, as are many common everyday events, such as Benjamin Bloom shows in "Automaticity: the Hands and Feet of Genius":

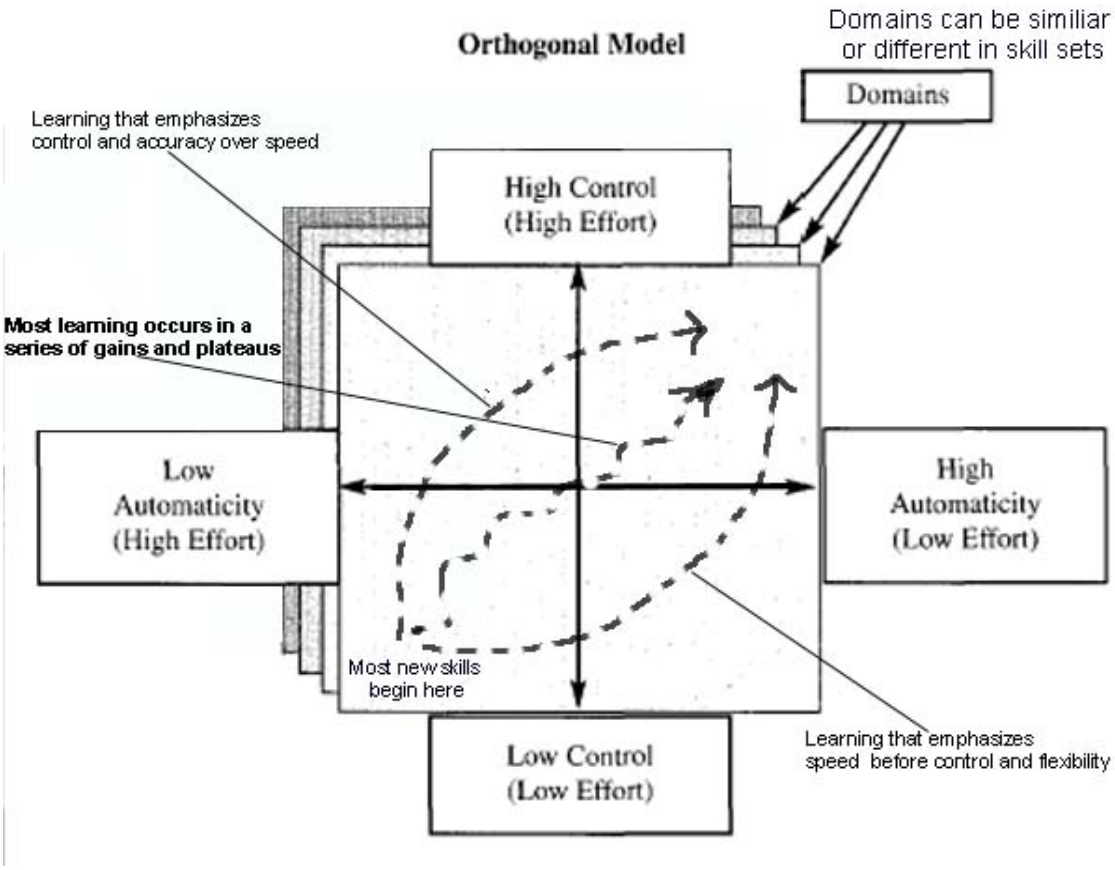
Table 1. Some Possible Automated Processes

Bodily control	Household skills	Communication skills	Man-instrument	Man-machine	Sports
eating	sewing	speaking	musical-instruments	driving	swimming
walking	knitting	reading	singing (trained)	flying	diving
running	ironing	writing	dancing (trained)	motor-boating	running
jumping	mopping	Braille	drawing	motor-cycling	jumping
catching	sweeping	deaf sign-language	painting		gymnastics
throwing	use of spoon	computer-languages	sculpturing		tennis
stair climbing	fork	shorthand	juggling		handball
stair descending	knife		typing		skating
dressing	hammering		adding-machine		cycling
washing	sawing		Morse code-telegraphy		skateboard
	raking				wind-surfing
					skiing
					sailboating

Source: Bloom, Benjamin

Figure 2: Some Possible Automated Processes

Automaticity, itself, is a questionable term; much of the literature concerning automaticity questions the validity of automaticity versus controlled thinking. There is a question of how automaticity and controlled thinking occur together, whether they are in opposition to one another on a continuum, or if they work interactively. Bebko et al.'s model asserts a connection between automaticity and controlled thinking, rather than a more traditional approach which states one or the other operates in our minds at any given time:



Source: Bebko, James M., Jenny L. Denmark, Nance Im-Bolter, and Angie MacKewn

Figure 3: Orthogonal Model

Bebko et al.'s view of the interaction of automaticity and controlled thinking is that both increase with training/learning. However, if we experience learning that emphasizes control and accuracy over speed, we will move through upper left quadrant toward both (meaning, for a time, we will have a low automaticity). If we have a learning experience of speed over control and flexibility, we will move through the lower right quadrant toward both (meaning, for a time, we will have low controlled thinking). Most training, Bebko et al. states, is usually a series of gains and plateaus leading through the intersection of both.

Some theories contrast with automaticity. In "distraction theory," the ability to perform a task degrades when one's attention shifts to irrelevant thoughts since these irrelevant thoughts reduce the amount of working memory one can use to attend to a task: "This theory has been supported by research in which very anxious subjects performed worse than less anxious subjects and implies that anxiety reduces working-memory capacity" (Johnson, Rebecca). However, the "explicit monitoring theory" suggests that anxiety of performance increases self-awareness, focusing attention on the processes of the task, and this type of learning is "automaticity" or "performing outside the working memory" (Johnson, Rebecca). When using automatic unconscious thinking (or automaticity), we not only can increase performance in a task, but we also have more choices to use when we do activate conscious thought.

One example of not using automaticity but of using controlled thinking which causes less performance in a task is that of driving a car. According to Bebko, we use "controlled processing, which is associated with slow, deliberate, and effortful processing (such as a beginning driver for whom the task of driving is mentally exhausting because each component of the task must be deliberately considered and attended to). The processing becomes less deliberate and effortful as the skill becomes more automatized." If we can be skilled enough to drive a car with unconscious thought then when we need conscious thought, such as a deer darting into our path, we have more choices available concerning how to react to that situation (Bebko et al. 472). Kelso and Zanone support this view of many choices by suggesting that we have a stored repertoire of behaviors to choose from when required. Both of them agree with the concept of Bebko's diagram: we move toward control and automaticity at the same time, not toward one and

away from another. As Bebko suggests, "the greater repertoire of related skills should be available...so the controlled processing required by the situation is likely to be more effective and successful" (Bebko et al. 473). If we can better establish an understanding of an automaticity of creativity, we would have even more creative choice available when using controlled processing to create.

Different disciplines use variations of automaticity in learning concepts. For behavioral psychologists studying motor control, there are three stages of learning: "(a) The first (cognitive) stage, in which learners are struggling, for example, to understand instructions and to formulate strategies; (b) the second (associative) stage, which involves the proceduralizing of task strategies in a way that will enhance performance and reduce errors; and (c) the final (autonomous) stage, during which the task becomes automated and can be completed with little attentional effort" (Bebko et al. 473).

For Cowdroy and de Graaff in Education, there are a limited number of ways a person is trained.

Traditions of "teaching creativity"	Pedagogy involved	Learning Focus of Tradition
Gift (inspiration)	Opposed to formal education	Schematization
Innate ability	Can only be nurtured through "followship," not taught	Schematization and Execution
Studio apprenticeship	Masters pass on values and abilities	Schematization and Execution
Reproductions of master's works	mimicry causes creativity	Execution

Source: Cowdry, Rob and Erik de Graff

Figure 4: Traditions of "Teaching Creativity"

In Cowdroy and de Graaff's concept, creativity is expressed as four possible sources: learning through being born creative, following the ways of those who are creative, learning the tools and tricks of a creative person, and mimicking someone's creative endeavors. Cowdroy and de Graaff's grid appears to use controlled thinking to form automaticity, such as the controlled thinking of mimicry or of learning the use of tools creating an automatic response after many repetitions. If we apply Bebko's graph to Cowdroy and de Graaff's grid, we can see that a specific training in creativity is not essential to being creative. Regardless of the route taken toward creativity, one key to creativity is the interaction of automaticity and controlled thinking through experience. Experience, then, is not merely a storehouse of information, but a body of information, literally. The body becomes involved in the actions, and body and mind handle situations through a combination of controlled and automatic responses.

Conductive Logic and Neurophysiology

Repurposing is not only about creativity but about a non-rational method of thinking. What neurophysiologists find is that conductive thinking has an important role in our thinking. We can identify this form of conductive thinking in a typical experience. In pre-sleep, our minds leap from one idea to the next.

> What is tomorrow? Tuesday. Ah, class in the morning. Ugh, class. Then just one more semester to graduate. I can go to Japan then. How do they make sushi? Kelp. I wonder where that coffee table oceanography book with the big undersea pictures went. Living undersea would be cool. SeaQuest...ugh. We seeing Terminator this weekend?

While that person could speak those thoughts aloud and perhaps we could draw rational connections between them, that person is not rationally or consciously drawing inductive or deductive connections to the next thought. The flow of thoughts has more to do with personal experiences than scientific rational thinking. "Flow" is a term used Mihaly Csikzentmihalyi to suggest the state one reaches that is an "optimal experience," and from his description it seems to merge doing with Maslow's idea of a plateau experience; according to Csikzentmihalyi: "It is what the sailor holding a tight course feels when the wind whips through her hair, when the boat lunges through the waves like a colt—sails, hull, wind, and sea humming a harmony that vibrates in the sailor's veins" (3). When we flow in thought, we can always stop and then apply a rational mind to what we had thought. That person in the example above can stop and think "Why am I

thinking of the Terminator movie," and by tracing back, conductively, the initial thought of *what is tomorrow* emerges again.

What neurophysiology has discovered in the last two decades is that all of thinking occurs first in that wash of conductivity, in chaos. An all too simplistic metaphor for chaos is that a butterfly beats its wings in Tokyo which causes a tornado in Iowa, yet this idea “really misses the target” because it focuses on error inflation without focusing on “concomitant overall order,” and both are needed for chaos theory (Smith, Peter 16). In product-science, we ignore the small errors, such as those considering time which is too great of a range (Gleick 15). Plastic manufacturing can disregard what will happen to the plastic in a thousand years when trying to make a container whose use may not exceed ten years. If a plastic container will break down in the sun in one hundred years, but we only need a container to last ten years, the effect of that 100 year degradation is so negligible as to not be important. Chaos, however, is a process method and does not discount those small errors. In chaos, the process has instability at every point, and small errors can occur at any time (Gleick 19). As a general gloss of chaos concerning process and product, “Chaos is a science of process rather than a state, of becoming rather than being” (Gleick 5). Because it is a process rather than a state, often the numbers in chaos are not useful to specific fields of study.

Physicists like differential equations, and the simpler the better. These kinds of equations represent a linear continuum. A trajectory plotted on a parabola is *seemingly* a process, especially because we plot the movement over time and distance. Even though a trajectory is a measuring of movement, such a measure is not a process. Small eddies in the air currents are discounted in

those equations; however, in chaos, everything may affect the trajectory. The eddies in the air seemingly would not affect a missile that soars around the world and removes the center pole from a tent in another country. Our military can still rely on product-science mathematics to find the target. Yet, if we want to ever understand how one complex society arrived at lobbing bombs at another complex society, we need more than product-science.

To study a waterfall with product science, we would study the rate of the water flow, perhaps height of the falls, and from these we could arrive at figures for energy output. We could build a power station to harness the waterfall's power (or a wheel mill) and use product science to make electricity or grist corn. However, we could go no farther. We would have difficulty writing a computer program that shows the intricacy and randomness of the flowing water. We would have to rely on an algorithm to change the flow, to simulate, but not replicate, the waterfall. The subject, waterfall, is not important enough for our exact replication of it. However, if we are to understand complex systems such as animal populations, we need more than mere algorithms. We need a science that includes randomness and non-linearity.

The most common metaphor for Chaos theory is the butterfly effect, which is a “sensitive dependence on initial conditions,” and this sensitivity connects the small scale system with a larger scale system. However the connection is not causal, and thus non-linear. Nonlinear mathematical expressions are not proportional, and they cannot be added together or solved. This non-proportionality, non-lineal, part of chaos means that the very act of working an equation randomly changes the equation. Outside of mathematics, we can think of small children who play a game, and continually, without any logic or design, add rules as the game continues. The

children do not have in their minds a final outcome to the game when they change the rules, nor are the rules preset to enter the game after a certain event. The game changes the rules.

As mentioned earlier, the butterfly effect only seems to suggest error inflation, but chaos also includes a tight confinement as well. If we imagine the generative power of a star, we can note that all stars are held between exploding outward and the gravitation that pulls them inward. Chaos also has similar pushes and pulls. Errors can exponentially rise into a system, such as the small butterfly wings stirring tiny eddies in the air which affects the whole world and causes a tornado in Iowa. We cannot find within a system a continuous scattering of errors, for intervals of time between errors may also have periods of linear activity (Gleick 91). However, chaotic systems are confined by attractors. An attractor means that points in a phase space converge toward a certain point, though some models may have points dispersing away from each other (such as the stars in a universe) in which case we say that the attractor is infinity (Gleick 14). Concerning stars in the universe and parts of a system in chaos theory, interaction occurs because the “trajectories through nearby points must tend to spread further apart from each other” [sic] while at the same time “trajectories need to fold back on themselves they keep in bounds” (Smith, Peter 20). Within a system is the continuous rise and fall of errors, which upon reaching a critical level randomly alters the system.

The building of errors in a system is called “noise” in chaos theory. Hans Liljenstrom, a biophysicist, in "Cognition and the Efficiency of Neural Processes" reveals how noise is a “continuous spontaneous activity” which changes the attractor (190). When the “noise” increases enough, the system randomly changes. Without noise we would say that a system is deterministic

(Smith, Peter 18). A pun filled example of noise and attractors is the use of the word rhubarb in theatre. When directing a large scene of people in a social setting, problems may arise if the actors simply say anything to one another to replicate the sounds of a large gathering talking. Having each person recite assigned lines would cause too much confusion. Theatre has responded to this problem with the word "rhubarb." We can have our cast of extras fill in the background noise of a large gathering's conversation by having everyone say the word "rhubarb." If all the actors said the word together the conversation would turn into a chant, thus the actors have "conversations" with each other, including vocal inflection and full sentences while only saying the word "rhubarb." The attractor is people aiming at the sound of a conversation. The "noise" is the noise of the collective sound. The noise helps each person determine if she is being too loud, not loud enough, speaking too much or not speaking enough. The actors can then change their patterns of using the word "rhubarb" which modifies the noise. The attractor (make conversation) functions as long as the noise of the overall conversation can be heard. Without the attractor of "make conversation" the scene may not appear as a social gathering with dozens of conversations occurring. Without the noise, (plug the ears of the actors) the setting would fail again, perhaps becoming too loud, or too quiet.

In an actual social setting, we can also find patterns of rising and falling voices. At times, the sound in a room will rise, and at other times it will become quieter. When the room is quieter, not everyone has become quiet, and when the room is noisy, not everyone has become louder. Yet, within each conversation, if we focused our microphone on one, we find degrees of loudness and quietness. Again, the quietness or loudness rises or falls from the noise, not just

from the attractor of carrying on the conversation. Chaos theory suggests that the individual conversations do not have a cause and effect relationship with the sound of the whole room, but that the patterns of loudness and quietness in each conversation has the same pattern as the sound in the whole room. Again, chaos does not say simply that each conversation affects the sound of the room, but that the patterns in each conversation can be found in the pattern of the sound of the whole room, and those patterns are not necessarily one affecting the other. This idea of the attractor focusing points and noise creating randomness is called recursion.

Recursion is the "self-similarity in symmetry across scale" where there is a "pattern inside a pattern" and those patterns affect one another (Gleick 107). Using non-chaos science, product science, we would graph the sound in the room, and the sound of a few if not all of the conversations. In such a graph, we would show how the rise and fall of sound in conversations occurs before, after, or exactly during the rise and fall of sound in the room. This idea concerns the traditional science of focusing on two -major categories: how big and how long? This bias in conceptualizing the world is acceptable in some areas of scientific pursuit that seek to understand differences in scales, such as with animal bone structure which changes according to animal size; however, in some areas of scientific study, such as with earthquakes or clouds, the irregularity is the scale and thus free of categories (Gleick 107). In the social setting, the recursive association of sound would find series of random changes in the whole sound level of the room, and we would find a similar pattern in the sound level within the smaller conversations. However, while both affect each other, one does not cause the other. With recursion, chaos suggests that "cycles

in which a system's output at a given moment is used as input of the following moment" (Aula 197).

Thus, within a system, an error exponentially builds, creating a "wall of constancy" (Goldstein, Jeffery 170). The attractors focus the system within those walls, and as the system moves forward in time, the noise (error inflation) increases, and at a "critical moment" the noise radically alters the linear path of the system. The system bifurcates toward a new attractor, which is not causal from the former attractor. Next, errors exponentially rise again, and these errors are also not causal to the former errors. The noise feeds the attractors, the attractors feed the noise, and again a critical moment causes a random change (Goldstein, Jeffery 170). This continual association of noise to attractor is called emergence.

Usually when we think of emergence we think of something coming from something else in the sense of cause and effect, like a chick emerging from an egg. Causality and chaos have some correlation, which Goldstein covers in his four ideas of causality within chaos (pattern complexifying operations, criticalization of parameter values, appropriation of randomness, and actualization of potentials). His text covers them well enough without detailing them here. The sum of those points is that causality does not beget chaos, but may exist within chaos, at varying points of a system. Goldstein suggests that a new understanding of causality must be "understood in terms of patterns" (165). The linear distinction of cause and effect is too simplistic for many systems, for the effect exists within the cause before the effect occurs. The effect of the sun exploding in the distant future is within the process of the sun at this moment.

Emergence in a “purely mathematical system undergoes bifurcation and the transition from simpler to more complex attractors” (166). In other words, inherent in any system is a self ordering, self organizing, generative process. Traditional thinking suggests that we merely perceive order in chaos, but from mathematical models to real world applications, chaos theory reveals that the more complex a system is, the more likely noise and attractors will cause an emergence of an some ordered state for some length of time. This change in the system, this self-organizing generative emergence, suggests that “globally there is intentional collective behavior arising from complex nonlinear interactions,” yet according to chaos theory, “there is no ‘goal’ or ‘plan’ of some supervising authority like ‘God’ or ‘Nature’” (Mainzer 161).

Thinking, consciousness, itself is a subject of chaos and neurophysiology. Biochemically, neurophysiologists are beginning to understand that the mind works more like a rippling wave than as an organ connecting isolated packets of information. What we call conscious thought or rational thought is actually an imposition into that chaos. What we are doing in that conductive thinking is leaping across domains of information and experience. The rational mind if asked to organize experience and information would not choose all of that above person's thoughts as one domain. Looking back over that conductive thought trace, we could say that the thoughts leapt from a domain of future preparation to a domain of work, to education, to travel, to food, to botany, to books, to geography. Another way of seeing how random that conductive thought process is would be to give that first question to a group of people and to have them write down what ever comes to mind and to not stop but to let the ideas and images pour forth, what surrealists called automatic writing. Each person would be able to explain why most of what he

or she wrote entered each mind, but if we gave the first question and the last statement only to someone else, they would not be able to follow the same path. And that activity of painting in the pieces missing from someone else's conductive thinking would be a scientific reasoning. This exercise is not merely a praxis in subjectivity of conductive thinking, but a training of the automaticity of rational and limbic thinking.

The place of conductive thinking in repurposing is that conductive thinking is the connection of disparate ideas, resulting in producing new ways of thinking, new ideas, or new objects. Conductive thinking allows us to leap from one idea to the next, across domains. By rationally investigating those leaps, those connections, we can draw new uses and new ideas. That all works well in the experiments of surrealists and in the leisure of invention; however, in survival situations, where the leisure of time is not so fruitful, conductive thinking allows us to connect old things with new uses: repurposing.

What occurs is not merely necessity breeding repurposing, but a training that continues from one generation to the next, as has been done, and is done, in a variety of places and times. For most of human history, women, especially those not of higher classes, have perpetuated a training of repurposing items. Sometimes called household hints, they filled women's magazines and were a passed on heritage from mother to daughter. How to remove red wine from carpet. How to remove gum from hair. These were not *male* experimental sciences resulting in the advance of knowledge, but real world, every day uses. In Chapter Two, History, I cover the places and times that repurposing occurred, revealing a long history of creativity and training in automaticity among historically marginalized people.

CHAPTER TWO: HISTORY, PAST AND PRESENT REPURPOSING

Source: Lupton, Ellen

Figure 5: Designing a Better Tool from Existing Objects

"The woman above has set her tub on a chair, bringing it within her reach and thus designing a better tool out of existing domestic objects." from *Mechanical Brides: Women and Machines from Home and Office* (Lupton 20).

Each of the unlabeled lists below come from different sources: one comes from helpful household hints passed from woman to woman, the other comes from a current e-mail passed among people and housed on thousands of websites. The ones that are passed among women is the beginning of a larger collection. The aim of this collection is more than the current usefulness of each household hint; the aim of this collection is to compile a massive record of distributed information that is not just useful but carries with it a training in conductive thinking. These hints were money, energy, and time-saving practical hints that, like the caption of the picture above, reveal how women would design "a better tool out of existing domestic objects:"

List A

1. Ant traps: honey & boric acid in bottle or jar caps
2. Clean Windows: Old newspapers and vinegar
3. Tanning oil: baby oil
4. Jellyfish sting: pee on sting, urea neutralizes the poison
5. Toothpaste: baking soda
6. Deodorant: corn starch
7. Kill fleas: Sprinkle Borax in the carpet and on fabric
8. Roach deterrent: bay leaves along windows and under counters
9. Dry Shampoo: Sprinkle in flour or corn starch (absorbing oil) comb out
10. Wrinkle remover: hemorrhoid medication
11. Warts: Milkweed on warts to dissolve
12. Air freshener: Wipe bleach or lemon cleaner on a door jamb so the house smells clean

List B

1. Sore throat: mix equal parts vinegar and honey; take 1 Tbl, 6 times a day
2. Burns: toothpaste
3. Skin blemishes: Honey on blemish overnight
4. Urinary infection: Alka-Seltzer. Orally, 2 in water
5. Toenail fungus: Listerine bath for toes

6. Flying bug killer: cleaning spray, 409
7. Arthritis pain: cover in warm Oats in water for relief
8. Mites in pet ears: corn oil on cotton ball, massaged inside ears. Three times/day
9. Bruises: Vinegar soaked cotton ball on bruise for one hour
10. Boil cure: tomato paste as compress
11. Remove splinter: white glue, dry, peel off
12. Achy muscles: 1 Tbl horseradish/ 1 c. of olive oil. Let stand 30 min, apply as massage oil

Though we can intuit that these hints saved money, determining the economic value of dollars not spent on other products, the ease of physical labor, and the amount of time saved would be an interesting calculation to derive from a massive record of these hints. What interests me more than those "savings" is the epistemology imbedded in those hints. Within the uses of these hints, within the interesting underground "trade" of these hints, within the bonds formed among women from the transmission of these hints, a way of thinking exists that is scientific, lab-centered, and creative, yet not framed in inductive or deductive reasoning nor in a knowledge-seeking, scientific process.

These two lists have much in common: neither is based on empirical scientific evidence, the users of both lists swear by the efficacy of each item, and both lists have items that were made for some other purpose (such as Colgate which was meant for teeth, not burns). Most of the items on both lists were not studied in an official lab for their uses as given above, but by

their presence, continually passed on from woman to woman or across the Internet, they have been tested in the "lab" of the kitchen for many decades, if not centuries. Testimonials of a hint's efficacy usually accompany the hints, in both face-to-face discussions and on digital mediums.

Overall, both lists have this in epistemological connection: they are the dissemination of repurposed items and concepts, not for the sake of profit or ideology, but for the sake of bettering real lived experience, and it is here in the transmission of these repurposed items that a technology comes to us from the past and carries forth: that technology is not the thing itself that we make or use; technology is a way of thinking about things that inspires creativity to put a thing to new uses, or in the words of Ellen Lupton to design a better tool from other domestic objects.

The repurposing of these items is not recycling or reusing. *Recycling* often refers to returning some material back to its raw state to recast it into another item, and *reuse* means to reuse something in a similar manner for which it was first created. *Repurposing*, such as the hints in the lists above, is using an item or a process in a way that is different from its intended use. Glancing over those two lists, most people would have difficulty deciding which list was disseminated among women in face-to-face conversations and which comes from an email currently sent among people on the web (and found housed on thousands of websites)? The first list comes from a rural Floridian family, some of the hints coming directly from that family's 80-year-old matriarch that she had heard when she was younger. The second list is from the web, but we those repurposings were not thought of *for* the internet, rather the internet became the new medium by which they are disseminated.

Repurposing the Past: Technology as Network, not as Things

Ruth Oldenziel discusses how "Well into the twentieth century, inventive genius was not necessarily understood to be machine bound" (26), and Ellen Lupton, in her book *Mechanical Brides*, suggests that "to study design from a feminist perspective, one must look at the social framework in which objects are put to work" (11). Those two views come together as the idea that technology is about networks, not about things. Repurposing, too, then, is about networks, and not merely about the things utilized. A social framework of people passing household hints to each other is not merely about the worth of the hints themselves, but also about the training that other women (and some men) received in a way of thinking that leads to their own repurposing of items and processes. Maryln Katz discusses that as far back as Ancient Greece, Athenian "girls' training was in all likelihood entrusted to their mothers, who instructed them in the domestic arts and 'womanly wisdom'" (74). Lupton's work does not focus on early repurposing but on the loss of repurposing as machines and appliances entered the household.

The ideology of domestic appliances is a "powerful ideology that limits the ambition of middle class housewives" (9). Lupton reveals how common home appliances helped shape a product minded view of technology that aimed sales at women. Early telephone executives at first "dismissed women's talk as 'idle chatter' that tied up the lines" (38). But by the 1920s, women's use of the phone had risen to such an extent that "AT&T marketers realized they should stimulate rather than denigrate female phone use" (38). Through the pull of women to use the phone and the push of companies to sell more phones to women, the phone, and the

conversations women used them for, reinforced the role of women as nurturing (38). From a lens of repurposing though, women repurposed the phone. By AT&T's own admission, they believed the phone was not built or meant for "idle chatter." Yet, women did with the phone what they did with many other items in their lives; they repurposed the phone. Another way of expressing women's repurposing of the phone would be to suggest they re-invented or invented new uses of the phone, but *invention* has its own history and meaning stemming from the late 1800s and the 1900s when *inventiveness* became more strictly associated with patents and products.

Ida Tarbell, seeking to counter the idea that inventiveness was a male prerogative in the late 1800s and early 1900s, sought to change the argument about inventiveness and drew from a much older use of the term *inventiveness*. Catering to the, then, standard of the separate-spheres ideology (a view that men and women lived and worked in different spheres--men at a job, women at home--and thus those spheres could not be equated in worth, energy, or accomplishment), Tarbell "rescued women's practical solutions at home as legitimate inventions because they were effective and valuable" (Oldenziel 33). Yet, the practical had no place in, to borrow a phrase from Carroll Pursell, the world of "manly pursuit of invention and engineering." Despite Tarbell's view that "an invention is an invention whether it be for house or mill-work, and the kind of mental quality it requires is the same" (qtd. in Oldenziel 36), *invention* became a term associated with men. Oldenziel, in *Making Technology Masculine*, discusses that inventiveness of which Tarbell speaks, and more specifically how the term was gendered as male. Oldenziel and Tarbell both detail discussions of the male dominance of science and similar terms, but I would rather look to the space that both Oldenzeil and Tarbell point toward, a space

where technology and inventiveness are, in Tarbell's words, a "kind of mental quality" that is, as Oldenzewil suggests, "not necessarily understood to be machine bound." Tarbell was attempting to shift the discourse from *inventions* as things made toward the processes of creation, as I do now in this dissertation.

Seven years after Tarbell, in 1894, Lewis Morgan suggested that women's "ingenuity has been an important element of progress" (qtd. in Oldenziel 39). While he does not suggest it directly, the importance, as we can see now, is not so much in the patentable products, but in the method of invention. Morgan inadvertently suggested that women were inventors by "juxtaposing inventiveness and domestic institutions" such as women's basket weaving (27). However, despite these claims for the equality of thought needed at work or in the home, women's work, and any ingenuity, invention, or repurposing that such work entailed, was marginalized as *just* domestic work, or as stemming from primitive pasts or peoples, and therefore not as important as male generated patents and products.

Currently, some writers have attributed more to the process of invention than simply the products that arose from those processes. Londa Schiebinger's *Nature's Body* and Daniel Headrick's *When Information Came of Age* both discuss how methods and structure of language shaped (and still shape) invention and scientific worldviews. Schiebinger discusses how apes were drawn in modest poses, and how the "great chain of being. . . . postulated that species were immutable entities arrayed along a fixed and vertical hierarchy stretching from God above down to the lowliest sentient being" (145). With that frame of thinking (the great chain of being) in place, so-called "primitives" were less than Europeans, and all of their "primal" ways, too, were

less than the Europeans. Basket weaving, then, on the great chain, is much lower than manly invention, not simply because it was dubbed as *woman's work*, but because it was done by "primitives" as well. Schiebinger revealed one process involved in gendering invention, though her work centered on nature: language (visual, written, and spoken) linked to the great chain of being.

Ruth Oldenziel discusses the politics of patents; women's inventions were ignored by the patent office when the products for which they sought patents moved farther away from a domestic sphere and toward an industrial sphere. This too reflects the great chain and separate-spheres traditional view. Women could invent for the domestic sphere; invention would not intimidate men when a woman created a new domestic product. Oldenzeil reveals how our current conception of *invention* has been tainted by patent selection, which in turn was tainted by views of a woman's place.

Carolyn Marvin's *When Old Technologies Were New* positions a definition of new media which resonates with the "kind of mental quality" that occurs in repurposing old items into newer items: "New media [are] broadly understood to include the use of new communication technologies, new ways of using old technologies, and, in principle, all other possibilities for the exchange of social meaning" (8). For Marvin, invention, discovery, and creation with technology concerns, in part, the use of old technology in new ways: in a word, repurposing.

What each of these writers does is use a *kind of mental quality* to find new ways to discuss old technologies. They are, in a word, repurposing the history of technology. However, that form of thinking, undertaken by women for centuries, if not for thousands of years, is still

considered a secondary and less-than form of thinking in comparison to logical and rational inductive or deductive thinking. The power of the scientific method still reigns.

The Science of Repurposing

The scientific process focuses on a singular, rational mode of knowledge seeking to produce invention. According to Sandra Harding, there is a "conventional belief that the truly scientific part of knowledge seeking--the part controlled by methods of research--occurs only in the context of justification" (245). Yet, as she suggests, discovery is also part of the scientific process, but since discovery, itself, is "thought to be unexaminable within science by rational methods," identifying appropriate problems "to study, hypothesizing, and defining key concepts are not considered part of real science" (245). The knowledge seeking, rational aspect of the scientific method, as Harding suggests, "makes objectivity a mystifying notion, and its mystificatory character is largely responsible for its usefulness and its widespread appeal" (246) which continues due to, as Harding suggests, a false hope that science will level the playing field and make all analysis, or all wits, as she cites Bacon as saying, comparable and free of subjectivity.

Objective, rational science, though, does not observe itself in the same way as it does the rest of the world. As Carroll Pursell suggests in her article "Feminism and the Rethinking of the History of Technology," "When we take such activities as acquisition, maintenance, repair, use, and redesign seriously, women, children, workers, and 'people of color' reappear in all their

diversity and importance" (114). Yet, Purcell does not elucidate further what these groups bring to those activities. With women, and the other groups as well, we might well imagine that *the kind of mental activity* such as repurposing is what they add with those activities. Children, minorities, and workers also engage in repurposing. The white male world (touting the knowledge seeking, objectivity-focused, scientific process) even carries forth derogatory terms to deride different groups when they repurpose objects or processes: children play (to spend time to create something is to "waste time playing around"), blacks rig things (as in the term "nigger rig"), and Jews "jew" people. (See below, subsection Rednecks for a more in depth discussion of these terms). These negative views of repurposing center the scientific process as the most important aspect of inventing or creating, and they set others on the fringe.

The scientific process, and more so the focus on knowledge seeking, does not hold in esteem any mistakes, happenstances, general knowledge, or conductively connected items or processes to create new uses; however, the idea of the Happy Accident is becoming more mainstream (as mentioned in the Introduction). Humans, also, are not a consideration in the scientific process model (except when expedient to a corporate myth, such as mythologized scientists like Edison or Steve Jobs). Obviously, a complex civilization needs verifiable methods and processes with which invented items are tested for reliance and safety, a scientific lab wherein the scientific process runs without human foible or corruption, but such a need does not necessitate that other "labs" are less-than. The scientific lab is a place where creativity and inventiveness are falsified or verified, but as Oldenziel, Marvin, Purcell, and others have shown,

the scientific lab became more than a place; it became a template by which all other "labs" were, and still are, judged.

One counter to the view that the scientific process is the only process that can be a gauge of technology is a description of technology that comes from Foucault, as interpreted by Anne Balsamo in *Technologies of the Gendered Body*: "the workings of a collection of practices that produce specific cultural effects" (21). However, the term seems so vast and interpretable that being a Wal-mart shopper might make one technological.

One question that more strongly connects the repurposing of domestic objects and processes with the digital age is a shift from a literate decorum to "a felt necessity of the times," as Richard Lanham suggests. For Lanham, "what is extraordinary is not how digital technology has compelled us toward a fundamental cultural reevaluation, but rather how technology can--if we use it right--express so eloquently an omnipresent reevaluation already in being" (84). We could "use it right" with a "kind of mental quality" that fulfills a felt necessity, and to do so would be to look no further than the training that has occurred for generations through repurposing domestic items.

This training is not formalized, but socially situated, and it comes with a strong objectivity, as any discovery and subsequent dissemination for a repurposed item or process would need the testimonial of the discoverer or user. Because repurposing domestic objects fulfills a necessity, repurposed objects and processes are not part of folklore concerning magical or superstitious remedies. Throwing salt over one's shoulder to ward off bad luck is not a repurposing, but a superstition. Repurposing, itself, carries no moral ending or value-laden ideas

(though of course those in the lists above do perpetuate ideas of cleanliness and health, as most of them are hints on cleaning and health). Repurposing acts on everyday lived experience.

Of the two lists above, the internet list was posted as an email sent from person to person with the subject line of "Grandma's Cures". I had amended the list above intentionally to remove the brand names listed on the list. Here are the 16 brands listed throughout 19 hints of the above Internet based list: Gatorade, Colgate toothpaste, Altoid's Peppermints, Alka-Seltzer, Band-aid, Listerine, Maybelline Crystal Clear nail polish, Coca-Cola, Formula 409, Elmer's Glue-All, Hunt's tomato paste, Heinz vinegar, Dawn dish washing liquid, Bounce dryer sheet, Wesson corn oil, Quaker Oats. The intriguing aspect of this emailed list of household hints is that no one company seems to be behind the creation and spreading of the list. For instance, PepsiCo owns Gatorade and Quaker Oats, but they, of course, do not own Coca-Cola. People posting on a message board on snopes.com have wrangled with this very conundrum too. One poster suggests that nine different companies, not subsidiaries of each other, are represented in the list. What interests me is that if the list was created as a marketing mechanism, there is one obvious conclusion that can be drawn: repurposing has become such a part of American culture that marketing is using it as an angle to sell products. What women have done for centuries is expanding into the wider culture. At one time, necessity was the mother of all invention, then mothers repurposed items and things for other uses, and now the web remediates that domestic repurposing, disseminating what was once "female" knowledge to anyone.

Beyond the Great Depression

There are more returns on Google, as of this writing, for Great Depression Grandmother than for Great Depression Reuse; in other words, if we want to learn how people reused or repurposed items during the Great Depression, the word "grandmother" should be a search term. The 100,000 plus pages concerning grandparents and the Great Depression are often filled with the everyday changes people had to make in the Great Depression. Many of these sites connect the Great Depression with our time of the Great Recession, from cooking lessons that use Great Depression era recipes, such as Cooking with Clara (a 93 year old grandmother web sensation) to an entire genre of sites dedicated to lessons grandmothers taught from the Great Depression.

That Americans in the Great Depression had to learn how to do more with less is a deeply imbedded American lore. Two developments since the 1930s have occurred to widen the interest in their stories. One, the changing gender roles and power distribution have opened up a space for these stories to not only be told but also to have an audience that finds them enriching, and two the advent of the Internet has allowed those stories, any story, to have a place in our collective history. What was once a conversation among women (repurposing items, especially during hardship) has become a discourse across the Internet. However, with the opening of gender restrictions and the delimiting of who could tell a story, gender has little bearing on who tells these stories. Without an exhaustive study, I cannot know for sure of the exact demographics of those involved in the relaying of Great Depression stories on the Internet, but surveying nearly a hundred of these sites reveals authors who are men and women, recounting

tales told to them from their grandmothers (and in some cases from their grandfathers; however, the grandfather stories usually have to do with jobs and less about repurposing.) I have little of my own "grandmother stories" to add to the body of this genre, except one.

I have a steel penny (stamped 1943) on my wall in my home office, taped to a map of Great Britain. It's been there for years, before this dissertation began to form. I "found" it while working in a convenience store, where speed of ringing up customers was entwined with social niceties. Those without an automaticity of working with things and numbers are often gruff and unresponsive in those jobs. Even among the din of customers talking, of ringing up people, some part of my mind told me that the clink I just heard was not normal. But the clink was from the penny tray, and I became accustomed to ignoring when people gave me Canadian pennies on accident. It wasn't worth hassling a customer for an American Penny. After a few minutes, the clink sound kept coming back to me, interrupting my thoughts. It wasn't Canadian, my mind told me. Opening the drawer, there it sat. I wasn't sure why it clinked oddly. It did looked discolored. I exchanged it for one of my own and pocketed it. Later in the evening I showed it to a rather well-informed elderly gentleman who would stand and chitchat once in a while. He gave me the back story of the dearth of copper during the war, of the use of steel to make pennies. He talked of Great Depression rationing, War time rationing, and trucks that would roam the neighborhood picking up recyclable items for the war effort. The steel penny still sits there taped to the map. In a later chapter, I more fully discuss that intuitive moment of how I heard the wrong sound of the steel penny, but such an instance opens another discussion: how a person is culturally situated to have lived experience as an intuitive guide toward repurposing.

Economies of Repurposing

The rest of this chapter is dedicated to showing repurposing in various disciplines and geographical places. I take from Bruce Mau's *Massive Change* the idea of economies. In 2006, the Museum of Contemporary Art in Chicago hosted "Massive Change," an extensive exhibit created by Bruce Mau and over fifty scientists, thinkers, and leaders who sought to shift "the objective of the welfare of the human race from a utopian ambition. . . to a design project, a practical objective" (Mau 18). The premise of the exhibit (and the subsequent texts, films, and websites) asks one overarching question: How do we do more with less?

The exhibit not only offered ways in which we could fuse intelligence into materials to free form from material parts, such as memory-imbued items like foam, it did so interactively by asking the guests of the exhibit to vote on such issues as engineering animals or reusing materials. By positing new ways of thinking of old methods, such as creating an automobile that could be as easily disassembled for reuse of its constituent parts as easily as it had been assembled, the exhibit avoided prophetizing the end of material resources or forming a jeremiad about the overuse of resources. Rather, the exhibit sought to redesign our thinking in much the same manner as the exhibit offered redesigning things. For instance, instead of resources turned material items then melted down to recycle, the term recycle became cycle—to cycle materials from one use to another with the second or tertiary uses built into the design of the resources'

first use. How do we do more with less was not directed as how do *we* do more with less, as if we should relinquish our material goods; rather the questions asked how *do* we *do* more with less.

How can we do more with less asks not only how we can utilize objects in new ways but also how we can think in new ways to support a massive change (Mau). Within the companion text to the exhibit, Bruce Mau discusses and has conversations with eminent members from a variety of disciplines and fields, from energy to markets, from images to information, from manufacturing to militaries. In these discussions and conversations, Mau expresses the need for new "critical faculties" that can "embrace the dilemmas and conflicts" of massive change. For such critical thinking to occur, the discussion and the solutions must come not from atomized areas of research but from discussions that "go beyond the design fields themselves and reach out to the broadest audience, to the people directly affected by the work of designers" (18).

Rather than reiterating labels of certain groups and peoples, or of cultures and geographies, we can look at how peoples around the world have a shared skill of repurposing. Another aim of using the term *economies* is to highlight the degree to which repurposing influences our, or a people's, economic situation. Interest in the idea of repurposing is growing, and various cultures have not only a cultural norm of, and pride in, repurposing, but they also have specific words in their language for such an activity. There is only one group in the world that has come late to repurposing, and to all of the creative underpinnings of repurposing—(mostly) white, male, and middle to upper class Western males. As we shall see, repurposing mostly occurs among people who are at the lower end of an economic scale, including segments

of white males in the Western world. Another element of discussing these economies is to reveal similarities in various disciplines and fields of study that use similar terms to repurposing.

Ancient Economies

Ancient art is a poor source for instances of referencing repurposing, as most of ancient art was concerned with ritual, propaganda, or idealized life. There is one other possibility as to the dearth of evidence in repurposing in the Ancient world; there was no surplus of material goods lying about. In all of the economies investigated below, they all have a commonality of having a surplus of material goods (though, by most Western standards, the term would not be "a surplus of goods" but "trash" or "old junk"). One instance of ancient world repurposing occurs in an ancient Assyrian engraving of a swimmer using full pig skins as flotation devices. A three part volume on the Middle East called *History of Egypt, Chaldea, Syria, Babylonia, and Assyria* refers to the bas-relief as soldiers crossing a river (Maspero); however, Mathews and Platt's *Western Humanities* refers to the same swimmers as "fugitives." Pure speculation can only decipher whether the pig skin flotation devices are invented items or repurposed. I would suggest that if the swimmers are soldiers, and since they swim toward a fortified wall, that the bladders are inventions. The soldier had to think ahead of time how to cross the river and attack the walls. However, if the swimmers are fugitives as Mathews and Platt suggest, they are being hunted, and they would have little time or leisure to invent the bladders. Instead, and hard pressed for time (as they are on the run, as evidenced by the pursuing archers), they had to quickly make the pig

skin floats. I would suggest that such a last minute single-serving need was evidence of an ancient world repurposing. Most of ancient art seems impenetrable with a discussion of repurposing. Usually the art is so intricate with an organized composition that finding a scene that uses repurposed items is difficult. Even the Assyrian piece is complicated. Why show swimmers? Is this to revel in, or even boast of, Assyrian ingenuity or Assyrian tenacity? If they are fugitives, why show that in an engraving? Is it to show you cannot escape their power?

One example of Ancient world repurposing is Odysseus' creation of the Trojan Horse, by repurposing ships into a large horse in order to sneak his men into the city of Troy. The scene never occurs in the *Iliad* or the *Odyssey* (only a brief line in the *Odyssey* discusses the "carven horse"); the story comes to us by way of Virgil's *The Aeneid*.

Economies of Story Telling

The Aeneid is the story of young Aeneas who escapes with others from the burning city of Troy; making their way to the west, they found Rome. *The Aeneid* repurposes the story of the *Iliad* for its own ends. Virgil, working for Emperor Augustus, is able to create a nationalist origin myth that pre-dates, or at least equals in dates, the Greeks, thereby skirting the idea that Romans borrowed their gods and ideas from the Greeks. *The Aeneid* is the first in a long line of literary repurposing.

The term in literature for utilizing a story line from history and altering it to fit a new cultural concern is *adaptation*. An original story was created for a specific time and place, but

someone then picks up that story and utilizes it in a new manner, to espouse new ideas, or ideas that are more of a concern to a contemporary reader or viewership. One of the most prolific repurposers of stories was Shakespeare; since the early 1600s, his plays have been repurposed, and it is not until the Twentieth century that they are "adapted."

Shakespeare's *The Tempest* was a repurposing of two stories: Montaigne's essay "Of Cannibals" and the account of a ship wreck in 1609. Today, one adaptation of *The Tempest* is the film *Forbidden Planet.* The concern in Shakespeare's play of indigenous peoples is altered to a concern for not only technology but also how people may become too powerful due to technology. *The Tempest* relies on magic, on Prospero's "so potent art" (V.i). *Forbidden Planet* mixes technology and psychology. The power in *Forbidden Planet* is an "elementary basis of the subconscious mind" whereby Morbius can form "creation by mere thought" (Wilcox). The central idea within *Forbidden Planet*, the interface between human and machine, could have been told without *The Tempest* connection, just as any item repurposed to solve a problem or to act as a fix or solution could have a different object or item used in its stead. Considering Arthur C. Clarke's third law of prediction, "Any sufficiently advanced technology is indistinguishable from magic," the themes are the same: people wielding greater power than perhaps they should have. This same theme of an advanced technology equating to magic occurs again in the adaptation of the Nordic mythology of Thor, *Thor*, as the character Thor states: "Your ancestors called it magic, and you call it science. I come from a place where they are one and the same." (Branagh). The adaptation from *The Tempest* to *Forbidden Planet* is a repurposing of the central idea, of the theme to the story. Shakespeare repurposed essays, legends, stories, news accounts,

and other plays to fit his contemporary audience, sometimes repurposing themes and sometimes repurposing plots. Plutarch's *Lives* became *Antony and Cleopatra, Coriolanus, Timon of Athens,* and *Julius Caesar*. The Legend of Amleth as told in the *History of the Danes* by Saxo Grammaticus became *Hamlet*. *The Faerie Queen* by Edmund Spencer became *King Lear*. From a British poem by Arthur Brooke called the *Tragicall Historye of Romeus and Iuliet* (1562), Shakespeare repurposed the plot but not the theme to create *Romeo and Juliet*. Brooke's prefaces his poem *Tragicall Historye of Romeus and Iuliet* with this central idea to the poem:

> Thralling themselves to unhonest desire; neglecting the authority and advice of parents and friends; conferring their principal counsels with drunken gossips and superstitious friars (the naturally fit instruments of unchastity); attempting all adventures of peril for th' attaining of their wished lust; using auricular confession the key of whoredom and treason, for furtherance of their purpose; abusing the honourable name of lawful marriage to cloak the shame of stolen contracts; finally by all means of unhonest life hasting to most unhappy death.

These are not the themes of Shakespeare's *Romeo and Juliet*. The theme changes from Brooke's sense of moral and immoral to Shakespeare's sense of forbidden love due to social castes. In recent modern versions, such as *West Side Story* and the 1994 *Romeo and Juliet*, the plot is again repurposed while the theme shifts to discuss social issues again, but this time of race and ethnicity.

In 1642 the theaters were shut down in England, and eighteen years later, the Restoration experienced a rebirth of the theaters, but plays were difficult to find. Shakespeare, though

popular in his own time, was not set for the greatness his name would become until Restoration theaters repurposed his plays. In the new theaters, women could perform on stage, and the audience was not experienced theater goers. The result was a repurposing of pre-interregnum plays to fit this new audience; the plays became more bawdy and watered down than the originals to appeal to a more vulgar crowd. Gerald Eades Bentley in *Shakespeare and His Theatre* cites a contemporary of that time, Edmund Gayton, who writes how unless the popular humor was satisfied, the audience would storm the stage and throw around set pieces (112). Shakespeare would be repurposed again in the American Frontier where his plays were boiled down even more as cabaret and saloon skits. Alexis de Tocqueville mentions this prevalence of Shakespeare and in the same passage discusses the American propensity to repurpose ideas and things:

> The literary genius of Great Britain still darts its rays into the recesses of the forests of the New World. There is hardly a pioneer's hut which does not contain a few odd volumes of Shakespeare. I remember that I read the feudal drama of *Henry V* for the first time in a log-house. Not only do the Americans constantly draw upon the treasures of English literature, but it may be said with truth that they find the literature of England growing on their own soil. . . . Thus they transport into the midst of democracy the ideas and literary fashions which are current amongst the aristocratic nation they have taken for their model. They paint with colors borrowed from foreign manners. (55)

According to De Tocqueville, Americans did all of this as practical measures, to "put the real in the place of the ideal." Shakespeare entered a new phase of repurposing in the Twentieth century, and it is here that we can find the use of the word "adaptation." William Gilbert (of Gilbert and Sullivan fame) adapted *Hamlet* into *Rosencrantz and Guidenstern* in the late 1800s. By the turn of the century the play was being performed; all of the characters have the same names, but the plot has changed, and it is a comedy. Gilbert's *Rosencrantz and Guildenstern* centers on themes of what makes a good play and takes an irreverent stab at playwrights and plays. Tom Stoppard's *Rosencrantz and Guildenstern are Dead* carries those themes further, but does so using various post-modern ideas to question not only authorship and plays but also the relativism of such authorship.

There are some distinct features that illuminate the difference of a repurposing and an adaptation from Saxo Grammaticus' tale to Shakespeare, from Shakespeare to Gilbert, and from Gilbert to Stoppard. We can experience Shakespeare's play *Hamlet* to its fullest with no knowledge of Saxo Grammaticus' work, but we cannot have the full experience of Gilbert's play without knowing Shakespeare. For instance, we would not understand the humor in a scene where Rosencrantz and Guildenstern, in Gilbert's play, desperately try to prevent Hamlet from boring them with a soliloquy by trying to have Hamlet kill himself:

> Music. Enter HAMLET. He stalks to chair, throws himself into it.
>
> HAMLET: To be -- or not to be!
>
> ROSENCRANTZ : Yes, that's the question --
>
> Whether he's bravest who will cut his throat

Rather than suffer all --

GUILDENSTERN: Or suffer all

Rather than cut his throat?

HAMLET (Annoyed at interruption, says,

"Go away -- go away," then resumes)

To die -- to sleep --

ROSENCRANTZ It's nothing more –

Death is but sleep spun out--

Why hesitate?

(ROSENCRANTZ offers him a dagger)

GUILDENSTERN The only question is

Between the choice of deaths, which death to choose.

(GUILDENSTERN offers a revolver)

HAMLET (In great terror) Do take those dreadful things away.

They make my blood run cold. Go away -- go away!

(They turn aside. HAMLET continues.)

To sleep, perchance to --

ROSENCRANTZ Dream.

That's very true. I never dream myself.

But Guildenstern dreams all night long out loud.

GUILDENSTERN (Coming down and kneeling)

With blushes, sir, I do confess it true!

HAMLET This question, gentlemen, concerns me not.

(Resumes)

For who would bear the whips and scorns of time --

ROSENCRANTZ (As if guessing a riddle)

Who'd bear the whips and scorns? Now let me see.

Who'd bear them, eh?

GUILDENSTERN (Same business)

Who'd bear the scorns of time?

ROSENCRANTZ (Correcting him)

The whips and scorns

The whips and scorns, of

GUILDENSTERN course.

(HAMLET about to protest) (GUILDENSTERN continues)

Don't tell us -- let us guess -- the whips of time?

HAMLET Oh, sirs, this interruption likes us not.

I pray you give it up.

The changes from these versions of the Hamlet story reveal an essential aspect to repurposing. Repurposing is not limited to the thing produced but includes the experience of the producer/creator and the consumer. As a producer/creator or consumer, knowing the original helps us to understand the thing repurposed. If neither producer/creator or consumer are aware of

an original use, the act is an invention. Below, in the other economies, this distinction becomes clearer in the use of material items in every day usage. Here, we then can see that Stoppard knew of Gilbert's play and Stoppard repurposed it (Stoppard uses Gilbert's play as the play-within-the-play of *Rosencrantz and Guildenstern are Dead*). Gilbert knew of Shakespeare's play and repurposed that play. Tracing these repurposings back, perhaps Grammaticus invented the story, but more likely he simply wrote down into verse an existing legend and lore.

The hegemony of "invention" is still alive; I find evidence of that in my own language: "perhaps . . . invented. . . , but . . . simply wrote down." I, a researcher and writer espousing repurposing, inadvertently (subconsciously?) relegated repurposing as a *less-than* ("simply") to invention. The view that invention is somehow better than repurposing is, as we have seen, a "manly pursuit of invention and engineering" rather than being equal in a list of "such activities as acquisition, maintenance, repair, use, and redesign" (Pursell 114). Not only is there a gendered underpinning to a discussion of repurposing and invention, but there is a racial underpinning as well, one that can both condescend and dismiss repurposing as *less than* invention.

Economies of Indigenous Peoples

The economies of indigenous peoples is simply my difference between those who, though they may have a culture that long ago derives from somewhere else, have developed that culture with the lands on which they live. Below, the distinction is clearer as I discuss two other economies: post-colonials, who live on lands that were once colonized and thus not only have

material items left from that colonizing but also have access to other nations' material goods, and economies of primitive cultures, who have an understanding of industrial nations and their material items but who themselves do not have access to such items. The economy of indigenous peoples, then, is an arguable label. The advantage of such a label, rather than referring to groups by name is that the idea of repurposing is not relegated to being a specific cultural norm in a specific place, for such a connection would too easily allow "invention" to maintain a hegemony through racial or nationalistic sentiment.

I would like to one day do a study where people view a series of images of homes. One home in the series would be set in, what would appear to be, the American West. It would be a mobile home in perfect condition with a well-kept yard and with old tires laid out on the roof. My guess is that most Americans would perceive the inhabitants as impoverished, or at least low on the economic scale. Another home in the series would also have a flat roof, but dispersed across the roof would be low, metallic, aerodynamic domes. I assume most people would see this home as advanced in technology, utilizing some form of invention for some unknown reason. This would not be a study of shiny things equals money equals higher class, but rather a study of invention and repurposing, and of the hegemony of definitions, use, and *purpose*. I could taint the results by adding another image of a home using tires on the roof, homes in Manila, where tires are placed on tin corrugated roofs. Seeing these homes as seen in the same series, who would not perceive the tires as weights to hold down the roof? I wonder how many people would express a pity (a condescending pity?) toward the less than fortunate who need to use tires on their roofs.

I wonder how their view of those homes would change when they realize the purpose behind repurposing tires in such a manner. Tires, as it turns out, are excellent disruptors of wind. The hollowed out center destroys the free flow of air, and as a result, flat roofs stay attached in fierce gale force winds. Without the tires, the flow of wind over a flat roof causes lift, like the lift generated on airplane wings, and the roof would soon be airborne (DiLuccio). In less destructive winds, tires reduce sounds caused by winds (Patterson). Would they, upon reviewing the images, still think the low domes on the flat roof house were still more technological? They shouldn't; those low domes would not disrupt wind like the tires, and the roof would be no safer.

In the American Mid-West and West, old tools, bottles, utensils, and pans were used as wind chimes. Referring to the study I would like to do, above, I wonder about people's perceptions of chimes that looked like they were made from "junk." Are those items quaint? Interesting? Not fit for my McMansion? Before weather forecasting was accurate and available, wind chimes were the predictors of weather. Various types of wind chimes, made of various materials, were hung at different locations outside of houses in the windy areas of the Mid-west and West. To us in the modern world of Doppler radar, wind chimes are interesting, or peaceful, accoutrements to landscaping, but in the past they were part of an intricate lived experiential understanding of weather. By tones of each chime, by the rapidity of the clappers striking the hanging items, and by the relation of which chime chimed where on the property, people could determine not only the changes in storms, but the possibility of severe storms. A rising chiming from the West, or Southwest, indicated the feared summer storms that cross the West and Mid-West. Wind chimes, or rather the sound from them, are better indicators than trees swaying or

the feeling of wind on the body. During a storm, wind chimes could warn of tornadoes as well: a change of winds, from one direction to the opposite would warn of air being sucked toward a funnel. Repurposed items worked best for these chimes, as the items used would have distinct sounds from items from other chimes on the property. In the Southern states, another outdoor lawn ornament has been often misunderstood: the repurposing of bottles hung in trees.

Eudora Welty, in her work with the Works Progress Administration, took photos of Bottle trees and mentions them in her short story "Livvie":

> There was no word that fell from Solomon's lips to say what they were for, but Livvie knew that there could be a spell put in trees, and she was familiar from the time she was born with the way bottle trees kept evil spirits from coming into the house--by luring them inside the colored bottles, where they cannot get out again. Solomon had made the bottle trees with his own hands over the nine years, in labor amounting to about a tree a year, and without a sign that he had any uneasiness in his heart, for he took as much pride in his precautions against spirits coming in the house as he took in the house, and sometimes in the sun the bottle trees looked prettier than the house did.

As the story describes, bottle trees are trees where bottles, usually blue in color, have been placed over the limbs with the bottle opening pointed downward. The lore that trapped evil spirits will become confused by the sun shining off of the bottles, enter the bottles, and be trapped, thus not harming or bothering the family on whose land the bottle tree stands has ties also to medieval Europe, where "witch balls" were used to capture witches (Rushing).

Economies of Economically and Socially Disenfranchised Westerners

"You might be a redneck if--your working TV sits on top of your non-working TV," states the comedian Jeff Foxworthy. Foxworthy reintroduced America to the word "redneck," altering its backwater label that often carried a pejorative of being ignorant, racist, and bigoted to one concerning "redneck ingenuity" or at least as a word used within the culture as a means of humorous humility and self-mocking, just as Randall Kennedy suggests blacks did with the word "nigger," and just as "other marginalized groups have done with slurs aimed at shaming them. They have thrown the slur right back in their oppressor's faces" (Kennedy 38). Foxworthy defines a redneck as someone with a "glorious lack of sophistication." Rob Loach, a professor of French at Bob Jones University, suggests in his humorous blogs that rednecks are somewhat defined by their connection to "junk":

> One aspect of redneckery is being a packrat--if you throw something away, you will immediately need it and wish you had held on to it. Most rednecks are probably just making do and getting by with what they have-- something *everyone* may all end up having to do if our economy continues to decline. Many of the abundant redneck jokes poke fun at old cars in the yard, old appliances on the porch, etc. Snobs might not prefer to think of it this way, but could rednecks just be practicing a different form of the modern virtue of recycling?

Of course my answer is a resounding yes, but not recycling, they are repurposing. The term for it is "redneck ingenuity," which itself can be a pejorative toward the culture, or used as a point of

pride within the culture in the same manner as the word "redneck," itself, is used. In the redneck lexicon, though, there has always been a host of words to refer to using improvised parts or improvised fixes of something that are not up to standard, such as the word "jury-rig." Jury-rig stems from John Smith's 1624 account of early colonial America, *The Generall Historie of Virginia, New-England, and the Summer Isles*:

> But ere I had sailed one hundred and twentie leagues, she brake all her Masts, pumping each watch fiue or six thousand strokes; onely her spret-saile remained to spoone before the winde, till we had re-accommodated a Iury-mast to returne for Plimoth, or founder in the Seas. (Smith, John 223)

A jury mast, or as written above, a Iury-mast, is a temporary mast, made from spare spars or other items onboard a ship. From this word "jury-rigged," a host of negative slang grew within the redneck community and the larger white community, meaning shoddily built as a temporary (or even long term) fix: "Jerry rigged" referred to Germans (though the etymology is actually from elsewhere, the label stuck), "nigger rigged" to African Americans, and "Jew rig" to Jews. Within the rhetoric of that language as a means of maintaining distance from and power over another group, those phrases are mostly used to maintain power within the group. Each of these racially or negatively charged words attempts to reposition the speaker into a role of authority on how to fix something, as if to say, "If I can identify that what you are doing is wrong and use a pejorative toward your work in reference to a 'lesser' culture or race, I reaffirm I am right in my assessment which is as right as my own race's superiority."

Through a lens of repurposing, though, race and color dissolve, as one person's jerry rig is another's redneck ingenuity. Redneck ingenuity, as jest or as actual practice, usually involves four parts: isolation, a surplus of material, pride, and duct tape. The redneck culture has an entirely different view of what is junk than the wider "sophisticated" culture, and it is usually their isolation from cities that allows them to explore that packrat aspect. Most towns and cities in the United States use municode as their set of municipal ordinances, and the municode is hostile to the redneck cultural norm of packratting, such as this one from Titusville, FL, municode, Chapter 12:

> Sec. 12-23. Machinery parts, scrapped lumber, etc.--Storage and maintaining prohibited.
>
> (a) It shall be unlawful for any person to cause or permit junk, scrap metal, scrap lumber, wastepaper products, discarded building materials, or any unused abandoned vehicle, vehicles, or abandoned parts, machinery or machinery parts, or other waste materials, to be in or upon any yard, garden, lawn, out-building, or premises, in the city unless in connection with a business enterprise lawfully situated and licensed for the same.
>
> (b) It shall be unlawful to permit any accumulation of any such waste materials to be in or upon any yard, lawn, garden, out-building or premises, in the city, if it constitutes a fire hazard, a hazard to the safety of persons or property, or an unsanitary condition.

This ordinance is not about trash such as food refuse or decaying, molding, or harmful substances. The ordinance is directed at old material items, and one could only surmise that the reasoning is solely aesthetics, to keep a neighborhood beautiful (where beauty is not junk). By being isolated (not living within a municode enforced city limits) rednecks can accumulate junk. But accumulation is not enough, and though often perceived as a group who are economically impoverished, they are not (compared to other historically marginalized people around the world).

What seems to stand out among historically marginalized peole everywhere (as we'll see below with historically marginalized people from India) is a certain pride in fabricating something from old unused items. The Internet has thousands of pages concerning repurposed cars, lawn mowers, and other fabricated items from old junk, such as trebuchets, potato cannons, and explosives. The redneck desire to repurpose heavy machinery has altered Americana. The rednecks of Appalachia (that's Appalachian Americans to those outside the culture) began Nascar as moonshine runners, the rednecks of the cornfields created the first monster trucks (large 4x4s were needed in the muddy fields and backroads of the Midwest), and Florida redneck crackers (though they did not invent the airboat) fabricated airboats from scratch. Each of these, though they may to us today appear as fun toys, were machines used in order to make a living or to live better within a specific geographic place.

Added to the word "redneck" and "redneck ingenuity" is a joke that rings true for those in the redneck culture more than others could grasp, which stems from Jim Berg and Tim Nyberg's book *The WD-40 Book*: "If it doesn't move and it should, use WD-40. If it moves and it

shouldn't, use the duct tape." Duct tape, itself, could hold together an entire dissertation on repurposing. From its inception in World War II to its use by rednecks, from Berg and Nyberg's books to Martha Stewart, duct tape has become the symbol for limitless imagination and creation. Repurposing with duct tape was the center of one of the most famous moments in the 20th century, and the most famous moment in space travel.

Due to complications of a minor explosion and an oxygen leak, the CO2 levels in the lunar module *Aquarius* were rising, and they did not have enough filters for the unit that scrubbed the CO2 from the air. According to the transcripts, the filter conversion, from a square filter to a round filter, used two command module lithium hydroxide canisters, a roll of the gray tape, otherwise known as duct tape, the bags from two LCGs (Liquid cooled suits) and an LM (lunar module) cue card (Apollo 13 Technical Air-to-Ground Voice Transcription). The repurposing of less than six objects not designed for the use they were created for saved not only the astronauts' lives and the pride of America in the space race but also stopped a $375 million project ($2 billion in 2008 dollars) from being lost. In this historical moment, we find the intersection of two terms having the same referent: American Ingenuity and Redneck Ingenuity both mean repurposing.

The economies of Economically or Socially disenfranchised Westerners take pride in their ability to repurpose items, and that pride has, in the past, become part of an American wider culture, such as Nascar, Monster trucks, and airboats. Another term connected to repurposing is "ghetto," which in itself is a complex word. Geneva Smitherman in her book *Black Talk: Words and Phrases from the Hood to the Amen Corner* suggests that the word "ghetto" is being used by

blacks to suggest black pride and authenticity. However, another nuance to the word is something or some viewpoint that keeps blacks from entering mainstream society. In Regina Austin's "A Nation of Thieves: Consumption, Commerce, and the Black Public Sphere," she points out that blacks often have to dress up for even simple shopping outings, whereas whites do not, just to receive the same kind of service as whites. This idea is reflected not just in scholarship but in the black culture as well, as evinced in Kanye West's song "All Falls Down":

> Man I promise, I'm so self conscious
>
> That's why you always see me with at least one of my watches
>
> Rollies and Pasha's done drove me crazy
>
> I can't even pronounce nothing, pass that versace!
>
> Then I spent 400 bucks on this
>
> Just to be like nigga you ain't up on this!
>
> And I can't even go to the grocery store
>
> Without some ones thats clean and a shirt with a team
>
> It seems we living the american dream
>
> * * *
>
> We'll buy a lot of clothes when we don't really need em
>
> Things we buy to cover up what's inside
>
> Cause they make us hate ourself and love they wealth

These two cultures, redneck and ghetto, have different forms of repurposing. The redneck forms of packratting, duct tape fixes, and hand crafted lawn ornamentation would be castigated as "ghetto" in black communities. Rednecks repurpose material items; hip-hop black culture repurposes arts, especially music: "There is, in fact, often not much 'real' or 'original' music, but simply basic drum beats and guitar riffs, overlaid with recorded sounds" (Best). In the late 1980s, rap began "experimenting with multilayered sound collage, appropriating sounds from contemporary media culture, everyday life. . . rap articulated with a postmodern aesthetic of sampling, quotation, and appropriation, thus becoming part of the postmodern turn in culture" (Best). Best and Kellner pull from Houston Baker's idea that rap is a "nonauthoritative collaging or archiving of sound and styles that bespeaks a deconstructive hybridity. Linearity and progress yield to a dizzying synchronicity," and since, according to Best and Kellner, "In a postmodern media culture, there is evident pleasure in quotation, sampling, and mixing material from different sources and eras," rap is "eclectic and pastiche-oriented, and subverts modernist notions of authorship." There is a question, though, if this form of music is repurposing or just reusing music since the original pieces of music were made *as* music and the use in hip-hop or rap is also used *as* music. However, repurposing is more than mere use; in the context of these economies, it is doing more with less to fulfill some need within the group, a need that could not be easily filled with new materials.

Economies of Post Colonialism

Economies of post-colonialism refer to those peoples who have a surplus of material items (albeit, that material may be junk in American eyes) that stems from a colonial influence. That surplus, however, does not mean stock piles of discarded goods, rather the surplus means there exists a variety of "junk" from which other uses may be fashioned. Either through a colonial presence having once occupied their lands which caused a bubble in the amount of material items, or through the incursion of material goods, post-colonial economies utilize these material items in new ways. Usually, in post-colonial areas, new material items are available but along the scale from high to low among the classes only the wealthy class has access to new items. In these economies, the historically marginalized comprisesing most of the peoples, repurpose what has been left behind as junk.

In India, among the lower castes, the term often used is *jugaad*. Niti Bhan, a name among those discussing repurposing on the Internet and the founder of Emerging Futures Lab, which declares itself to be "multidisciplinary research and consulting team focused on understanding the people at the base of the pyramid in order to improve the success rate of new ventures, products and services across the developing world," refers to *jugaad* as "the secret of Indian innovation. . . more than simply an elegant solution to an existing problem using whatever materials or resources are available. It's also an attitude, distilled in the crucible of scarcity, poverty and the systemic chaos that is India." *Jugaad* does not refer simply to the act of repurposing. Jugaad, she suggests, is a space between technology and scarcity of resources that

allows for creative expression through repurposing to survive or to better accommodate everyday lived experiences:

> Jugaad, the bottom of the pyramid, creativity and the 'make it happen' mentality . . . all point to a sense that the liminal space where high technology overlaps with poverty and scarcity of resources is one of the most creative and innovative when it comes to solutions to everyday life's problems. Be it the guy charging mobile phone batteries on the street corner in Uganda with a rubber band and a couple of wires attached to a car battery or the farmer in remote India welding a backpack style pesticide sprayer onto a motorcycle--this often overlooked ingenuity has traditionally paled in comparison to the oohs and aahs of the latest products and advances unveiled in tech conferences ranging from Las Vegas to San Jose.

AfriGadget aims at "solving everyday problems with African Ingenuity" (Napara). Such ingenuity includes using coconut shells and old zippers to create a hanging zipperable container (sold mostly to tourists as novelty items), juakali lamps (regular light bulbs powered by batteries housed in a construction made of a tin can and flip-flops), plastic bottles turned into bird feeders, and environmental messages in the form of sculptures made from the very things that kill certain animals (an elephant made from old animal snares and a shark made of washed up ocean debris.)

All of the these items have one central purpose: tourism and earning money. Economies of post-colonial marginalized people share this trait. They are not simply repurposing items for their own uses, in their own homes, they are entering a market of commerce. As mentioned earlier, sometimes repurposing is not taking the thing-itself and utilizing it in a new way;

sometimes it's about applying the idea from one domain to the another domain of life. Shamsudeen Napara from the northern part of Ghana noticed that a medical pill dispensing device could be refabricated as a pipe with a specific tip at the bottom to act as a hand held corn seed planter, by "transferring that knowledge to his communities needs" his repurposing "significantly decreases the time that it would normally take to plant corn." *The Guardian* also published an article that included a discussion of Napara's repurposed item, and in that article they give a name to the repurposing of items that occurs in developing countries: bushpunk (Anderson). *Bush Punk* is a play on the term *Steam Punk*, which was discussed in Chapter One. Another example of Bush Punk discussed in the article is Bernard Kiwia's creations. This bicycle mechanic from Arusha, Tanzania, has "created windmills, water pumps, mobile phone chargers and pedal-powered hacksaws, all from old bike parts" (Anderson). These post-colonial BoPs, or Bushpunk, are adding to a global interest in sustainability, in doing more with less. Research into how all of these BoP repurposings aid in our understanding of entrepreneurialship is beyond the scope of my work, but such an investigation could yield further discussions on how economies are altered, how lower class can rise, and how sustainability can be a market.

I would like to conclude this chapter, not by simply reiterating its contents but in challenging my own work. To wonder if I am not merely playing with words and definitions to fold an argument in support of my idea of repurposing. Does such a space of repurposing exist within discussion of technology? Does the use of the idea of technology include Lupton's idea of making "a better tool out of existing domestic objects," or is such a process different than technology? Perhaps it is the word *technology* that is too problematic; the use of the word has

such a wide range of possible meanings and ideas associated with it that the widest usage could become absurd in its nearly universal meaning. Rather than forcing a difference and similarity between repurposing and technology, I think a more fruitful discussion is to wonder if there is an actual space, process, and even sense of being (kind of mental quality) that exists in which repurposing is found. We can say that this space is "not necessarily machine bound" as Oldenzeil suggests, and occurs in a "social framework in which objects are put to work," according to Lupton, and it need not be merely the "manly pursuit of invention and engineering," as Pursell suggests. Whether we call that process adaptation, Redneck ingenuity, American ingenuity, bush punk, ghetto, or *jugaad*, it seems to occur "when we take such activities as acquisition, maintenance, repair, use, and redesign seriously, [for then] women, children, workers, and 'people of color' reappear in all their diversity and importance," according to Pursell. Whatever that space and process may be called, it takes a "kind of mental quality," according to Tarbell, that has "the workings of a collection of practices that produce specific cultural effects," according to Balsamo, to form "new ways of using old technologies," in Marvin's words.

I can see such a space, process, and sense of being as a part of technology, and I see a need for us to be able to better understand such a space, process, and sense of being. A greater understanding is needed not just in the grander sense of the humanities or academia's search for meaning and knowledge, but in the very real world, real lived, experiential sense of preparing our world for what is, and may be, tough economic times. Therein, I have no ideology to offer, no step-by-step recipe for success in a tough new world; I have what has been, seemingly, a historically transmitted way of thinking about how to engage the material world and alter its

things for other uses. To that end, the next chapter delves deeper into that "kind of mental quality," seeking to form a coherent theory of when and how repurposing takes place, and through all of my searching, I have found that the most readily apparent space in which that "'kind of mental quality" occurs is in dystopic narratives, both real and fictional.

CHAPTER THREE: DYSTOPIA, SURVIVAL, AND REPURPOSING

In this chapter I plan to show how potentially real dystopic futures and fictionalized dystopic narratives inform our worldviews and leave open a space in which repurposing occurs. To de Certeau "'stories' provide the decorative containers of a narrativity for everyday practices" (71), and in this chapter, I use a specific subset of those "containers": dystopic narratives. (I use dystopic narrative as a phrase, but within this dissertation the term would more aptly be an apocalyptic dystopic narrative). The aim of such a discussion is to reveal how, why, and where repurposing occurs within both of those real and fictional dystopic narratives as a "kind of mental quality" and as a bodily action. To reveal this space of repurposing in dystopic narratives is to suggest the place of repurposing in our lives, from which, in later chapters, we can explore how current technology informs our thinking through a training to *do* repurposing.

Dystopic narratives lend a voice and vision to our fears of a collapse of civilization, and they also act as a global discussion about the cultural phenomenon of those fears. Torin Monahan in his article "Marketing the Beast: *Left Behind* and the Apocalypse Industry" has shown the recent "notable growth in the market of apocalypse literature," which reveals a "cultural phenomenon worthy of investigation" (816). An investigation of apocalypse literature, though, could lead to a confusion of terms that are often used in dystopic narratives: dystopia, end-of-times, apocalypse, Armageddon, and eschatology.

I follow Ryan Bisel and Debra Ford's use of "eschatology" and "apocalypse" that they take from Stephen O'Leary: eschatology refers to an in-group's view of a perfected universe or future, but apocalyptic "connotes an out-group perspective in the sense that apocalyptic is often

used by nonbelievers to focus on coming destruction" (352). My concern is the out-group—those who do not espouse a specific eschatology—and it is within the myth and narratives of that "out-group" that we can identify concerns for an end-of-times, an apocalypse, or an Armageddon.

In order to understand repurposing's place within dystopic narratives, we should first examine the differences between those three terms that concern an out-group: end-of-times, apocalypse, and Armageddon. Each has a different connotation, but all three have a similar culminating motif in common with each other (and with eschatological worldviews): a new hope, "a perfected existence beyond the end of the world" (Bisel 340). Armageddon has a specific meaning within Christianity—the place of the last battle between good and evil mentioned in Revelations 16:16: "and they gathered together to the place called in Hebrew, Armageddon." An apocalypse, however, focuses *less on the clash* of good and evil, and *more on the separation* of good and evil, such as Elana Gomel suggests when discussing how "all apocalyptic and millenarian ideologies . . . [have] the standard plot of apocalyptic purification as a singularly atrocious technique of separating the damned from the saved " (406).

Both words, *Armageddon* and *apocalypse* have Christian themes of good and evil, but end-of-times suggests an end point of human civilization (while still holding a new hope as the aftermath). With Armageddon and apocalypse narratives, sin and the wrath of God accompany the narratives, but in end-of-time events, human error results in the collapse of civilization and a greater-than-human power forces humans either into extinction or submission.

The end-of-times appears in literature concerning itself with the collapse of civilization either through human error or through powerful forces. In an end-of-times event, civilization

collapses, but humanity (or at least some humans) continues. As we shall see after a survey of those myths and narratives, within them is a new hope, which rises through human agency, not divine or *deus ex machina* intervention.

Around the world and across time, dystopic myths and narratives have informed many cultures. The Mayan calendar predicted an end of the earth in 2012, a dystopic end-of-times event on which Hollywood capitalized; however, the real Mayan calendar is a resetting of the calendar itself, (which we understand when we see how we reset our calendars to January at the end of every year) not a cataclysmic event. In the Nordic traditions, Ragnarok (or Ragnarokr), a cataclysmic battle between gods, leaves the world to renewal. Hindu traditions believe that Kalki and/or Shiva (sometimes a merged figure) will dissolve the universe and thus cause regeneration. In the West, today, specifically in America, there are wider more pervasive myths of dystopia, from *The Terminator* franchise in fiction to the "dystopian image for the metaphoric end of public space as the mobile phone becomes a cyborg-like attachment" (May 201). The narratives of the myths, especially the electronic/cyborg narratives, sometimes have direct voices behind them, such as Kirkpatrick Sale who believes that computers produce "social disintegration, economic polarization, and environmental devastation" (qtd. in Applebome).

One overarching theme in these dystopic narratives is a new hope, generated by the survival of humans through a planetary "worst-case scenario," and it is within this part of the narrative, the new hope, that we can then can identify a space of repurposing. In the West, the Christian *Revelations* narrates Armageddon, the war of good and evil, which ends with 1,000 years of peace (the term "1,000" means "forever," not a numerical 1,000 years). The hope though

is never *deus ex machina*; rather, that-from-which hope will arise is always present before, during, and after the end-of-times event. In most dystopic narratives, the chaotic end-of-times may be blamed on humans, but the actual events are beyond the control of people. Dystopia happens. From that dystopic collapse arises a new world; however, the new world does not rise from nature or the power of a divine being. The regeneration of humankind occurs through human endeavors. Within that rise, that regeneration, as told in modern dystopic narratives, a ubiquitous theme of hope occurs in the human ability to remake the world from the ashes of Earth-that-was. Within dystopic narratives, the new hope is sustained and the world rebuilt from our capacity to repurpose the "junk" or surplus material items.

Repurposing is not recycling or reusing. *Recycling* often refers to returning some material back to its raw state to recast the material into another item, and *reusing* means to reuse something in a similar manner, such as using jelly jars to store push pins and paper clips (in both instances, the jelly jar was used as a container). In dystopic narratives, as well as in many of the economies discussed in Chapter Two, people do not have access to advanced machinery and tools that would allow for recycling. *Repurposing* is utilizing an item or a process in a way other than its intended use; however, repurposing is a kind of mental quality as well, yet too easily, repurposing could be thought of as the product of repurposing: the item that is used in a different way.

One way to investigate the "kind of mental quality" that occurs in repurposing, as different from repurposing as a word that refers to new uses of old items, is through the ideas of conceptual change. Chi, Slotta , and de Leeuw suggest three different ontological categories

(Matter, Processes, and Mental states); when a concept is reassigned from one category to another, a conceptual change occurs. *Recycling* and *reusing* are within one category (Processes), but *repurposing* crosses and connects all three ontological categories: Matter, Processes, and Mental states. Repurposing is a conceptual change; however, according to Chi, Slotta, and de Leeuw, crossing categories as a conceptual change is difficult for people. Conceptual changes are difficult because we have a "preference to conceptualize many concepts as Matter-based" which is due to the "well-developedness of the Matter category" (35). In other words, our way of thinking is often anchored in Matter, and we resist making a leap across categories. One view of this "concretization of the concept" comes from Silvano Arieti who sees such a concretization as a "primary process mechanism common to dreams and to schizophrenia" (495). Chi, Slotta, and de Leeuw do not make a connection to dreams and to schizophrenia, but they see this resistance of Processes and Mental states as something that "stems from the existence of a mismatch or incompatibility between the categorical representation. . . and the ontological category" (34). In other words, people's "naïve conceptions represent a concept. . . as a kind of substance" (34). Repurposing can be difficult to understand as more than the physical change in the use of a thing since we do have that naïve conception that a concept (such as repurposing) is merely the substance that is utilized in another way. This use of a naïve conception begins early in life, as children often confuse categories, not just from Matter to Processes, but from the third category, Mental States to the Processes.

Chi, Slotta, and de Leeuw give an example of children's misconceptions from an earlier study. When children were asked to explain how animals grow, they confused a Mental State

category with a Processes state. They responded that animals grow (a Process) because they want to (a Mental State), indicating a child's view of the world is one based on wishing and wanting (Mental States) not on Processes. Due to this misconception of categories, children contend with the word through narratives that speak to their Mental State worldview. As children grow, they have a need for stories that organize the chaos of real life, as Elizabeth Bullen and Elizabeth Parsons' "Dystopian Visions of Global Capitalism: Philip Reeve's *Mortal Engines* and M.T Anderson's *Feed*" suggests. Children "learn to devise positive and flexible life stories in ways that are responsive to and resilient in the face of a social world which is no longer secure or predictable" (128), yet, as Bullen and Parsons point out, most children's stories rely on "assumptions about intended child audiences and their need for positive outcomes or succinct closures" (128). In other words, concerning the ontological categories, Matter is a closed state that has discrete boundaries which can grant closures, and to a child, Mental States can have closure; however, Processes are unpredictable since they rely only on a few constraints, and when children are confronted with Processes, they reassign the Process to another ontological category, which allows for closure. Many children's books and stories often uphold this transference of categories and reinforce to the child that the transference of a Process to another state, one which can have closure, is not only an acceptable thinking practice but also a worthy and positive practice.

One such story is *The Lorax,* by Dr. Seuss. The basic narrative is that the character, Once-ler, cuts down all the Truffula Trees to make Thneeds and ends up destroying the entire eco-system. The telling of the story shows the world becoming worse by the page, with the

Lorax decrying the Once-ler's actions and forewarning more damage to the environment. In the end, instead of the world remaining a desolate land, a dystopia, from which an environmental lesson could be studied and learned, the Once-ler gives a young boy the last Truffula Tree seed. The seed in a literary sense would represent the symbol of a new hope for the future; however, when considering the transfer in categories of thinking, the seed allows a child to transfer from the unclosed Process of the environment's destruction onto the Matter state of the seed. The problem with such a transfer of states is that it reduces critical thinking; children need not critically evaluate the Process of the deforestation of the Truffula Trees because a Matter state, the seed, will heal all of the problems.

As Bullen and Parsons point out, "if children are to be resilient and adaptable citizens in the face of an uncertain and unpredictable future in risk society, they need to be able to view it critically" (138). They further suggest that for anyone to be resilient and adaptable, "one necessarily has to stand outside culture and ideology" (138). One way of standing outside of culture and ideology is in reading dystopic narratives, in "leaving the reader with some discomfort that they [the narratives] ask the reader to seek its cause." For Bullen and Parsons, reading dystopic narratives "becomes an impetus to action" since dystopic narratives "can be read as empowering, mapping a trajectory from bystander to action" (138). In *The Lorax*, the transfer of Process state to a Matter state does not ask its reader to seek causes in order to assuage their discomfort. *The Lorax* ameliorates any discomfort and ignores causes through the transfer to a closed Matter state, the seed that will make the world well again.

Further in this chapter, I return to this discussion to relate this discomfort to Lacan's *little a* and to connect "impetus of action…bystander to action" to Ricouer's *ipseity*, but here the immediate aim is to show how repurposing occurs in children's dystopic novels as a means of aiding in that impetus.

Children can "devise positive and flexible life stories in ways that are responsive to and resilient" to the future by reading stories about dystopic situations. I follow Bullen and Parsons in suggesting that it is the reading that gives children such a responsiveness and resilience, and I add to their idea by suggesting that by reading dystopic stories, children move from a focus on Matter-based categories to Process categories. In children's dystopic narratives, children are not simply given procedures for repurposing, they encounter protagonists who use Processes to solve problems.

To an adult, children's books, such as the series called *Series of Unfortunate Events*, may not seem dystopic in a global sense, but to children, who tend to focus on family and immediate surroundings, the stories have cataclysms comparable to adult concerns of nuclear war or climate change. From nuclear threat in an adult's world to family disruption in a child's world, the central point of these dystopic narratives concern the disruption, the insecurity, and the unpredictability of a future, rather than the harbinger of doom (nuclear bombs or divorce) itself. What children experience in their reading of Processes in these dystopic narratives is not merely templates of procedures, but characters who innovatively design problem solving. We can learn to make fire from Piggy's eyeglasses in *Lord of the Flies* or to pick locks from Violet's contraption made of an electrical socket, thumbtack, and soap in *The Reptile Room*, one of many books in *A Series of*

Unfortunate Events. Seemingly, there is a need for children's stories that show characters such as Violet being "responsive and resilient."

Stories of Violet are only one of many dystopian novels shaping children's worldviews today: "The past year [of 2008] has seen the publication of more than a dozen post-apocalyptic young adult novels that explore what the future could look like once our unsustainable lifestyles cease to be sustained" (Green). However, dystopic children's narratives are not new. If children's dystopic stories help children be responsive and resilient and have no closure, assuredly, the Greek myth of Icarus is one such dystopic story in the eyes of children. Instead of reiterating a history of dystopias (which dozens of books and websites more than aptly discuss), I extend my own history, from childhood to adulthood, that moves through four decades of my interactions with dystopic narratives.

When I was 11, perhaps 10, (circa 1976), I read a dystopic novel of which the title eluded me for years. Since the mid 1990s, I occasionally spent nights roaming the Internet, using every search word and phrase possible to re-locate this novel. It haunted my adolescent mind during the late 1970s; I am sure I had little to no awareness of the real-world specter of nuclear war. In the novel, *The Girl Who Owned A City*, everyone over the age of twelve dies of an unknown disease, leaving the children to fend for themselves. Unlike the *Lord of the Flies*, which happens on an island after a plane crash, and is thus far removed from most of our daily lives, this story unfolds in suburban Chicago; I grew up on the farther edges of that suburbia.

In the novel, the children fortify a school into a castle, but other than that fragmentary memory, and one other, the rest of the plot and chapter by chapter narrative eludes me to this

day. What does remain still locked into my mind is the end of the novel. The children are only a few hundred strong, lining the walls of the "castle." They have feared yet prepared for the coming of a child warlord, who has rallied others under his yoke and set out across suburbia to the edge of the cornfields (where I lived) on his quest to conquer the world. In the last line (or so my memory recalls), the King of Chicago rises over a hill in front of the castle-school, thousands of warrior kids in his army. The end.

Though a chilling ending in its emptiness (assuredly, at least to my memory, there are no "positive outcomes or succinct closures"), a hint of hope mingles with the coming doom. The characters survived throughout the novel on their repurposing of ideas and items, from thinking across domains—from one category to another category to utilize objects and ideas in new ways. They crossed categories, from Matter to Processes. I didn't know that that was occurring when I read the story as a child. If I re-read that novel as an adult, will I realize that I remembered the whole story incorrectly? Perhaps I will realize that all of my memories were shaped and changed by the real-world concerns of nuclear war and not by that story at all. Perhaps I was biased and that bias now colors everything I read and everything I might have to say on the subject of dystopias and survivalist worldviews. Perhaps the comfort of pointing my own psychoanalytic finger at the impressionable mind of myself as a youth allows for "positive outcomes or succinct closures" and thus a dismissal of fears concerning dystopic futures. Perhaps it was the apes.

At some time in my adolescence, I saw the *Planet of the Apes*; I witnessed the disturbing ending of Taylor, dropped to his knees on a beach, looking up at the Statue of Liberty yelling "You maniacs. You blew it up. Damn you—damn you all to hell." This cry was a jeremiad for

the next decade—a fear that we would, indeed, blow ourselves up through nuclear war. However, despite the fear, or in spite of it, we rallied heroes and ideology. The 1970's and 1980's worldviews were ripe with mythic heroes and dualistic posturing of opposing sides, from our geopolitical confrontations to our *Rocky*/*Rambo* movies, and we who lived through those times became products of that period's worldview, as Mick Broderick suggests in "Surviving Armageddon: Beyond the Imagination of Disaster." President Reagan issued two conflicting views of nuclear authority and destruction: one suggested the inevitable clash with Soviet nuclear might and the other advocated Star Wars (the Strategic Defense Initiative): destruction (nuclear war) and heroes (technology). These two very real-world possibilities simultaneously added to dread and to hope, respectively, and they fulfilled real-world mythological contexts for the period's science fiction of an evil versus good wherein a hero navigates the two while surviving in a post-apocalyptic terrain (Broderick). With the close of the Cold War in the early 1990s, the 1980's anxieties remained even though the real world's problems diminished.

Paul Boyer discusses how the old anxieties sought a new cause: "historically it has been the period immediately following disarmament treaties and geopolitical shifts which has led to the submergence of nuclear fears and their projected displacement onto other arenas" (qtd in. Broderick). In a special apocalypse themed volume of the journal *Twentieth Century Literature*, James Berger's "Twentieth-Century Apocalypse: Forecasts and Aftermaths" suggests that there has been a "sudden evaporation of apocalyptic feeling at the end of the twentieth century" (386). This decline in feeling does not necessarily mean a decline in anxiety, especially since Berger's

view means we are in a period of transformation, and transformation means instability and an increase in anxiety:

> Frank Kermode wrote in *The Sense of an Ending*, a book that is still the starting point for thinking about twentieth-century apocalyptic literature, that the apocalyptic imagination takes as its premise the conviction that time has reached a critical juncture; that there is a unique importance to the present moment, for the nature of things is, just now, being transformed into something utterly different. (389)

Berger suggests that critical juncture occurred at the end of the Cold War, when mutually assured destruction was no longer a possible future. One can imagine, then, Berger's use of Whitman to summarize this period of transformation that still houses former anxiety: "something startles me where I thought I was safest." Whether today is informed by being in a transformational period (Berger) or by feeling yesterday's lingering anxieties (Boyer qtd. in Broderick), the anxiety does continue. One anxiety concerns our sense of place and space in a world wired from PCs to cell phones and from GPS to iPods. Townsend discusses how "mobile phones increasingly add an element of uncertainty about physical location to our urban environments," and May cites not only him but Fortunati to discuss how we miss the experiences of everyday life while we are using cell phones; in Fortunati's words, we lose "directly experiencing everything the social space can offer" (qtd. in May). To Townsend this digital removal from an urban space means that digital-users experience their surroundings through different spatial and temporal constraints than non-digital-users. To May this removal speaks of a

separation of "tribes," those who are digitally connected and those who are not. In both views, we see a bifurcation of worlds bound to cause anxiety by either "tribe."

I, too, then, am shaped by both my direct interaction with technology and my indirect connection through others' uses of technology. If children are shaped by their insecurities of the future, if the Cold War made us insecure about a stable future, if those anxieties still linger long after those eras have passed, if new anxieties form concerning stability, I am unsure, then, whether it was my earlier child self or my adult digital self that has me believe that I was never truly conflicted about the story *The Girl Who Owned a City*: I saw myself then as both the 12-year-old girl who leads the students lining the castle-school and as the King of Chicago. Did I actually think that way in my childhood, or as a digitally minded person having fears of a dystopia futuristic, do I find solace now, in a digital way, by eliding my identity? Of all of the technological marvels in the digital age, it is an eliding of identity, a transitional space of identity, a continual liminal space, where we can align ourselves with many diversified aspects of a human story, yet those transitional spaces are not merely a symptom of a former anxiety, for in and of themselves they cannot yield closure. In dystopic narratives we have "critical junctures," as Berger discusses, or transitional spaces and accompanying anxieties that are symptoms of former anxieties, such as Boyer discusses. As Broderick suggests, we have a dual view of technology; technology is both a hero saving us from those anxieties (such as the Strategic Defense Initiative) and a cause of that anxiety, such as the idea from Townsend, May, and Fortunati that technology can separate us from each other. Today, however, in some ways, truth is indeed stranger than the fiction of dystopic narratives.

Mike Gane, in "Conflicting Visions of Code--Work in Recent Social Science Fiction Information," suggests that since technology now yields a reality of physically altering our identities, through surgery, gene manipulation, and cybernetics, our fiction must struggle to say something that is new, fresh, and beyond our reality: "just at the very moment when transgenic variation is becoming a real possibility, fiction finds it has the problem of saying something that has not already been said about the mutant, the neohuman, the post-human, the android and the cyborg" (802). The "problem" Gane discusses seems to point toward subjects or themes of futuristic dystopic narratives; however, as discussed next, dystopic narratives cannot ever be exhausted of the transitional spaces to which they refer.

I suggest that in these transitional states (these "critical junctures"), where technology can be both villain and hero, where digital tribalism can both connect people within the tribe but also separate tribes from each other, we learn how to make conceptual changes across ontological categories and in doing so move from bystander to action, from misconception of categories to *ipseity*. This move occurs within the narrative of the dystopia as a repurposing of items and ideas to confront the challenges of the post-apocalyptic world, and this move also occurs within a readership of those narratives by experiencing the Processes in these dystopic narratives, not as merely templates of procedures but as innovative problem solving, as mentioned above concerning children and dystopic narratives. An examination of a series of sub-genres of dystopic narratives will aid in an understanding of that move and the conceptual change.

Though all of these sub-genres focus on dystopic narratives and on repurposing in dystopic narratives that prepare people to live beyond survival in times of political and

environmental upheaval, these sub-genres are arbitrary. They are not canonized nor are they Library of Congress catalogued. The first is cyborgs, cyberborgs, and gene technologies: dystopias that concern enhancing what is generally considered *human* to something more than—other than—human. The second sub-genre discusses dehumanization: the removal of that which is human, our emotions, our agency, our rights—and, concomitantly, zombies and diseases. The third sub-genre covers the iron hand, or even kid glove, of totalitarian regimes: "Big Brother", "Little Sister" governments, and monstrous bureaucracies. The last sub-genre seems the most prevalent in our world today: post-apocalyptic terrains, wastelands, urban collapse, and societal dissolution. By first tracing a line through *The Terminator* series and its franchises, we can see how our dystopic narratives have kept in line with a transition from neo-Luddite fear of nuclear war in the 1980s to a current digital worldview of cybernetic survival.

Cyborgs and Cyber-borgs

In 1984, *The Terminator* entered theaters carrying a neo-Luddite fear that machines (computers) would take over, cause nuclear devastation, and send humans into a dystopic world. The movie-going public didn't really care. Few went to see the movie. Two weeks later, George Burns' sequel in *Oh God, You Devil!* made more money in its first week than *The Terminator* did in its first week. A week after that, *Supergirl* made $1 million more in its first week than *The Terminator*. *The Terminator* grossed only a total of $38 million in US box office sales during its run in theaters, which means the movie was never received well by the movie going public;

however, within seven years, during the proliferation of VCRs and premium Cable stations like HBO, a fan base had risen so steeply that the second Terminator film cleared more than $38 million in its first few weeks; in other words, *Terminator 2* made more in two weeks than the first movie made in total during its entire time in theaters. According to "Box Office History for End of the World Movies" on The-Numbers.com, *The Terminator* began the "End of the World" genre of movies. From 1984 to 1991, it was the only End of the World movie until *Terminator 2: Judgment Day* in 1991. Then for seven years, again nothing. From 1998 to 2008, 15 movies were made to fit their category of End of the World, ten of which were made in 2007 and 2008. These statistics (especially when combined with the earlier mention in the rise of children's dystopic stories in 2008) suggest an ever increasing demand for these types of stories. But why the increase?

Perhaps people, myself included, loved the movie because we all were morally safe in our desire to kill this new enemy, these robots, these cyborgs. Susan Sontag suggests that such an "enemy" offers us a safe war—one with no moral impositions: "wishful thinking. . . the hunger for a 'good war' . . . poses no moral problems, admits no moral qualifications. The imagery of science fiction films will satisfy the most bellicose addict of war films, for a lot of the satisfaction of war films passes, untransformed, into science fiction films" (31). The terminator-cyborg was not just an enemy, but an unconscionable monster and a seeming unstoppable force. We could find further motivation to hate this immoral being in his quest: to kill a mother—and not any mother, but the mother of a child, John Connor, who would one day, in the future, be the

leader of the human resistance against the machines. We can feel righteous hatred toward the killer of the mother of freedom, of humanity.

The Terminator franchise began during the Cold War and extended over the boundary of Cold War and post-Cold War; in that brief change from era to era, a new worldview arose in which, as Paul Boyer suggests, the search for a new anxiety began, due to, in Berger's words, "a critical juncture." In the search for a new cause of an old anxiety, technology would not be left alone. Technology became an integral underpinning, not the main fault and problem. The fears in the 1990s had technology intricately woven into them: transportation systems, causes of climate change, and the ease of distribution of disease and viruses (even the creation of new viruses needed the latest in technology to achieve):

> Many of the newer anxieties turn in fact on the idea that the oil-intensive planetary transportation system so vital to the functioning of contemporary capitalism ultimately abets climate change, the arrival of peak oil, and the circulation of viruses, while globalized financial markets are capable of spreading contagions (as in the “Asian flu” of 1998) of a different kind. None of this was impossible to imagine during the nineties. (Kunkel 89)

Into this world came the second installment of the Terminator franchise, *T2*, occurring after the dissolution of the Soviet Union and the "end" of nuclear fears. In this new world, the narrative of dystopia changes; the Schwarzenegger terminator-cyborg is now the hero, helping to protect the young John Connor as he fights against a more insidious morphing terminator-cyborg. We can see in this change the strict neo-Luddite fear of the machine give way to a world

view more akin to Haraway's view of the cyborg, where human and machine are interdependent. This second installment, *T2*, even ends with the mother believing that perhaps the Schwarzenegger terminator-cyborg is the father figure that her son has always needed.

In the third installment, *T3*, the cyborg is again the hero, saving young Connor from an even more pernicious terminator, but instead of propagating fears of an apocalypse, the film centers on John Connor's training and preparation to survive in the soon-to-be dystopic future; dystopia, so the film assures, will happen. That theme of training to be able to survive a coming dystopia was then picked up and carried out weekly in a televised installment of *The Terminator* franchise in 2009— *Terminator: The Sarah Connor Chronicles*. The male cyborg Schwarzenegger is replaced with a female cyborg hero, the new protector and friend of John Connor.

This recent installment of the man vs. machine narrative (that began in the 80s with fears of nuclear devastation) now focuses on man and machine as possible lovers, with many subtextual or nuanced scenes and story lines that suggest a sexualized and emotional bonding of the hero and the machine, a sexualized connection discussed by Claudia Springer in "Digital Rage." Springer shows how the once Victorian separation of *thought* and *sex* has become "thoroughly entwined in contemporary cybercultural discourses" and that the "ascription of sexuality to computers is part of a larger well-documented tendency for people to anthropomorphize computers" (337). A sociological model of an interaction between man and machine suggests not merely sexualization but also an unpredictability, as John Urry does: "the forms and possibilities of social life . . . enable the insertion of novel technologies that at that

moment and in that society are stably embedded but which nevertheless have future unpredictable consequences" (264). It is this unpredictability that the franchise currently used in its latest plotline: will the new terminator-protector betray John Connor by killing him or seducing him, or will she maintain her loyalty, even friendship, with him? *Terminator: The Sarah Connor Chronicles* is a post-apocalyptic survival narrative for the digital age, where the interaction of humans and machines involves identity and community, rather than the 80s dystopia that focuses on dread and played out on the screen with neo-Luddite fears.

Susan Sontag suggests that the monsters of 1950's and 1960' films were an "aesthetics of disaster," metaphors for nuclear annihilation, and Broderick suggests that, from the 1940s to the 1980s, science fiction, especially those concerning some form of Armageddon, concerned itself "primarily with survival as its dominant discursive mode." We can see this with the newest installment of *The Terminator* franchise, *Terminator: Salvation*, in which the setting is not our time, but the future world of John Connor, where he leads the resistance against the machines in a post-apocalyptic world. In *Terminator: Salvation,* the convergence of human and machine is reversed with the creation of a character who is machine but thoroughly believes he is human.

The Terminator franchise has had a continued acceptance by the viewing public, a verification in itself that something within the films appeals to filmgoers, and perhaps that something is the 1980's view of a cyborg as a thing-apart-from-humans which has changed with the new millennium's view of a cyborg as a post-human. To better understand how the cyborg has risen from a quiet film in the mid-80s to a worldwide franchise in 2010, we can read across cyborg-themed films with how we preface experience by Slajov Zizek.

Zizek suggests that we all preface our digital experience with an uncertainty concerning what others want from us, and our attempt to reflect that uncertainty is a hysteria. Zizek outlines four types of how we preface our experiences with digital technologies: 1) common sense version—helps us to communicate, 2) paranoiac version—loss of autonomy, 3) perverse liberating—gender switching, etc, and 4) New Age—such as a collective noosphere. The second one, paranoiac version, appears farther below in the section on totalitarianism, and the other two appear in later chapters, but the third one is of interest here: perverse liberation.

Depending on one's political positioning, Zizek's category of "perverse liberating" can seem hopeful or dystopic. Within this category, the concept of a cyborg has many possible meanings, leaving us many possible interpretations of dystopic narratives centered on cyborgs. Donna Haraway's "cyborg" suggests alternatives to a wide variety of hierarchical structures, and thus in Zizek's "perverse liberating" these alternatives are a liberation from traditional hierarchies. In order to fully utilize these "perverse liberations," we need to have the ability to reconstruct boundaries, according to Haraway, to take "responsibility for social relations of science and technology means…embracing the skilful task of reconstructing the boundaries of daily life, in partial connection with others, in communication with all other parts" (316). That "skilful task of reconstructing" is repurposing: using a kind of mental quality to create new uses for objects and ideas not intended for those purposes. However, others might see "perverse liberating" as a negative, as a destructive element. There is a psychological safety in maintaining the boundaries of life, and any narrative, with or without cyborgs, that attempts a restructuring could be easily construed as a dystopic future waiting to happen.

The same suggestion of seeking a psychological safety in maintaining boundaries of life can be made of David Thomas' ideas, which are decidedly optimistic. To Thomas, technology is a space within which we can change; it is a "powerful, collective, mnemonic technology that promises to have an important, if not revolutionary, impact on the future compositions of human identity" (Thomas qtd. in Squires). The language of Thomas is clear: technology equates with "promises," but to Jennifer Gonzalez, "requirements" are demanded, such as in her discussion of the hybridism of cyborgs and L'Horlogere (Mistress of Horology) as a change from one ontology to another: "when the current ontological model of human being does not fit a new paradigm, a hybrid model of existence is required to encompass a new, complex and contradictory lived experience" (542).

Neo-Luddites might well agree with her but preempt her argument by suggesting the problem is that a new paradigm, an unwanted one, arose in the first place. Claudia Springer surveys cyborg fiction to discuss not only cyborg "place" and gender "places," such as with Sarah Conner from the Terminator franchise, but in regards to the unpredictability of the future. Tizianal Terranova discusses post-human and post-humanism. The problem, Terranova suggests, with cybernetic post humanism (CMC) is the "rampant super-voluntarism" of people choosing to change what is human into what is posthuman or transhuman. Terranova seeks to critique those who believe CMC will simply and easily and equally distribute material and cultural resources. His critique aims at undermining a possible dystopia where voluntarism into cybernetics will advance, if not worsen, the same materialism and class separation that already exists. In any

discussion concerning CMC or a new ontological model of being human, the idea of *humanity* is called into question.

Gane suggests two ways of understanding this term *humanity*. One way is through Steve Fuller's idea of members of the same species, the other is from Baudrillard. According to Fuller, humanity is "the properties that all human beings possess either individually or collectively, but in any case uniquely as members of the same species" (Gane 803). Baudrillard, though, suggests an eliminable process by which we may, some day, understand what it is to be human. To Baudrillard, humanity is "a kind of adventure, an heroic test: to take the artificialization of living beings as far a possible in order to see, finally, what part of human nature survives the great ordeal. If we discover that not everything can be cloned, simulated, programmed, genetically and neurologically managed, then whatever survives could truly be called 'human': some inalienable and indestructible human quality could finally be identified" (Gane 803).

Baudrillard's "test" to understand what it is to be human may take some time before we can derive such an answer, but his concepts of the simulacra offer us a better insight to the cyborg. According to Baudrillard, we mediate our relationships with each other through images, symbols, and signs, yet images, symbols, and signs lose the meaning to which they refer and instead refer simply to themselves as a mediation of relationships among people, and thus forms hyperreality. I am always acutely aware of this concept when I am in the downtown of the city in which I live. It's old. It's quaint. It's reconstructed. Everything about the small community downtown aims to refer to a past era where the downtown was the focal point of community relations. Assuredly, in its past, the downtown did *refer* to a community center; it *was* the

community center. It was a place in which people formed, built, or extended their relationships with one another, thus continuing the community. Now, though, the refurbished facades (some even maintaining fifty-year-old signage), refers to a place that no longer exists; the downtown is no longer a place of community and of relationships between people—it is a shopping center.

The "existence" of the terminator-cyborg allows us to connect to each other through it as a mediated image, yet unlike the mediated image of, say, the downtown, this mediated image of the terminator-cyborg (if it succeeds in its mission in the film) means the destruction of mediated images, as they too would disappear with the collapse of human civilization. To hate the terminator-cyborg is to have the satisfaction of a moral hate in common with others (connecting with others in the mediated image). Seemingly then, our need for the terminator-cyborg to be destroyed and for the hero to win suggests our need for the continuance of the simulacra. However, if we simply rejected the terminator-cyborg, we could do so by ignoring the movie, by hating the movie itself. But we don’t. So what compels people to want to experience a dystopic narrative that houses a theme of the removal of the simulacra? Below, in the section on zombies, a further discussion of Lacan's and Baudrillard's ideas will help toward an understanding of not only that question, but will illuminate how the dystopic narratives, in themselves, are also simulacra.

For this section, a discussion of cyborgs relates to one of the ways in which we preface our interaction with technology: perverse liberating. That "perversion" is akin to Haraway's suggestion of a skilful reconstructing of boundaries. As cybernetics becomes more of a reality,

we will need not just the science that fabricates cybernetics but a "kind of mental quality" that will allow us to use bodies and minds in ways they were not developed for.

Totalitarian Regimes/"Big Brother" Governments/Monstrous Bureaucracies

While totalitarian regimes, "Big Brother" governments, and monstrous bureaucracies may immediately bring to mind such political narratives as *1984* and *Brave New World*, I am more concerned here with digital age narratives, where humans are subsumed into a cultural juggernaut. In these forms of dystopias, people are information data sets. They are part of a wider information code "in the way that love, hope, emotional complexity, spontaneity, or humanity might be excluded from or 'reduced' to information" (Gane 802) rather than as constituents in a form of politics. Within these dystopic narratives, the community is emptied of any meaning: "These works tend in the direction therefore of (re)producing a norm, and of conserving it, but the norm is the bizarre utopia of a communism without a community" (Gane 801). As John Urry suggests, there have been many ways in which sociologists have attempted to see the future according to some particular aspect of the present: "Weber's dark account of the emerging 'iron cage' of bureaucracy, Durkheim's anxieties as to the future significance of anomie or normlessness within social life, and Simmel's extrapolations as to how life within the metropolis will increasingly entail systems of punctuality and the spread of a blasé attitude" (Urry 261). The human subject is the concern with these speculations of dystopic narratives of

the future, but for this section, I would like to focus on a real world dystopic narrative: "The Unabomber's Manifesto."

Zizek's second way in which we preface our interaction with technology (of the four he outlined) is the paranoiac version—a loss of autonomy, a theme that entwines all of Kascinki's ideas together in *Industrial Society and Its Future*, better known as "The Unabomber's Manifesto." Kascinski formulated an anti-leftist thesis while also disavowing the political right. His overall premise is that two main elements undermine people today: leftism and technology, and they are inexorably entwined.

According to Kaczynski, "the continued development of technology will worsen the situation. It will certainly subject human beings to greater indignities and inflict greater damage on the natural world, it will probably lead to greater social disruption and psychological suffering, and it may lead to increased physical suffering even in 'advanced countries.'" He believes that a technological society must weaken the bonds of family for it to work efficiently. For that technological society to work well, people must give themselves first to the system, then to communities. He preempts any optimism of technology by stating that "people anxious to rescue freedom without sacrificing the supposed benefits of technology will suggest naive schemes for some new form of society that would reconcile freedom with technology." The problem, to Kaczynski, and the main thrust of his paranoiac vision, is that technology infantilizes people, and it is the causes of leftism (oversocialization in particular) that makes people weak enough to be subsumed and infantilized. Diane Gromala discusses another such pessimistic view of technology: "a deterministic view of VR which places its development as increasingly

removed from human control, somehow taking on a nature of its own, an essentialized apostasy." Kaczynski seems to fit her model, as he too became a neo-Luddite apostate. However, not all pessimistic views should be indicted as Unabomber-esque.

Arthur and Marilouise Kroker's ideas might sound like Kaczynski's to some degree, but their ideas stem from a search for an understanding of the human condition within a technological world rather than a condemnation of that world, but like Gromala's ideas, their ideas might help us better understand the radical edge to which a Unabomber can tread. The Krokers discuss the bunkered ego that is distended from society: "The bunker self is infected by ressentiment against those it holds responsible for what ails it…dumbing down is the last blast of slave consciousness" (97). Referencing Sartre, the Krokers discuss how "a schizoid self is simultaneously in-itself and for-itself, an unrecoiled self flipping between illusion and self-contempt. Today it's hip to be dumb, and smart to be turned off and tuned out." This bunkered self becomes a predatory self that uses a "tried but true formula of 'use and abandon,'" and by doing so, "the predatory self does the ultimate dumbing-down trick: it sheds its flesh (for cyberskin), its mind (for distributive intelligence), its nerves (for algorithmic codes) , its sex organs (for digital seduction), its limbs (for virtual vectors of speed and slipstream access), and its history (for multiplex hard ram). Virtual Gump" (97). In an effort not to seem too negative of technology, the Krokers suggest that "It isn't a matter of being pre- or anti-technology, but of considering the consequences of virtual reality when it is so deeply spoken of in the language of exterminism" (98). Yet in their final assessment, we can see the strong anti-technology pessimism in their worldview: "McLuhan was wrong. It is not the technological media of

communication as an extension of man; but the human species as a humiliated subject of digital culture" (103). Shedding of flesh, skin, nerves, and sexual organs—they speak as the sociologist William Bogard does—of zombies: "Postmodern zombies, conversely, are the product of a will that has no qualms about dividing the body into its tiniest parts in order to recombine and re-sequence them. Corpses are tied to the industrial period of Capital, but zombies are products of the information age."

Perhaps this genre should be called Digital Totalizing, where humans are reduced through one measure or another into a technological infancy and subsumed by a larger technological societal structure. However, I suggest that people are not infantilized by technology, nor are they dumbed down in a wish to turn off and drop out; rather, perhaps it is a lack of a certain ability to interact with new technology that has us stupefied, such as when we experience magic tricks. As Arthur C. Clarke suggests, "any significantly advanced technology is indistinguishable from magic," and in the presence of magic, we are stupefied (unless we know how a trick was done, in which case it's not magic). I suggest that the problem is the interface: an interface that is a "kind of mental quality" that we use with technology. I suggested in Chapter Two that that kind of mental quality has been in human experience within historically marginalized groups for most of human history. In this chapter, I am suggesting technology is not infantilizing but sustaining a dissonance among the majority culture of the West that opens a space for training in and uses of repurposing.

Dehumanization/ Disease/Zombies/Viral Outbreak

A growing body of dystopic narrative concerns zombies. Zombies are "utterly implacable because they are, in David Chalmers' term, 'all dark inside,' lacking ethical or affective judgments. Yet they are disturbingly like us, and as such can act as springboards into ways of understanding the ontology of the subject" (Webb and Byrnard 84). In other words, while modern dystopic myths and movies uses zombies as an anthropomorphic collection of dehumanization, disease and viral outbreaks, we can use them to understand aspects of being human. In this section, I suggest an ontology of repurposing by using Lacan, Freud, and Ricouer, yet I do not seek to weave a philosophy that explains repurposing, but a trace of theories that help us understand where and how that *kind of mental quality* occurs within our sense of being. Together, these theories of Lacan, Freud, and Ricouer reveal that the seat for this *kind of mental quality* does not rest in the mind, but in the body as well. It is fitting, then, that I begin discussing repurposing as a body knowledge through the discussion of a mythic being that is all body and no mind.

Zombies have forgone emotive responses or sensual connections to the world (save a need for food): zombies "have no capacity for subjective phenomenal experiences, or for ethical or affective judgment – and this alone is cause for the fear they generate in audiences for such films" (Webb and Byrnard). Aside from dystopic cyborgs bent on human destruction such as those in the Terminator franchise, no monster real or fictional is as horrifying as the mindless, yet determined, zombie. (Even in our cyborg based dystopias, the machines have a goal or desire

to achieve some grander cause or ideal.) Zombies have no goal, no cause—they are just pure *drive*.

Zombies are a simulacra in that they show us both a part of ourselves that we do not have in common with them (a need or a desire) as well as a part that we do have in common with them (a drive). One part that we don't have in common is that we *need* (and though we could use the word "need" with zombies—they need flesh for food—they do not, according to all cultural motifs of the zombie, need to eat to stay alive, or to stay undead.) We *desire*. (Though we could also use the word "desire" to suggest what zombies want—flesh for food—they do not have an "I" that seeks to fulfill personalized or communal satisfactions.) However, according to Webb and Byrnard, humans and zombies both have a *drive*. Drive is an "unthinking response of the subject to what Lacan. . . has called. . . the little a. . . The 'little a' – the other – is what emerges in the primordial void created when a person leaves the world of sensation for the realm of language, the symbolic order" (88). There is, then, an absence/presence inside of us, an apprehension but not a comprehension of the "something uncanny, or 'beyond our ken' about ourselves" (88). Webb and Byrnard assert that "this is not just a truism of cultural theory; it is also a physiological principle" (88).

In "Instincts and their Vicissitudes," Freud discusses how such a drive is not instinctual but somatic: "an 'instinct' appears to us as a concept on the frontier between the mental and somatic, as the psychical representative of the stimuli originating from within the organism and reaching the mind, as a measure of the demand made upon the mind for work in consequence of its connection with the body" (Abel). According to neurologist Richard Cytowic, there are parts

of us that are "inaccessible to self-awareness, the latter being only the tip of the iceberg of who and what we really are. The 'I' is a superficial self-awareness constructed by our unfathomable part" (Cytowic 170–1). Thus, we can never truly have pure agency of ourselves or our lives since this *uncanny something inside* cannot be accessed or expressed in lived experience; however, the *little a* can zombie *us*, (we react to that unfathomable part, knowing it is there, but unsure how to negotiate its drive—much like we cannot negotiate with the pure drive of zombies). This *little a*, this zombifiying thing, "gestures towards who and what we might be: someone with the capacity to reject the symbolic order and return to the wildness of the id" (Webb 88).

Yet there is more to identity than this absence-presence that constitutes the uncanny something of the *little a*. Ricoeur combines identity dialectically with social formation in order to theorize our personal identity as an instance of *ipseity*. *Ipseity* is my spontaneous being as shaped over time in response to my historicity. The social historical context may be more than the place and times in which one lives. Arthur Koestler suggests that the basic part of creative thought is bisociation: "perceiving a situation or event in two habitually incompatible associative contexts" (qtd. in Haring-Smith 24). Thus, the social historical context may be both the times in which we live and the incompatibility we have of incompatible associations of trying to make sense of those times: a specific place and time cultural milieu is more easily understood from a future vantage than while living it. It is a spontaneity, an essence that reacts instantaneously, but that response is affected by all the social norms and social influences, meaning society influences that spontaneity. Ipseity then occurs due to two things, and those two things are dialectically arranged, interacting with one another: our social historical context in which we live and our

actionable creative initiative, which is when we break into the flow of cause and effect in a way that is not understandable through philosophical methods or sciences. According to Ricoeur, ipseity is the "central truth about human agency" (van Hooft). We intervene in the world by an action that irrupts into the flow of events, and such an action is "not capturable by a purely descriptive philosophical method any more than by the physical or human sciences" (van Hooft). While we cannot capture ipseity as a thought, it does occur—in the body as an action. What "gestures towards who and what we might be: someone with the capacity to reject the symbolic order and return to the wildness of the id" becomes in lived experience an actionable creative initiative, but not just any act of creation; it is one that irrupts into the flow of events. To Ricoeur, those events into which irruption occurs are one's social historical context, such as, referring to Chapter Two, the economies, that like dystopias, are social historical contexts that require people to utilize a surplus of "junk" to their ends.

According to Julianne H. Newton in her article "Visual Ethics Theory," "neuroscientists had determined that humans operate from perceptual bases that are more often unconsciously or intuitively oriented than rationally discerned. . . . the assumed superiority of rational thinking processes over intuitive processes is shifting in recognition as a need for both" (Newton 431). If we cannot use science to "capture" this break, that means the break (irruption) is non-rational. The non-rational component of the dialectic is what I call *repurposing*, a break into cause and effect—by which we have actionable creative initiatives which, dialectically with social influences, leads to ipseity—a spontaneous being of authentic individuality, of real lived experience. However, social influences are also a part of that dialectic, and, as we shall soon see,

post-apocalyptic environs, wastelands, urban collapse, and societal dissolution are variants of a dystopic narrative that influence creative initiatives, that affect repurposing.

Post-apocalyptic Terrains/Wastelands/Urban Collapse/Societal Dissolution

The threat of the simulacra is urbanization, a distention, to use Debord's term, of people from nature. Guy Debord's concept of the spectacle is that the "spectacle presents itself simultaneously as all of society, as part of society, and as instrument of unification . . . [the spectacle is] a world vision which has become objectified" (para. 3), "a collection of images; it is social relations between people that is mediated by images" (para. 4) . Those images separate people, alienate people from each other, and in that alienation from each other, where we are separated, we desperately seek reconnection to each other; however, there are only the images to seek as a means to connect with each other, and we seek those images as a surrogate connection—separation impels further separation. In an urban landscape, those mediating images build what Baudrillard calls a simulacrum. In this hyperreality of simulacra, a false consciousness occurs that replaces real human connection with the false human connection through the mediated images, and despite the need to connect via social relations, any attack on the simulacra is a threat to the stability of false consciousness, a threat to the connections we have. Dystopic narratives threaten that false consciousness.

Above, in the cyborg section, I questioned what compels people to want to experience a dystopic narrative that houses a theme of the removal of the simulacra. It is not the dystopic

content or dystopic narrative that compels us, it is dystopia itself that helps strengthen the simulacra. Dystopic narratives seemingly only occur in hyperreal societies. From the ancient world to the twentieth century, few narratives are dystopic; dystopias flourished in the twentieth and twenty-first centuries in the West. To suggest that dystopias go hand in hand with hyperreality is a tenuous connection, until we better identify how one's self seeks dystopic narratives to better strengthen a simulacra.

According to Baudrillard, a hyperreality creates a false consciousness, based on the mediation of people through images. As discussed earlier, the terminator-cyborg is one such image of mediation. Also, as mentioned earlier, we have this uncanny something, the *little a*, that drives us. From Lacan we also have the theory that people are continually trying to return to the Real, though such a return is impossible. Webb and Byrnand discuss why these, cumulatively, drive us toward an edge:

> The object *a* fascinates because it gestures towards who and what we might be: someone with the capacity to reject the symbolic order and return to the wildness of the id. It fascinates too because it recalls the essential knowledge that death, the ultimate unfathomable, is the only way to regain what we have lost, to fill the void. The problem is, of course, that at the point of death, when the subject is returned to the void, it’s too late to know or articulate this recovered fullness, so the Thing, the inner zombie, remains just out of reach.

A hyperreality moves us further from the *little a*, as a hyperreality shields us in a false consciousness. In such a "place" we are in a distension, in Debord's use of the word, and thus

even the hyperreal becomes a spectacle. But, with dystopic narratives, with the destruction of society, would come the destruction of those spectacles, of the hyperreality, or the false consciousness. Dystopic narratives help us move closer to the *little a*, a closeness that will never be achieved. For one, we simply cannot return to the Real (or as mentioned above, if we can, we are then dead and cannot articulate that "fullness").

However at the same moment we are moving toward the *little a*, the dystopic narrative is reinforcing our mediation of relationships through the imagery, symbols, and signs of the dystopic narrative. That is, as the theme harkens us toward the *little a*, the whole narrative reinforces hyperreality. There, then, in that push-pull, we need a way toward psychological safety. In order to break free of that tug-of-war between *little a* and hyperreality, something must shift in the dystopic narrative. Something must irrupt into the narrative and break the causal flow of the chain of events. That irruption occurs as some event that alters the coming of the destruction, that reorients the dystopic narrative's social historical context—its dystopia futuristic. That social historical context is but one part of ipseity, and it is the other part of ipseity that irrupts into the narrative: creative action. Since the social historical context, the dystopia futuristic, is unchangeable from an individual view, what is changeable, what can be affected is single moments of thinking in a different way, of using some item or idea in a different way, of reconfiguring, reforming, reworking some process that thwarts the destructive future or at least allows humans to survive beyond the dystopia. That is repurposing. It is the irruption into the causal line of a new thinking, and it is viscerally in the pull of the *little a* and the search for the Real and pushed back against by the hyperreal.

In a dystopia, what is left is stark reality. What is left is necessity. What is left is a need to re-invent the former world. However, without a civilization's leisure time and resources, invention is stalled; those living in a post-apocalyptic situation have only a surplus of junk to repurpose into immediate needs, from which time and resources can be put forth toward invention. When the dystopia is righted and people lifted out of crisis, inventing can then begin.

CHAPTER FOUR: THE FUTURE OF REPURPOSING

My claim in this dissertation is that people have been thinking in ways similar to those needed in digital literacy before even literacy occurred. They have done so, usually, as historically marginalized people, as those caught in a dystopic environment, or as both. Chapter Two discussed a history of repurposing and how repurposing is used in many marginalized groups. Chapter Three discussed how and why repurposing occurs in our interior mental states and our exterior dystopic world. This chapter explores a variety of issues that connects to the change from literacy to digital literacy, as such change relates to creative and critical thinking, in order to draw connections between the *kind of mental quality* needed in the Process of repurposing and the kind of thinking that accompanies digital literacy. Like much of any interdisciplinary research, the scope can continually widen to an unmanageable breadth. What follows are tendrils of the central research, which can, depending on the depth of exploration, exceed the breadth of this research, but they are viable problems and areas for future research. Each of these areas arose in response to questions from fellow faculty, PhD students, and friends in other disciplines of study who had read previous drafts. The following are those questions in paraphrase.

Considering Howard Gardner's Eight Intelligences, does repurposing influence each of them, or do some of those Intelligences have a closer association with repurposing, and for a specific person then, a better ability at repurposing? Didn't TV already teach people the same way of thinking as repurposing, not just watching MacGyver, but in constantly seeing how same plots and concepts are reworked over and over again? The idea of us being trained into processes

first and matter second reminds me of an iconic scene in Star Trek, which carries over from the novel *Spock's World*, where Vulcan education is a series of process-centered concepts from which Vulcans learn information (matter); is there a way to teach process without teaching information? In what way does distraction theory alter this training in repurposing? I like the idea of an "interpreter" in our minds that aids in understanding and relaying of ideas to us, does the interpreter interpret repurposing or does this automaticity and repurposing affect the interpreter too?

Knowing the people from which these questions arise, I can sense each person's own concerns in each one's research or central work. The Gardner question suggests this dissertation ignores *difference* in the strategies that learners use to acquire new knowledge and asks for clarification. The TV question concerns this dissertation's leap over the 50 years when TV altered how people in the West consumed information and suggests a mention must be given to TV's role in the history of repurposing. The Star Trek question centers on science fiction as a vehicle to play and explore with radically different concepts of learning and intelligence, and, within this question, I sense that person's excitement that repurposing might be an inroad to one of those new concepts. The distraction question focuses on distraction as dissonance reduction as it relates to automaticity and repurposing. The interpreter question carries with it the worry that even though this dissertation has discussed emotion and the body in relation to repurposing, it hasn't made a full enough connection between feeling/body and the mind. Of these questions, each could be an entire chapter in itself; below is a discussion of each of these questions, given with the aim of each one growing into further research in the future.

Multiple Intelligences Versus "g"

The Gardner question suggests this dissertation ignores *difference* in the strategies that learners use to acquire new knowledge and asks for clarification: Considering Howard Gardner's Eight Intelligences, does repurposing influence each of them, or do some of those Intelligences have a closer association with repurposing, and for a specific person then, a better ability at repurposing?

The idea of "intelligence" is a hotly debated topic, especially concerning the argument of whether intelligence occurs in one form or occurs in many forms, such as the argument between Multiple Intelligences and a concept of intelligence called "g." Often the argument seems to have two positions at stake: one, what is intelligence, and two (which is sometimes weighted even more important in the debate), the political and social ramifications of there existing only one form of intelligence.

To Howard Gardner, “all human beings possess at least eight intelligences: linguistic and logical-mathematical (the two most prized in school and the ones central to success on standard intelligence tests), musical, spatial, bodily-kinesthetic, naturalist, interpersonal, and intrapersonal” (71). Gardner submits two claims to these forms of intelligence. His first claim is that “we all possess these eight intelligences,” and the second claim states that “owing to the accidents of heredity, environment, and their interactions, no two of us exhibit the same intelligences in precisely the same proportions” (72). Others, though, claim that only a single form of intelligence exists that underlies these eight intelligences.

Recently in the *Chronicle of Higher Education*, Christopher Ferguson, Associate Professor in the Department of Behavioral and Applied Sciences and Criminal Justice at Texas A&M International University, discussed a growing pedagogy that counters Howard Gardener's idea of Eight Intelligences: "g." The idea of "g" is that there exists a single form of intelligence, which may, Ferguson concedes, help in the "other" intelligences. This "g" is an "innate cognitive ability that powers learning." For Ferguson and others who challenge the lack of proof supporting the Eight Intelligences, the idea of one intelligence, "g" posits that "there probably is just a single intelligence or capacity to learn, not multiple ones devoted to independent tasks. To varying degrees, some individuals have this capacity, and others do not." The back lash against Ferguson, and others who follow the "g" theory, is understandable. The backlash stems from a fear that a single intelligence, a "g," especially if measurable in individuals, could result in a bias or discrimination of people based on "g." Such a fear occurred earlier in 20th century, leading Williams Bryant Jenning to argue against creationism in the Scopes trial.

For many people the Scopes trial was not about philosophical ideas of social control, but about our origins. Recently, I visited Dayton, Tennessee, and stood on the courthouse steps with a cup of coffee, a coffee obtained from a local coffee shop. While in that shop, I began a conversation with the "barista" and she referred to Dayton as "Monkey Town." I was unsure how to take her meaning. I still don't know if her use of "Monkey Town" was a pejorative, suggesting Dayton was "backward" and uneducated, or if it was derisive of those who think we evolved from monkeys. Clearly, though, as seen in her language use, the contention of being from monkeys is still the general view of the Scopes Trial. Michael Shermer, editor of *Skeptic*

magazine and author of *Why People Believe Weird Things: Pseudoscience, Superstition, and Other Confusions of Our Time* discusses how the Scopes Trial was not just about evolution versus creationism, but about the fear of what could occur if the "gene" argument won.

During the 1920s (the Scopes Trial was in 1925), the nation had been moving toward a scientific view of society based on genetics. The word "genetics" was coined in 1905 and soon entered the lexicon, and by 1910s the idea of chromosomes was well-known. By the 1920s, a fear of eugenics started to rise, a fear of a eugenics that we now metaphorize as Brave New World. The same fear seems evident in the discussion of "g" versus Eight Intelligences, as Shermer pointed out. The discussion of learning and intelligence is wrought with political implications. A single intelligence, g, could be used to support specific ideological worldviews that some people are smarter than others, which in turn could promote a specific type of culture or political regime. One of the problems in arguing eight versus "g," is that "g" suggest an innate ability while the eight intelligences discuss how we interface with information.

Interfaces, Reading and Visual

The TV question concerns this dissertation's leap over the 50 years when TV altered how people in the West consumed information and suggests a mention must be given to TV's role in the history of repurposing: didn't TV already teach people the same way of thinking as repurposing, not just watching MacGyver, but in constantly seeing how same plots and concepts are reworked over and over again?

When discussing what is creative or critical thinking, the idea of interfaces suggests how we connect with our world, and in turn how such a connection forms creative or critical thinking. One mainstay of education has been reading. Few would suggest that reading reduces our creative or critical thinking, but some people do suggest that reading is not the best approach to interfacing with information. According to Michael Gazziniga, a Professor of Psychology and the Director for the SAGE Center for the Study of Mind at the University of California, "Brains were not built to read" (qtd in Barry 56). Unlike many other early inventions, such as shoes to shod feet that were accustomed to walking, reading was not an invention that augmented a human trait or an innate ability of the mind, such as speaking or listening. Inventions that augmented speaking and listening would be megaphones and trumpet shaped hearing horns. However, reading, and writing, seems to aid in memory, in setting information into print so we can store that information. Contrary to that view of storing memories, there has been a long argument about if reading and writing reduces our mind's ability to keep memories. The move from orality to a literacy has been well discussed by others beginning as far back as Plato, and my aim in covering these views is to show the continual concern for the topic, rather than to find support to suggest a position concerning orality versus literacy.

In *Phaedrus*, Plato denounces writing as something which sets ideas outside of the mind, ideas that can only be conceived of *in* the mind. Plato asserts other problems with writing as well: memory loss could occur if one relies on writing instead of on the mind, writing does not respond when inquired of, which contrasts with Plato's (and Socrates') dialectics, and between a reader and a writing, no agonism occurs. Plato's view that by writing down ideas we would no

longer have to contemplate them, to rehearse them and refine them is, seemingly, the least of his concerns. To Plato, the great fear is the loss of a dialectic between speakers, a dialectic that is needed in order for the idea to be inquired of; to Plato, without inquiry of an idea (by questioning the speaker of the idea) the idea could not fully reach its highest level of veracity, and in that search for veracity, an agonism was needed to allow the contentiousness of the idea to be resolved. More poetically, Plato thought that to write is to write thoughts "in water with pen and ink."

Despite Plato's protests of writing, most of his ideas flourished above all others in the West until the 12th century when Aristotle's ideas re-emerged in Europe. However, through that time, writing remained one of the tools of the educated and the elite. Today, we use various ideas of a difference in orality and literacy to discuss the historic changes that have occurred. We did not, as Plato feared, lose our ability to memorize, but we did change our way of thinking about ourselves and our world. In many disciplines, the idea of "thinking about ourselves and our world" suggests a discussion of teleology or cosmology, or *weltanschauung* or life ways; however, to this dissertation, the term suggests an interface—how we interact with the space between interiorized knowledge and the wider world within which we live.

Interfaces, though, affect the interiorized self and thus how we not only perceive but also reach into and create the physical world around us. As Allucquere Stone suggests, "an interface is that which mediates between the human body (or bodies) and an associated 'I' (or 'I's')" (508). What this means for writing is that writing has been "deeply interiorized, incorporated into mental processes themselves" (Ong 169). While this interiorizing was happening in Ancient

Greece, "neither Plato nor anyone else was or could be explicitly aware that this was what was going on" (Ong 24). While we may have "interiorized" writing, and while we may have the ability, and certainly, currently, the need within our modern world, for writing, writing is, as Plato suggested, outside and alien to us: "our brains have no place dedicated to this new invention" of reading (Gazziniga qtd. in Barry). Today, a transition is occurring once again. In Plato's world, the transition was from orality to literacy. Today we are moving into what Walter Ong calls a Second Orality, and what Ulmer calls electracy, and what others called a digital literacy. From our interaction with interactive information to our ability to more swiftly access and store information, we are indeed experiencing a change of our literate interface. Raymond Kurzweil discusses an emergence of an amplified human in this new –iteracy:

> What human beings are is a species that has undergone a cultural and technological evolution, and it's the nature of evolution that it accelerates, and that its powers grows exponentially, and that's what we're talking about the next stage of this will be to amplify our own intellectual powers with the results of our technology (Kurzweil np).

Before seeing how the NetGen is amplifying its intellectual powers, we should look back at the pedagogical influences that first began the change away from literacy to a digital literacy (the use of video in the classroom) in order to later understand *how* intelligence is being amplified.

Reading, as Gazzinga points out, has its own problems, but there are also problems with using media in classrooms. Simply because something has a visual element to it does not mean that the media is more useful. According to van Eck, studies in the 1980s of 1970's classroom

use of media showed no significant changes in learning; however, the problem concerned the use of media, as different from the integration of media. Throughout the 1970s and 1980s, an overarching trope of "Television as the Boobtube" infiltrated many discussions, and the intellectual zeitgeist was that the *subject matter* of video dictated its intellectual worth. Documentaries were pointedly informative (compared to today's documentaries that have rich graphics and story-based vignettes). The demarcation of two worlds, entertainment and education, perpetuated the idea that television was not a useful educational tool, yet television made its way into classrooms as adjunct teachers and substitute texts; anyone having experienced the American school system in the 1970s and 1980s is all too aware of how often a video on a TV equaled a substitute teacher. The problem, as a general term, is the "problem of the box." Focus was on the *subject matter* of the box, not on *learning strategies* of what came from the box.

A debate has occurred throughout the decades between those denouncing television and those upholding its use. In the 1970s, research of cathode ray TVs suggested a slowing of the Alpha wave patterns of the brain. These "low alpha waves," some claimed, put people into a nearly catatonic state, nearly zombiefying them. Proponents of TV even held views that TV did not take much intellectual attention. Krugman, researching in 1971, sees television as being a marker in a rift between not only generations but also between a literate and visual culture. For most viewers, he explains, use a recognition perception of "ah, I have seen this before" when watching TV; however, the younger generation of viewers did not need to have seen something in reality before seeing it on TV because, as he suggests, the younger generation had the "ability

to recognize as familiar a wide variety of things in life." Krugman also bases this recognition patterning on William James' work concerning voluntary and involuntary attention:

> James' distinction between voluntary and involuntary attention means that much of thinking, learning, and reading represents a sequence of successive efforts to attend, while much of the viewing of life around us--films, TV, and other changing stimuli--are far less likely to require effort. In other words, the change, the switching, or the rhythmic process goes on inside man when he is working at the job of attention, or it goes on outside man and inside (e.g.) the moving film as it relieves man of that work (4).

Krugman contrasts this younger viewing audience with print readers, who pause and think when reading, thus forming opinions. Later in life, when the print reader sees something similar, the print reader can address that item or idea with the preset notions garnered by prior thoughtful reading. Krugman's call is not to advance one or the other media, or to denounce contemporary research into brain waves, rather he believes research should look "to better understand the significance of slow brain waves." This non-confrontational view of Krugman, to look to the veracity of what is counterintuitive (that perhaps slow brain waves are not necessarily bad) compared to an undercurrent of research concerning technological media for the next two decades.

Within the last 20 years, two strains of thinking have circulated, one rooted in the wider American culture that suggested TV is bad, the other in academia that sought to understand how we "interface" with technological media. I am less concerned with how Americans truly felt

about TV or about how many did and do watch TV than the overarching trope that TV is bad. Like any vice in the American culture, TV was looked at as not harmful; rather, it was seen as not the most productive way to spend one's time, a basic neo-luddite platform that either fears or loathes technology for a variety of reasons, as I covered in Chapter Three. Today the debate still rages forth. For instance, an American Academy of Pediatricians (AAP) suggestion that kids get fat watching TV (This same claim comes out every few years: 1990, 2004, 2006) was picked up by dozens of media sources from news websites to specialty websites (See Kaufman, Ron "Television, Diet and Advertising: Why Watching TV Makes You Fat"; Nikkhah, Roya "Children Growing Fat in TV time"; "Heavy television viewing makes young kids fat: study" ChinaDaily.com; Hellmich, Nancy "Danger Signs of Child Obesity"). An academic journal based on the AAP suggestion even gives this tantalizing title: "Is Watching Television Making Kids Fat? Fighting Childhood Obesity with the Push of a Button" (Smith-Miller).

Actually, the AAP never suggested that kids get fat *by* watching TV; they suggested that children need to be more active, and parents need to do more than leaving children to their own devices; parents need to help those children become more active. From the wider cultural perspective, TV *makes* kids fat. From the researcher's perspective, a correlation was shown that inactivity leads to obesity (this we've known) but that the fault lies with the parent child dynamic. The article is actually looking at an underlying problem of parent-child relationships, but the wider culture took the article as yet another condemnation of TV.

Throughout the last 20 years, the growth in computer technology has altered the argument. In 1994, schools in the United States had 5.8 million computers, one for every nine

students. But in reality, only 9% reported using computers for English class, 6-7% for math classes, and only 3% in social sciences (O'niel, John). Of the three top reasons for the lack of use, at that time, one was lacking computers *in* the classroom, two was the limited skills of teachers, and the third was an "overall lack of vision and clarity of goals with regard to technology's role in the school." Education with technology was first about programming, then concerned learning applications, but the, then, overarching view of "getting technology" overshadowed the use of technology in classes. The Office of Technology Assessment (a now defunct government office) concluded that "teachers have become confused, administrators frustrated, with many educators unclear where they should be headed with technology use" (O'Neil, John). Today, most schools have "best practices" seminars, either in person or online, helping teachers and administrators to better utilize computers and other technologies. However, as with any tool presented to teachers, the teacher has the choice with when, how, and to what capacity technology is used in the classroom.

To me, this is still the problem of the box. The PC has replaced the TV in the classroom, but the focus has remained the same—what is in the box, what emanates from the box. As van Eck points out, we need more than instruction of the box, we need educational methods that integrate learning with the DGBL learner; we need pedagogies of thinking, researching, learning and performance that attend holistically to how this new generation interfaces.

The use of visuals for learning is needed in the classroom. According to Diana George, "it is, of course, true that an insistence on the importance of visual literacy is an old and perennial one. In fact, it has become common today to talk of multiple literacies, to encourage

the uses of visual communication in the teaching of writing, and to argue that writing is itself a form of visual communication." Coupled with this insistence, we now know that "humans operate from perceptual bases that are more often unconsciously or intuitively oriented than rationally discerned" (Newton 431). Together these ideas suggest that DGBL use a different visual literacy through semantic associations.

Semantic Associations, Patterns, Templating Experience

The Star Trek question centers on science fiction as a vehicle to play and explore with radically different concepts of learning and intelligence, and, within this question, I sense that person's excitement that repurposing might be an inroad to one of those new concepts: the idea of us being trained into processes first and matter second reminds me of an iconic scene in Star Trek, which carries over from the novel *Spock's World*, where Vulcan education is a series of process-centered concepts from which Vulcans learn information (matter); is there a way to teach process without teaching information? One study called the "Winebottle Test" proved the effectiveness of visual thinking and creativity, and in this sense "proved effectiveness" means that creativity can be measured by a student's ability to create more semantic associations than in non-visual ways. In the "Winebottle Test," eighth grade students had to solve why a cork would pop out of an empty bottle, which had been placed in the sun after it had been in the refrigerator. A control group wrote responses in paragraph form, and an experimental group first used a concept map then wrote that concept map as a paragraph. After assessment, the "experimental

group constructed twice as many valid semantic relationships than the control group" (Longo et al.). If a large part of creativity is semantic relationships, the use of visuals exceeds the use of verbal or written language as an aid in forming those semantic relationships.

Longo et al. report many neurological findings of the role of visual language in thinking. One, "knowledge is distributed anatomically to separate regions of our brain," which means that concepts are neural ensembles. Two, "the visual cortex is viewed as a distributed network, where processing is concurrent and simultaneous," meaning there is feedforward and feedback among various areas of the cortex. Three, "the early visual categorizations have a functional role in cognitive processing," and among them "metacognitive learning tools facilitate working memory capacity." Four, "formation of visual images from both right and left brain hemispheres activate the early visual cortical networks," and "thinking visually relies on depictive representations that are topographically organized in regions of the primary visual cortex." In other words, visuals are stored as vast connections among many areas of the brain, and these connections are what we call thinking. Following the semantic connection argument of the "Winebottle Test," more semantic thinking means more creativity. Briefly stated, more visuals equals more thinking and more creativity.

Returning to Krugman's work that he based on James' work, we often do not attend to new visuals with conscious effort of thinking but we tend to template visuals and use little effort to experience them, as if they are copies of former visuals we have seen. If we can easily ignore new experiences by templating them, as suggested above, we seemingly undermine any ability at repurposing (since repurposing needs a continued exploration of semantic associations). As

mentioned in Chapter One, Bebko suggests that we use "controlled processing, which is associated with slow, deliberate, and effortful processing (such as a beginning driver for whom the task of driving is mentally exhausting because each component of the task must be deliberately considered and attended to). The processing becomes less deliberate and effortful as the skill becomes more automatized." If we can be skilled enough to drive a car with unconscious thought then when we need conscious thought, such as a deer darting into our path, we have more choices available concerning how to react to that situation (Bebko et al. 472). Thus, by templating our experiences, we may reduce other possible semantic associations but we increase automaticity: "Pattern formation and repetition are the way in which the brain forms attitudes and ideas neurologically, and those repeated patterns create the templates that we use to map and anticipate reality. Because neurons that 'fire together, wire together' these templates are peculiarly resistant to reason" (LeDoux qtd in Barry 61). As Bebko suggests, "the greater repertoire of related skills should be available...so the controlled processing required by the situation is likely to be more effective and successful" (Bebko et al. 473).

There is seemingly two Processes at cross-purposes: 1) we template experiences and information (such as James suggests we do when reading) which increases automaticity thereby allowing greater controlled processing of information but reduces the second process of 2) semantic associations that lead to new thoughts (which, in turn, reduces the kind of mental quality needed in repurposing and critical thought). Chapter Two suggested a socio-historic context of marginalized peoples who not only gave each other household hints, but who also trained each other in a way of thinking about how to do more with less. This training can occur

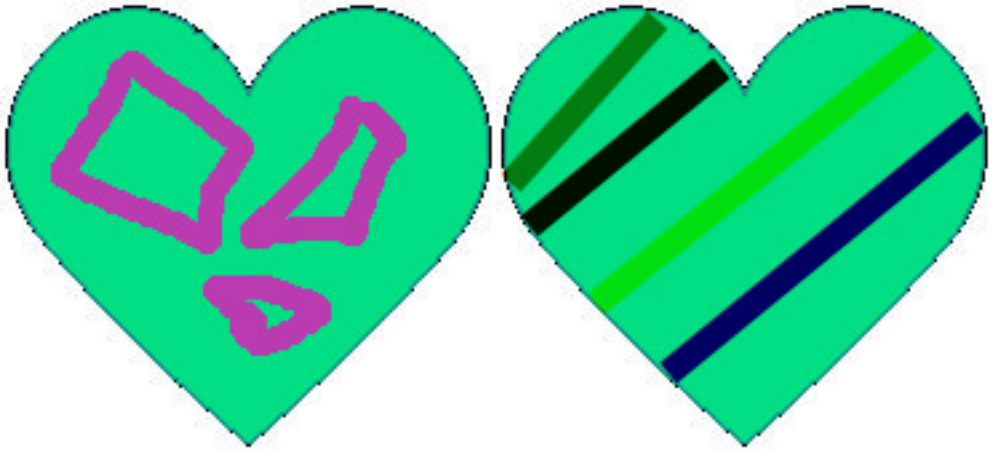
due to necessity (a dystopic environment) or through education (such as women teaching other women various household hints).

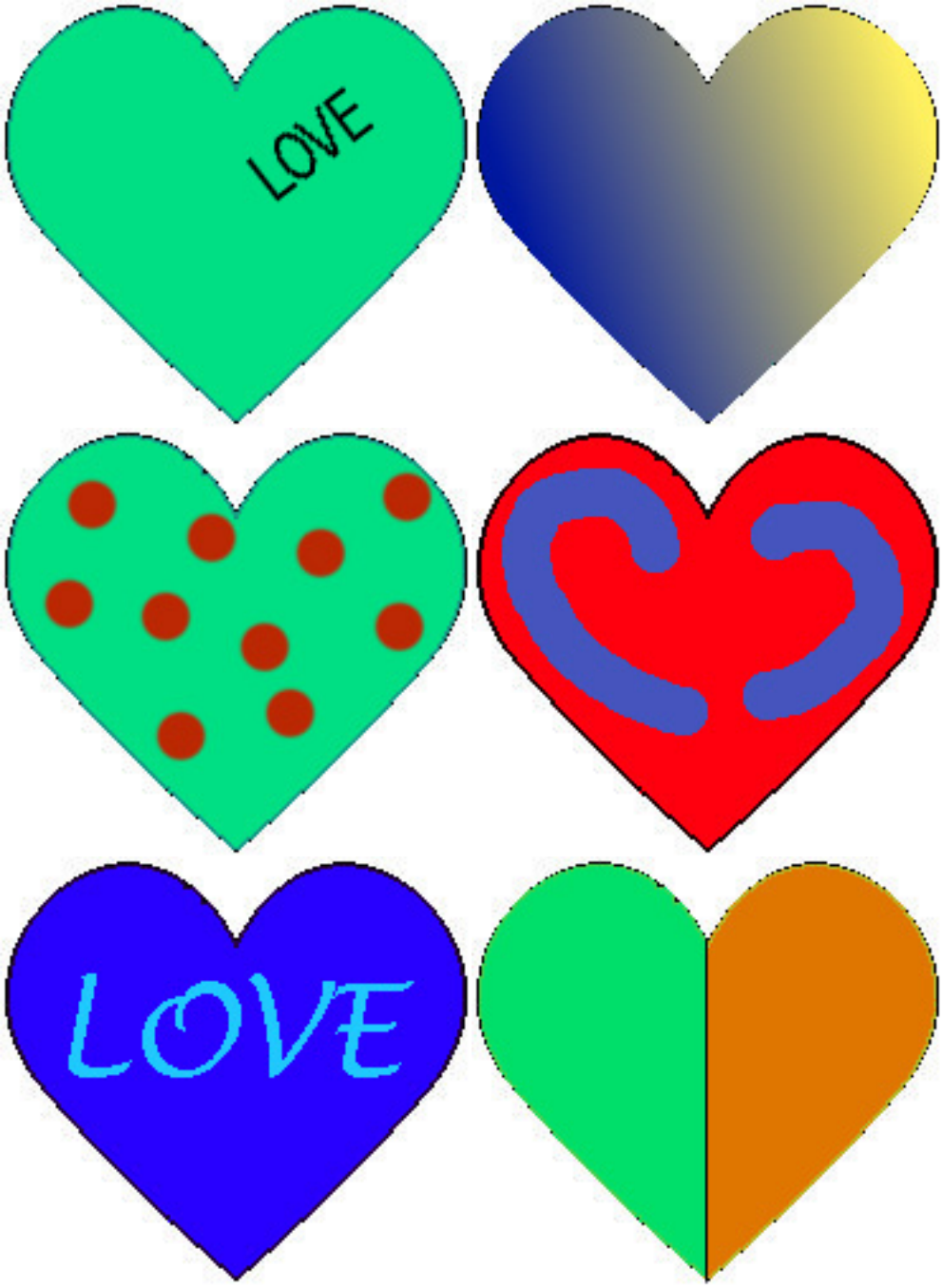
The question, then, is this: can someone be trained (by tutelage or by lived experience) to have an automaticity of forming new semantic associations rather than simply templating new experiences and reducing semantic associations. The aim of the rest of this chapter is to suggest the Process that underlies that training in repurposing so as to extract it from its long historical place among marginalized people and dystopic situations and to connect that Process with the kind of mental quality used by digitally literate people and Digital Natives.

We all have what Longo summarizes as "streams that carry the distributed knowledge of color, shape, location, and motion from the occipital lobe of the visual cortex [which] are maintained in the frontal lobe. . . . The frontal lobe region is the site of multiple working memory ensembles and is involved in the cognitive processes of planning, organizing, and decision-making." We use these processes when we solve problems, and creativity, in part, concerns solving problems. Much has been written concerning creativity, learning, and visuals, but the use of automaticity with those three has yet to be discussed.

Automatic unconscious thinking can be related to visuals and writing through Northrop Frye. Frye states that ritual is the origin of narrative, that ritual is temporal, and that in ritual, conscious meaning and significance is latent. Frye suggests that "the pull of ritual is toward pure narrative, which, if there could be such a thing, would be automatic and unconscious repetition" (1452). That automatic and unconscious repetition, where meaning is latent, is automaticity as training.

According to Bach, "meaning is the result of understanding functions. Functioning takes place in time. Only that which narrates can make us understand." We could use a series of images that would be akin to Anderson's "encyclopedic" meaning making and Pierce's concept of abduction as "the idea coming 'like a flash'" (Moriarty 235). Such a series of images has a precedent in research. Turkle and Papert give one study that, using a computer based program, asked students to think algebraically by having a child enter-in computer programming values to change the color of a bird on the screen. Following that study, I think that an automatically run program that, for instance, has the outline of a typical heart symbol, then swiftly runs through a vast palette of colors, textures, and tones would train a child's mind to the many possibilities of coloring anything in a myriad of ways.




LOVE
LOVE


Best
Friend

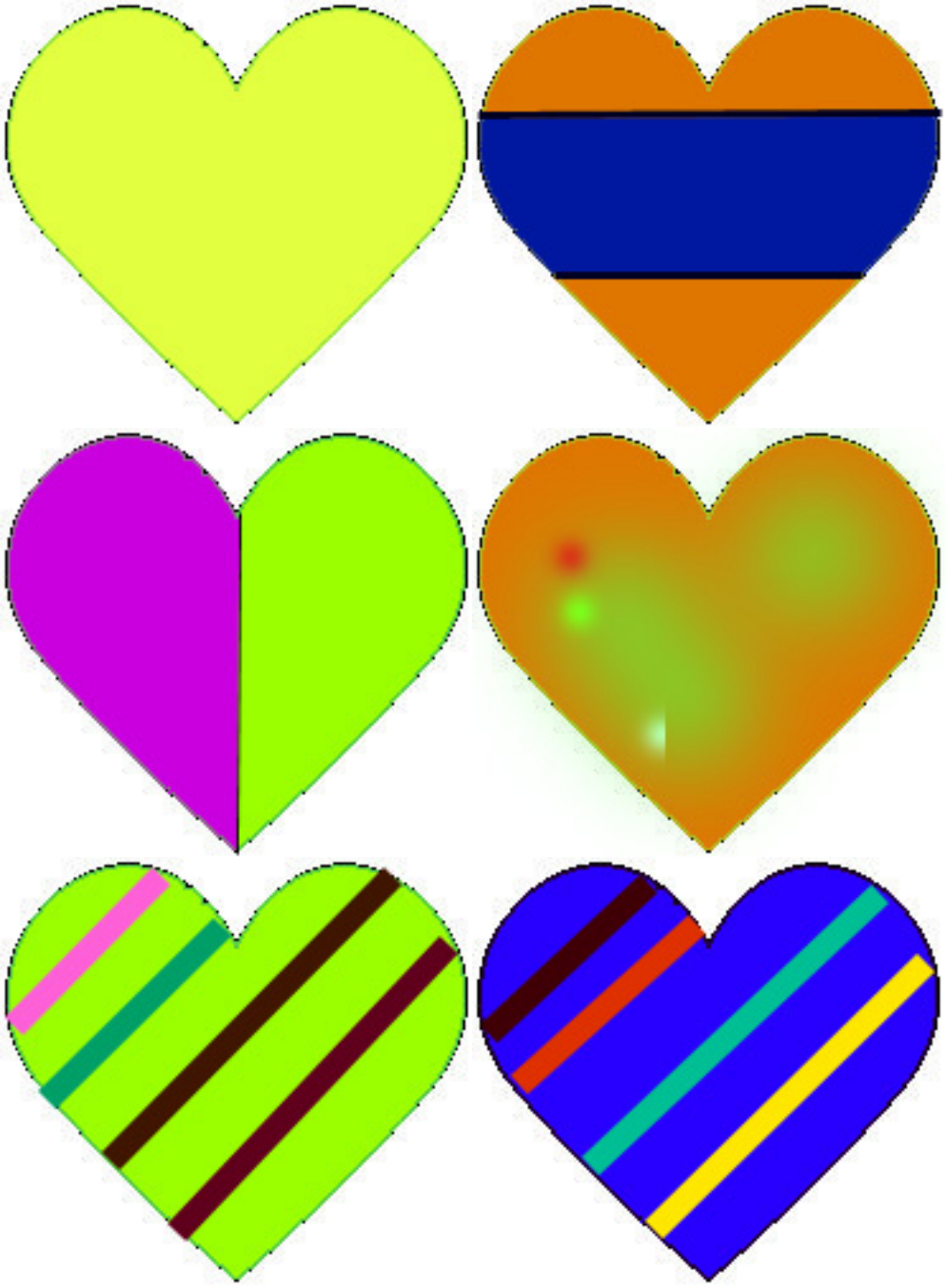


Figure 7: Image Training as Automaticity of Research

A person exposed to that form of automatically presented visuals would acquire an automaticity of a bricoleur: "Bricoleurs construct theories buy arranging and rearranging, by negotiating and renegotiating with a set of well-known material" (Turkle and Papert 136).

One question that remains concerns whether or not the viewing of visuals (such as the viewing of the hearts) would transfer as creativity (as a student acquiring an automaticity of creativity). As Bebko et al. suggests, the "transfer of learning is generally defined as the influence of previously acquired knowledge and skills on the learning or performance of new knowledge and skills." According to Bebko et al., "the more skilled and automatized the performer, the more familiar he or she would be with the range of dynamics of the behavior, and therefore the more able to adapt readily to changing situations within the same basic behavioral sequence" (Bebko et al.). Since such an instance occurs as well between the automaticity and controlled thinking processes, it seems to stand that an automaticity of creativity could be formed.

Disorientation

The TV question concerns this dissertation's leap over the 50 years when TV altered how people in the West consumed information and suggests a mention must be given to TV's role in the history of repurposing. The Star Trek question centers on science fiction as a vehicle to play and explore with radically different concepts of learning and intelligence, and, within this question, I sense that person's excitement that repurposing might be an inroad to one of those

new concepts. The distraction question focuses on distraction as dissonance reduction as it relates to automaticity and repurposing. The interpreter question carries with it the worry that even though this dissertation has discussed emotion and the body in relation to repurposing, it hasn't made a full enough connection between feeling/body and the mind. In what way does distraction theory alter this training in repurposing?

Van Eck suggests that "DGBL can be implemented most effectively, at least in theory, by attending to these underlying principles": situated cognition, play theory, assimilation, and accommodation (20). Situated learning is learning that occurs in meaningful and relevant contexts. Assimilation is an "attempt to fit new information into an existing slot or category". Accommodation occurs when we hold "two contradictory beliefs" wherein "we must modify our existing slot or category" (20). Another term for this process is cognitive disequilibrium, which is when our expectations are not met: "Piaget believed that intellectual maturation over the lifespan of the individual depends on the cycle of assimilation and accommodation and that cognitive disequilibrium is the key to this process" (qtd in van Eck 20).

Surrealists experimented with a similar juxtaposition of images with ways of using the box (cinema) as a method to research and learn. As Ramona Fotiade discusses in "From Ready-Made to Moving Image: The Visual Poetics of Surrealist Cinema," Soupault, one of Breton's collaborators, connects cinema to the dream work of surrealism: "we sought to discover, thanks to cinema, the means for expressing the immense power of the dream." It is through the use of cinema, and more specifically taking random extracts of film, that depaysement can occur through the juxtaposition of images or film clips. Depaysement translates from French as,

literally, disorientation, but also as "change of scenery." More occurs in depaysement than having a lack of orientation. Depaysement means a re-seeing, in the same manner one might find while traveling. It is seemingly near to if not the same as van Eck's accommodation/assimilation and Piaget's disequilibrium. When we go to a place and experience a culture, we are changed. To travel is to be shocked. When we return home, we re-see our own lives. We have changed through the experience, but the change is also about *how* we see. Yet how we see does not always mean we have changed our kind of mental quality, our ontological categories.

Briefly restated from Chapter Three, people can confuse ontological categories, confusing a Mental category or a Process category as a Matter category. Or, as the example was given, how children would confuse the Process of an animal growing up as a Mental category because the animal wanted to get bigger. According to Chi, Slotta, and de Leeuw, crossing categories as a conceptual change is difficult for people. Conceptual changes are difficult because we have a "preference to conceptualize many concepts as Matter-based" which is due to the "well-developedness of the Matter category" (35). Gian-Carlo Rota discusses this very problem in "The Pernicious Influence of Mathematics upon Philosophy."

To Rota, a problem has occurred in both philosophy and mathematics: philosophy has more and more altered to rely on facts rather than laying "bare contradictions that we would rather avoid facing up to" (166). "The reality we live in is constituted by a myriad contradictions, which traditional philosophy has taken pains to describe with courageous realism. But contradiction cannot be confronted by minds who have put their salvation in precision and definitiveness. The real world is filled with absences, with absurdities, with abnormalities, with

aberrances, with abominations, with abuses, with Abgrund." However, those absences are lost when we "avoid facing up to" them. As discussed in Chapter Three, people can confuse ontological categories in order to not address the rifts, fissures, and inconsistencies in any narrative. If people confuse categories and transfer mathematics from a Process to a Matter state (seeing the numbers as representations of Things, and seeing math answers as *must* having real world solutions), the move from philosophy to mathematics is also a relatively easy and supported category switch from Process to Matter. This creates a distension from reality, or in Guy DeBord's term, a spectacle, whereby the spectacle becomes more of a reality than reality itself.

When we have a moment of disequilibrium, we might not use accommodation/ assimilation to work out the contradictions; we could just change ontological categories and state the contradiction does not exist. However, with digital natives, their world is a constant barrage of social media, video games, texting, and tweets, and all of these spontaneously irrupt into life causing a disruption in the Matter category. Being unclosed narratives, these various digital mediums reverse the categorization and reveal to users the Processes rather than the comfortable Matter states. Thus, the digital world continually reinforces that the Matter category is fleeting, changeable, and to navigate such a space, Processes must be understood. However, being unaccustomed to the discomfort of Process states, Digital Natives have one other ontological category to use that allows them to "avoid facing up to" disorientation. Digital natives can re-categorize Process states (which are unclosed) into Mental states (wishful desire and wants that give reason and can close a state). One view of the genesis and impetus behind most digital

mediums is held in a discourse of desire, not because of the medium but due to a confusion of the ontological categories.

From all of the discussion concerning the artifacts of repurposing in Chapter Two, from ancient Greeks to Ghetto, from redneck to women's history, one central idea emerges: working in the Process category is one of the important aspects of repurposing, of digital thinking, and of creative or critical thought. Since Process states can be easily re-catergorized into Mental states that rely on desire and feeling, all of those Processes (repurposing, digital thinking, and creative or critical thought) are undermined. In this place of Matter states, we are in a distension, in Debord's use of the word, and thus even the hyperreal becomes a spectacle. That spectacle is desire for desire, a Mental state that perpetuates a Mental State as a safe haven from the disorientation. In this state, as with the Debord's concept of the spectacle, the spectacle becomes everything:

> The spectacle in general, as the concrete inversion of life, is the autonomous movement of the non-living . . . The spectacle presents itself simultaneously as all of society, as part of society, and as instrument of unification.. . . The spectacle is not a collection of images, but a social relation among people, mediated by images. . . One cannot abstractly contrast the spectacle to actual social activity: such a division is itself divided. The spectacle which inverts the real is in fact produced. . . The spectacle constantly rediscovers its own assumptions more concretely.

The confusion of ontological categories, the constant rediscovery of the spectacle relies on thought, on a Mental State that addresses wants, not emotions. Moreso, we are not aware of our re-categorization because "our strong sense of mind integration is created from the concerted action of large-scale systems by synchronizing sets of neural activity in separate brain regions, in effect a trick of timing" (Damsio qtd. in Barry 52). That sense of integration comes from our interpreter.

Interpreter

The interpreter question carries with it the worry that even though this dissertation has discussed emotion and the body in relation to repurposing, it hasn't made a full enough connection between feeling/body and the mind: I like the idea of an "interpreter" in our minds that aids in understanding and relaying of ideas to us, does the interpreter interpret repurposing or does this automaticity and repurposing affect the interpreter too?

According to Gazziniga, "one of the chief ways we use our cognitive faculties is to rationalize what has already been emotionally decided" (qtd. in Barry 57). In other words, the "interpreter" makes us think we are in control, but what we experience is a "prediction of what will be the future" (Gazziniga qtd in Barry). This a prediction occurs due to the trick of timing in our neurological shifts, and it does not matter if the information comes from outside of us through experiences with the world or from within our own thoughts. Static, mundane information can be perceived, but after it has been perceived it then can become a mental image,

which is, once again, neural imagery: "when what we read, what we hear, and what we see reach the level of ideas, they all appear in a different format: the format of neural imagery. This neurological shift is what results in meaning, and it is the patterning of neurons that allows us to understand something about the impact of what we see" (Barry 53).

According to Damasio, "virtually, every image, actually perceived or recalled is accompanied by some reaction from the apparatus of emotion. . . the controlling power of reason is often modest" (qtd. in Barry 61). The amygdala attaches emotional significance to incoming data, readying "the body to act before the mind makes the conscious decision to act" (Barry 57). Information goes from the eye to the thalamus then to the amygdala before a second signal reaches the neocortex. Here we can see the trick of timing Damassio referred to. Barry suggests that "neurologically without our consciously realizing it, emotional learning occurs that preframes attitudes, thinking, and behavior" (60). However, though attitudes, thinking, and behavior are preframed, the re-categorization of ontological categories from Process to Mental states adjusts any perceived disorientation, allowing us to think we know one thing when our bodies feel/think something else. It is at the moment of this exchange between the two systems, one rational, one limbic, that intuition irrupts into the exchange: "By the late 20th century, neuroscientists had determined that humans operate from a perceptual bases that are more often unconsciously or intuitively oriented than rationally discerned. . . . the assured superiority of rational thinking processes over intuitive processes is shifting in to a recognition of the need for both" (Newton 431). As Antonio Damasio noted, "neurological research has shown that we are not primarily thinking beings who also feel, but essentially feeling beings who also think" (Barry

47). Being primarily feeling beings, in the limbic sense of the word, the irruptions of emergent thoughts, in the neurophysiological, Chaos theory use of the word, are themselves contingent upon a *noise* of emotions. In other words, the more we feel into the world, the more intuitive thoughts irrupt into conscious thought—the more we have creative actionable initiatives. At those moments, we derive our mind's lingua franca: mentalese.

Pinker suggest the mind's lingua franca is a "medium in which gist is captured and concepts stored; it is a format that is comparable to Damasio's concept of image as a biological cluster of neurons firing in synchronicity" (Pinker qtd in Barry). To Pinker, "mental imagery is the engine that drives our thinking about objects in space. . . . images drive emotions as well as intellect" (53). Gist is that moment of understanding what the emotional body is telling us; not what the rational mind, the interpreter, *says* the body is telling us (as the interpreter might very well be re-categorizing ontological states). Through gist, or intuition, we can increase our ability at intuitiveness: "Emotional templates serve as a basis for perceptual anticipation of the future" (Barry 60). That is, just as we can build and store rational templates, which reduce semantic associations, we could build emotional templates, which allow for future understanding of emotional input, and since emotional inputs preframe thoughts, a continual development of, and automaticity of, intuition would allow for an increasing understanding of those irrupting moments of insight and knowledge. There is a sense of continual movement to this irrupting of gist. When visual, mental or sensory perceptions are linked to emotions, visuals can be read emotionally without cognitive thought, and the continual creative actionable initiative that occurs

is the flow of thinking that occurs in repurposing and the flow of thinking that occurs in digital literacy.

Conclusion

I am interested in a series of assertions that arise from a discussion of automaticity, research and creativity. Strung together they suggest teaching a variety of skills rather than asserting a thetic means of connection—they suggest teaching preframing skills (skills useful toward research or creation) that can be assessed, either by assessing the skill itself or by assessing student understanding of the skill within various disciplines—they suggest training students in various ways of connecting independent ideas and things, and to assess them in their articulation of what they did to connect those items, allowing for them to fail in their experimentation, such as the worthiness of a science that fails to prove a hypothesis—they suggest teaching, training, and revealing to students others' failed projects—and they suggest doing intentional work toward creating something that will fail, in order to understand what works in combining independent ideas and things and what does not work.

I wonder how and why I, and others I know, can, in a split second flash of insight, look at something for the first time and think to repurpose it in some manner. My thought on *why* that happens is that a mental and bodily process perpetually seeks to repurpose things and ideas. However, this perpetual seeking is not a gestalt or a paradigm, as those can be non-tactile and

purely mental, and they involve--or at least connote--a template by which one perceives the world.

So the question I ran into was this: what is that perpetual seeking to repurpose that has a bodily knowledge and bodily memory that one has been trained to do through *doing*? It's not mimicry, or mimesis, or metaphor. It is more akin to the signifier and the signified which only exist theoretically but are inseparable in thought. "Interface" is one possible word, but that has such a wide usage already and interfaces, for the most part, are exterior elements through which we interact with information. "Embodied cognition" is the closest term I have found; embodied cognition is more concerned with situation-appropriate behavior and also how we operate on a need-to-know basis with our environment.

The word "preframing," though, has the original meaning of "spoken before" and "made before," and beyond being the title to an initial section of a text, the word, in usage, means a preliminary statement that sets the intention of what is to come next, such as "Let me preface my remarks with this." That word seems appropriate.

Preframing, then, is that mental and bodily training that perpetually seeks something to repurpose. I call it a perpetual preframing, and it is perpetual because 1) it constantly seeks to repurpose, but 2) it constantly changes and grows. In other words, that moment of mental and bodily knowledge coming to bear on a situation and causing a flash of insight on how to repurpose something is not a static lens but a process that becomes more of itself—like a person becoming *more* creative. The person is not really becoming more of a thing called *creativity*. Creativity is growing. Creativity is becoming more creative.

The preframing continually seeks, and from it rises a moment of insight: "intuition". An intuitive flash is that spark of thought revealing something to our conscious mind. Intuition is the moment of insight, but what then is the word for the training that happens to someone to grow or build that preframing. It is a mechanism by which the "I" is momentarily set aside, for once the "I" enters, the interpreter can switch categories and the growth of preframing is undermined. The perpetual preframing is that mental and bodily knowledge, formed from *doing*, that continually seeks to repurpose things and ideas, and at the moment something is found that can be repurposed, we have an intuitive moment and thus a conscious thought that we can rationally relay to others. Inversely, as we *do*, as we repurpose, we are not only building a stock of how-to information but we are also informing that preframing, making it more active, growing it, building it larger (choose your metaphor) before the "I" can have a *say* in the matter and that is "inverse intuition."

This, to me, is what happens when people shop to decorate their homes—they are in a seeking mode, but they don't know what for, and a usual response is "I'll know it when I see it." It's also a survivalist mode (such as Les Stroud's "Survivorman"). It's also, to quote a friend of the Appalachian-American persuasion, "every Redneck I ever knew." It's a way of thinking rising out of the Great Depression or rising up in any dystopic, disorientated milieu. It is a way of thinking for the traditional role of women and for peoples in a developing nations who need to do more with less. It is surfing and virtual/ digital exploration.

What is inverse intuition? Inverse intuition is an automaticity of training the body to learn through *doing* its connections across domains that not only increases knowledge or ability but

also self-identity. Yet, Inverse Intuition is not a state of existence or an achievement to be had. It is a situation, a flow, a continual exploration of the mind to encounter and play with new ideas and new concepts. Cast in the light of inverse intuition, artistry and creativity are not traits or skills but an embodied interface with the emotional, intuitive understanding of experiences.

Craft and folk art, then, are not merely objects of art, but artifacts of a repurposed state of mind. They are the residue of an automaticity of repurposing. It is this repurposing of objects, which is a leap and connection of things and ideas across domains, that helps a people move from stick-rubbing fire building to the leisure of art, and with digital technologies, the skills utilized in repurposing are being fore grounded.

The very act of playing videos games, surfing the web, and multiple layers of telecommunication mixing with real world communication are indicative of a wider that culture that is learning (being trained into) an automaticity. It is my contention that digital technologies are finally bringing to all people a mental skill that occurs within the historically marginalized and the non-digital. There is much discussion today of the digital divide, between those who are wired-n and those who are not. However, I contend that the people who are plugged in are finally gaining what others (marginalized groups) have been able to do throughout human history: learn to allow their minds and bodies to conditionally accept connections between different domains so as to repurpose items and ideas toward utilizing them in everyday lived experience.

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