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CONTENTS

6 From the Editors

ESSAYS

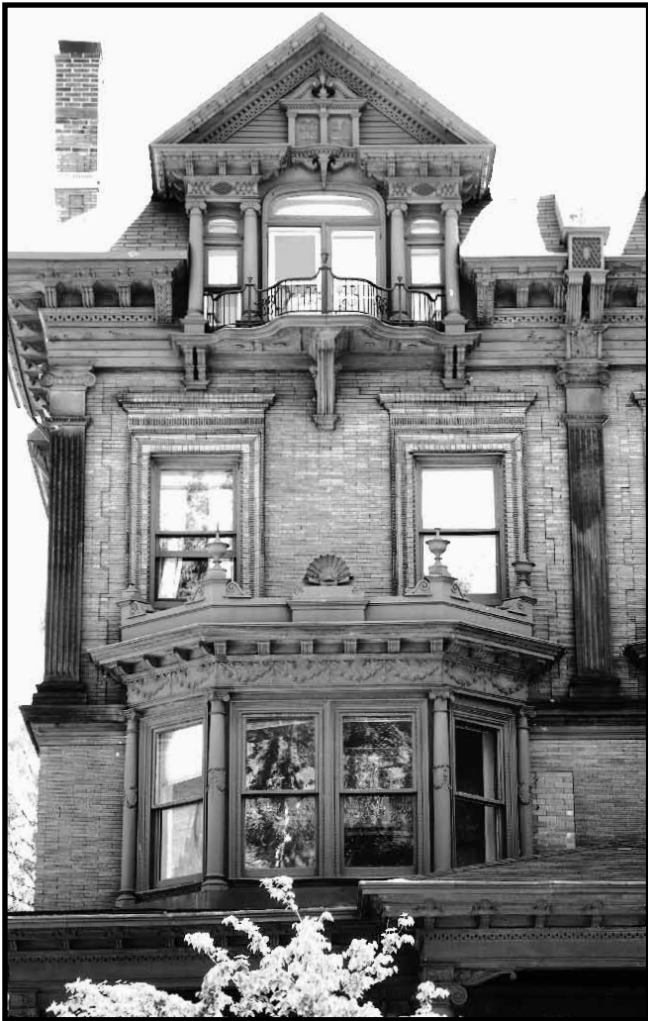
- 8 **Globalization and Government Regulations: Invasive Species Management in an Era of Interdependence**
Vibha Kannan
- 12 **Improving Admissions and Impacting Society: The Case for Social-Emotional Intelligence as an Undergraduate Admissions Criterion**
Theodore Caputi
- 17 **The Female Superhero: Fighting Villains and Stereotypes**
Alexandra Rubin
- 22 **A Modern Perception of Color: Blurring the Lines between Art and Science**
Claudia Li
- 27 **Leonardo and Modern Neuroscientists: Searching for the Soul**
Kanika Mohan
- 32 **Biological Essentialism and the Boy Crisis**
Alina Wang
- 37 **What Makes a Species: Roles and Perspectives on Reproductive Isolation**
Jennifer Wu
- 43 **Born to Remember: Insights into Infantile Memory**
Yoon Ji Moon

- 49** **“But Work She Does...And You Hardly Know It”: The
Forgotten Half of the Feminist Movement**
 Rachel Walter
- 56** **Milton Friedman’s Influence on Corporate Social
Responsibility**
 Caroline Ohlson
- 61** **The Effect of Narrative on Health**
 Jessica Agas
- 66** **Apollinaire, the Engine of the Avant Garde**
 Jason Zhang
- 71** **Expression through Lines in Comics**
 Sarah Allen
- 76** **Fall of a God: Uncovering Japan’s Most Humbling
Archaeological Crisis**
 Ryan Fan
- 82** **Examining Vespasian’s Propaganda: Garnering the
Loyalty of Soldiers**
 Adam Nissinoff
- 88** **Contributors**

From the Editors

In this, the tenth volume of *3808: A Journal of Critical Writing*, we are once again honored and pleased to present the truly impressive work done by Penn undergraduates. To appear in this journal, the essays must first be nominated by critical writing faculty. Each nominated essay undergoes multiple rounds of blind review, assessed by the Faculty and Student Editorial Boards. These 15 essays were selected from the more than 2400 students who took the critical writing seminar during the 2014-2015 academic year.

Please join us in celebrating the work of these promising young writers. We hope that you enjoy this collection and learn as much from them as we do.



About Our Title:

Penn created the Critical Writing Program in 2003 and, as part of the Center for Programs in Contemporary Writing, gave us splendid residence in an old Victorian at 3808 Walnut Street—from which this journal takes its name.

Globalization and Government Regulations: Invasive Species Management in an Era of Interdependence

Vibha Kannan

The phenomenon of globalization is the driving force behind world trade and the integration of national economies. However, it has also become a primary driver of one of the most prevalent forms of environmental degradation: marine invasive species. These nonindigenous organisms, which have an evolutionary advantage over local biota, often devastate their new ecosystems.¹ However, despite an increased awareness of invasion problems in the scientific community national governments continue to fall short on implementing preventative measures.² Marine biologists Nicholas Bax, Christopher Bright, Bella Galil, Diana Padilla, and Callum Roberts approach the problem of alien species from different angles. Yet across these five sources, a common premise emerges: today's global world makes it more difficult for governments to deal with invasive species. As nations are more interdependent and trade continues to flourish, the problem of bioinvasions is only becoming more difficult to handle. Thus, scientists agree that globalization has made it more difficult for nations to implement strategies against marine invasive species.

Researchers argue that countries are unable to combat all the new transportation mediums of marine invasive species that are arising from increased trade. Currently, fifteen categories of transportation mediums, or vectors, carry marine organisms.³ However, Roberts notes that most national governments, even those who are progressive in regulations

¹ Callum Roberts, *The Ocean of Life: The Fate of Man and the Sea* (New York: Viking, 2012), 196.

² Nicholas Bax, "Marine Invasive Alien Species: A Threat to Global Diversity," *Marine Policy* 27, no. 4 (2003): 315.

³ *Ibid.*

of vectors like New Zealand, Australia, and the United States, only regulate ballast water.⁴ Ballast water refers to the water in the ballast tank of ships that often contains many local organisms; this water is later discharged into the ocean after long journeys, carrying the organisms to new ecosystems.⁵ Although this is a major vector, many others are emerging through world trade. As Bax points out, “the increase of trade and shipping is altering the diversity and speed of potential vectors.”⁶ Governments not only have to deal with historically common vectors like ballast water transport, but also new, technologically advanced vectors like the aquarium trade, air cargo, and the oil industry.⁷ Globalization is increasing the variety and technology of transportation mediums, and nations are struggling to implement preventative measures. This is especially observed through the aquarium trade, a rising transportation medium. Padilla mentions that most of the trade in this industry takes place through the Internet.⁸ As the technological capabilities of the aquarium trade increases, governments are finding it more difficult to regulate marine invasive species, since any organism listed as illegal can still be traded through the Internet.⁹ Bright also mentions the problem globalizing vectors are having on government management: “Controlling invasive species is difficult enough, but the bigger problem is preventing the machinery of the world trading system from releasing them in the first place.”¹⁰ Nations are facing the problem of marine invasive species in the context of diversifying transportation mediums and technological advancements.

Industries profiting from globalization are also refusing to cooperate with national preventative regulations. Trading vectors are not the only problem contributing to difficulties in managing invasive species. The shipping industry, a livelihood borne from global trade and interdependence, is also causing its fair share of problems. Bright

⁴ Roberts, *The Ocean Life*, 195.

⁵ Bax, “Marine Invasive Alien Species,” 313.

⁶ *Ibid.*, 315.

⁷ *Ibid.*

⁸ Dianna K. Padilla and Susan L. Williams, “Beyond Ballast Water: Aquarium and Ornamental Trades as Sources of Invasive Species in Aquatic Ecosystems,” *Frontiers in Ecology and the Environment* 2, no. 3 (2004): 135.

⁹ *Ibid.*

¹⁰ Christopher Bright, “Invasive Species: Pathogens of Globalization,” *Foreign Policy* 116 (1999): 53.

points out that within the shipping industry, responses to the proposals of regulation and preventative measures against marine invasive species have been mixed.¹¹ Although industry officials concede that the problem exists, the prospect of specific regulation has tended to provoke outrage and discontent among management.¹² This is particularly evident in California. Here, a proposed bill that would have prohibited foreign ballast water release in ports ignited widespread discontent from local representatives.¹³ Officials argued that such regulations might hurt the shipping industry by encouraging ship traffic to pass California ports in favor of those in the Pacific Northwest.¹⁴ The shipping industry, which relies on globalizing forces and trade liberalization to make a profit, does not have the same environmentally motivated goal as the national government. However, this tension between industry and government is not only a domestic problem. The international community must also face industry opposition in order to manage invasive species.

The international community is also struggling to reconcile its own goals of marine invasion prevention with the goals of industries reliant on globalizing forces. For example, meetings conducted by the IMO (International Maritime Organization) on ballast water regulations have also sparked contention. The international shipping industry has argued that rigorous regulation would be extremely costly for the industry and that internationally binding regulations should be avoided in favor of local regulation.¹⁵ Galil also mentions the IMO as an example of how the globalization of industry has made it difficult for countries to regulate marine invasive species. The IMO, which focused their efforts on ballast water regulation, a key vector of invasive species, succeeded in passing a convention in 2004.¹⁶ This significant environmental act needed to have been ratified by 30 nations in order to enter into force. However, it has not been properly implemented because only 6 countries have signed

¹¹ Ibid., 59

¹² Ibid.

¹³ Bax, "Marine Invasive Alien Species," 318.

¹⁴ Bright, "Invasive Species," 59.

¹⁵ Ibid.

¹⁶ Bella Sarah Galil, "Loss or Gain? Invasive Aliens and Biodiversity in the Mediterranean Sea," *Marine Pollution Bulletin* 55, no. 7-9 (2007): 319.

the document.¹⁷ This lack of international cooperation is mainly due to the competing interests of industries, which have been relying on the globalizing forces of trade. The deviating interest of these industries and international organizations further illustrates how globalization has made the national management of invasive species more difficult.

Globalizing influences have also caused nations to not appreciate the severity of marine invasive species. Trade and interdependence have shrunk the planet and sped up the blending of the world's flora and fauna.¹⁸ However, humans are unable to keep up with this speed and visibly recognize the increasing rate of invasion.¹⁹ Roberts mentions that this phenomenon, "shifting baseline syndrome," is a product of globalization. Shifting baselines, as he notes, refer to the circumstance where the current generation takes for granted things that would have seemed impossible a few generations ago.²⁰ He notes that although an influx of invasive species results in a real loss of diversity and variety, "it sometimes takes generations to realize how much intruders have altered their new environment."²¹ Because it can take generations to identify an invasive species, government responses are often insufficient and overdue.²² Other researchers also agree with Roberts. For example, Bax notes that policy-makers do not take the problem of marine invasive species more seriously because it is no longer very visually apparent. As global trade and interdependence has increased, marine invasions appear to be the norm.²³ In fact, people are beginning to have difficulty differentiating between local and invasive species. As the world is becoming more global, invasive species are failing to "have an immediate visual damage."²⁴ It is clear among researchers that

¹⁷ Ibid.

¹⁸ Roberts, *The Ocean Life*, 196.

¹⁹ Ibid., 4.

²⁰ Ibid., 196.

²¹ Ibid.

²² Galil, "Loss or Gain?" 319.

²³ Bax, "Marine Invasive Alien Species," 318.

²⁴ Anthony Ricciardi, "Should Biological Invasions Be Managed as Natural Disasters?" *BioScience* 61, no. 4 (2011): 313.

globalization has made it more difficult for governments to recognize that there is an immediate need for regulations.

Globalization has made it difficult for governments to implement effective strategies against marine invasive species. Although global trade has benefits, its environmental costs are greater. Nations must now learn how to face the problem of invasive species in an interdependent world. Researchers have also noted that global approaches often work better than many uncoordinated national initiatives, which complicate international trade. Scientists note that global trade is rapidly increasing and new vectors of marine invasive species and trade routes are developing. Therefore, as Bax notes, the tensions between trade liberalization and the minimization of the risks of marine invasive species need to be reconciled.²⁵ There is a general agreement in the scientific community that more government cooperation and comprehensive strategies are necessary in order to mitigate the globalizing effects on marine invasive species.

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²⁵ Bax, "Marine Invasive Alien Species," 319.

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Improving Admissions and Impacting Society: The Case for Social-Emotional Intelligence as an Undergraduate Admissions Criterion

Theodore Caputi

Colleges have traditionally relied heavily upon academic measures such as high school GPA and SAT scores to make admissions decisions. Colleges want to admit applicants with the best potential for success, and academic measures are used to predict both later academic and career success for the applicant (Fried, 2010). However, controversy over the predictive power of high school GPA and SAT scores has challenged the use of these measures in the college admissions process. Another measure, social emotional intelligence, refers to one's ability to monitor and control one's own emotions and to understand the emotions of others (Colman, 2009). Recent research has shown that social emotional intelligence has promise in predicting academic and financial success. Further, social emotional intelligence can be objectively measured through standardized testing, such as the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT; Mayer, Salovey, & Caruso, 2006). American colleges should use social emotional intelligence scores as a criterion for undergraduate admission.

By considering social emotional intelligence when evaluating applicants, colleges can improve their identification and acceptance of high-potential students that are likely to benefit the college. Colleges seek out students they believe will be academically and professionally successful because these students enhance the school's prestige and, as alumni, often become good donors. Research suggests that social emotional intelligence may be a better predictor of first-year academic success (Schulman, 1995; Parker, Summerfeldt, Hogan, & Majeski,

2003) than high school GPA and SAT scores. Competitive colleges can also use social emotional intelligence scores to identify students who will likely make alumni donations after they graduate (Grove, 2014). Research has shown a correlation between high emotional intelligence and financial success (Baron & Markman, 2003) and Holmes (2007) notes that those with high incomes are more likely to make alumni donations. Selecting applicants with high social emotional intelligence will effectively bolster the college's reputation and secure future donations.

Some argue that including non-academic measures to the application process detracts from colleges' focus on academics. Consider, for example, a recent finding about student-athletes at the University of North Carolina (UNC) at Chapel Hill. UNC-Chapel Hill considers athletic ability when making admissions decisions; indeed, students with exceptional athletic ability are sometimes admitted even when their academic record is well below the school's average (Fried, 2010). Though UNC-Chapel Hill is ranked as one of the best public colleges in the country, a 2014 report (Ganim, 2014) found that several of its student-athletes were barely literate. In the report, it seems clear that UNC-Chapel Hill admits certain students for their athletic talents rather than their GPAs and SAT scores. The matter has embarrassed UNC's students, administrators, and alumni and detracted from the college's academic prestige.

While some types of non-academic criterion for admission may detract from a college's academic focus, accepting applicants with high social emotional intelligence will enhance a school's ability to advance its academic agenda. Social emotional intelligence, demonstrated in attentive learning, teamwork, and scholarly interaction, is an integral part of academic achievement and insight. Colleges that select students with high social emotional intelligence scores will be better able to promote these sorts of intellectual interactions. Social emotional intelligence further benefits classroom success: a 2011 meta-analysis found that K-12 students who had received some sort of social emotional learning scored on average 11 percentile points higher on standardized aptitude tests than students who had not (Durlak, et al., 2011).

Colleges could evaluate social emotional intelligence test scores to hedge against the risk of dropout. The risk of student dropout remains

one of the most pervasive challenges in American colleges. According to a Harvard Graduate School of Education study (Symonds, Schwartz, & Ferguson, 2011), only 56% of American college students who enter four-year colleges graduate within six years. This implies that a high percentage of students drop out of college. Fortunately, research suggests that schools can predict persistence rates through social emotional intelligence testing. A 2006 study (Parker, Hogan, Eastabrook, Oke, & Wood, 2006) found that students who persisted through college had significantly higher scores in social emotional intelligence, and a 2009 study (Qualter, Whiteley, Morley, & Dudlak, 2009) successfully used social emotional intelligence to predict persistence in higher education. It stands to reason that a college could decrease dropout rates simply by selecting students with high social emotional intelligence scores upon admission. Further, national college ranking formulas (i.e. U.S. News & World Report Best Colleges; Morse & Flanigan, 2013) consider graduation rates, and so by decreasing its dropout rate, a college could increase its national ranking.

Adding social emotional intelligence as a criterion for admission will not only advance the purpose, prestige, and financial status of colleges but will also benefit applicants. Students with high social emotional ability will be recognized for having an important talent. Many colleges have already formally adopted systems of recognizing and accepting students for non-academic talents such as athletic ability (Fried, 2010) and musical ability (Brimmer, 1989). Emotional intelligence is similar to these skills in that it takes years of practice and substantial effort to refine (Freshwater & Stickley, 2003; Goleman, 2006). The holistic application process, which considers non-academic criteria, like musical and athletic ability, affords students the opportunity to focus on non-academic passions without sacrificing their chances of admittance to competitive colleges. Who is to say that social emotional intelligence is less worthy of a skill than music or athletic ability?

Testing and test preparation costs imposed upon college applicants and their families will be outweighed by lifelong benefits. It is true that students and their families will likely face additional financial costs (i.e. test registration costs, test preparation; Scott, 2013) if colleges begin to use social emotional intelligence as a criterion for admission. However, the lifelong benefits of social emotional learning will far exceed the costs

imposed on students. When students prepare for the SAT, they learn skills that will only be applicable on the day of the test. When students prepare for a social emotional intelligence test, however, they will be learning social emotional skills that they can utilize for the rest of their lives. Social emotional intelligence plays an important role in virtually every career path and profession, and so we can expect that almost every student who undergoes social emotional intelligence instruction will have something to gain. Further, studies show that social emotional intelligence can be learned through formal instruction and retained over time (Slaski & Cartwright, 2003). Students will not have to wait to reap the benefits of social emotional intelligence instruction. Elias (2001) notes that social emotional intelligence helps young people deal with stressful social situations.

What we measure in the college admissions process – whether it be academic prowess, musical ability, or athletic talent – is representative of specific abilities that our society values. Research has proven time and time again that social emotional intelligence is a key to academic advancement, financial prosperity, and personal happiness. By including social emotional intelligence as a criterion in the college admissions process, we signal to our nation's youth that social emotional intelligence is a valued skill. Using social emotional intelligence as a college admissions criterion may be the first step towards a more socially and emotionally intelligent society.

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Instructor: Shaleigh Kwok, Critical Writing Seminar in Psychology, Emotion Revealed

The Female Superhero: Fighting Villains and Stereotypes

Alexandra Rubin

While male superheroes have the privilege of focusing their attention on fighting evil villains or saving Gotham City, female superheroes must combat a very different monster: societal gender roles. The narrative of the male superhero has been enormously successful and lucrative in the realm of the comic book industry, drawing a tremendous following. In the past, “women in comic books have . . . been stuck as tagalongs, also-rans, and girlfriends who try to tie down male heroes with marriage” (Anders). Only in the past few decades has the idea of a female superhero been toyed with and explored. While this new, strong female heroine comes in many forms with a diverse set of powers and backgrounds, scholars have detected a rift that hinders the female superhero from becoming a truly inspirational character for young women. Scholars agree that the portrayal of female superheroes as empowered women has not yet been successful.

Many scholars blame the male-centric nature of the comic book industry for the many issues facing the portrayal of female superheroes. The author of the article “Supergirls Gone Wild,” Charlie Anders, was frank in stating that, “with very few exceptions, comic-book writers and artists have been men, and they’ve assumed most of their readers were, too” (par. 5). Superhero stories are told from the point of view of a male as a means of catering to a predominantly adolescent male audience – the gender roles depicted in superhero comic books are presented with this in mind. Nickie D. Phillips and Staci Strobl call this a “gendered gaze” in their book *Comic Book Crime: Truth, Justice, and the American Way*. By this, they go on to say that “the story is told from the vantage point of a male and reinforces the notion that men act and women merely appear” (Phillips and Strobl 149). The kind of story that teenage boys

are eager to read is one in which they can look up to a superhero role model and hope to one day be strong and powerful just like them. “The world of superhero comic books is still a bastion of adolescent power fantasies, and images of hypermasculine men continue to dominate the colorful worlds where every wimpy Clark Kent or Peter Parker can become a Superman or Spider-Man,” explains Jeffrey Brown, author of *Dangerous Curves* (Brown 54). While the predominance of males in both the creation and consumption of comic books is a reality, it becomes extremely deleterious when this “gendered gaze” is integrated into the presentation of female superheroes. Scholars feel that the creators of comics are the most responsible for this portrayal – for example, comic scholar Marc DiPaolo dedicated his research to Wonder Woman and rationalizes, “Whether Wonder Woman will succeed in inspiring young women today will partly depend on who gets to tell stories with the character, and on how her image is ‘marketed’ to the young” (DiPaolo 170). Simply put, the creation of superheroes to fit this existing model is no longer reasonable now that female superheroes are also making their mark.

Scholars feel that female superheroes face more difficulty rising to and falling from power compared to male superheroes. Not all superheroes can be immortal, but scholars agree that male superheroes rise to and fall from power with more dignity. This experience probably results from the view that men more naturally assume and maintain authority. Julie D. O’Reilly discussed in detail the differences in how male and female superheroes assume power in an article entitled “The Wonder Woman Precedent: Female (Super)Heroism on Trial.” She discovered that females must “demonstrate their abilities or defend their roles as heroes in a manner not afforded their male counterparts” (O’Reilly). According to O’Reilly, many superheroes such as Wonder Woman are subject to violent and extremely physical challenges and are only venerated once they have completed them. O’Reilly proposed that “the trials that these female superheroes undergo may be a way to perpetuate the ‘masculine gaze’ which depicts viewing the female form as a prototypically masculine-subject/feminine-object relationship” (O’Reilly). Traditionally, women are seen as needing the protection of a man, evidenced by the way that female superheroes face death. Phillips wrote, “In our sample of comic books, males are frequently portrayed as

victims; however females are subject to particularly brutal, and at times sadistic, forms of victimization. Subsequently, the message conveyed is that women require particular protection from the forces of evil” (143). Anders poses many examples of brutal victimization, such as when “Batgirl was shot in the spine by the Joker, who then took obscene photos of her” (par. 5). All in all, the notion that women are subordinate to men and are in need of special protection becomes central to the plot of such comics.

Scholars claim that both male and female superheroes abide by extreme versions of gender roles that peg males as dominant and women as subordinate. Brown feels that a very central problem facing female superheroes is that they do not embody their own form of power but rather do a mediocre job of emulating a “male” definition of power. “By assuming male traits,” he says, “they gain access to a form of power (both physical and social) that has been systematically denied to women, while simultaneously demonstrating that the association of ‘maleness’ and ‘power’ is not innate but culturally defined” (50). Brown feels that this is disappointing because comic books imply that women can’t be powerful in their own right and “the action heroine ... simply enacts masculinity rather than providing legitimate examples of female heroism” (43). Because crime fighting is associated with males, females must over-compensate and abide by traditional gender expectations to reinforce the fact that they are female – Phillips defines this as “emphasized femininity.” Often times, the superpowers of female heroes reflect gender expectations “such as a focus on domesticity, child care, nurturance, and empathy even while they fight for justice” (Phillips and Strobl 157). One scene depicts the X-Men enjoying a meal that the only female member of their team, Jean Grey, cooked for them. Phillips is also disappointed, like Brown, because a kind of femininity of “women who are independent, strong, and assertive, is subordinated to femininity that reinforces ‘the interests and desires of men’” (Phillips and Strobl 148). Scholar Joseph J. Darowski used the X-Men series as his case study to discuss the gravity of this gender portrayal in his book *X-Men and the Mutant Metaphor*. At one point he considers the plight of one member of the team, Jean Grey, and explains how many of her “contributions as a superhero are frequently minimized.” Even though many of these cues are implicit, minimal, and easy to dismiss, “the cumulative effect

of seeing Jean Grey treated as simply an object of affection, captured by the villains and in need of rescue, and being the sole member of the team to be assigned domestic duties diminished her significance on the team” (Darowski 44). Jean Grey is unable to hold her own on a team of men, and demonstrates how she is seen as being subordinate to the rest of the team.

Scholars assert that female superheroes are “hypersexualized” in a way distinct from just the abidance of hegemonic gender roles. While females are undermined by gender roles, they are also undermined by a depiction as a “fetish object” that is unique to women. Brown discussed how female superheroes are equal in many ways to male superheroes because they are “typically as powerful, violent, skilled, smart, and self-assured as any of the male comic book counterparts.” However, he expressed how this is “offset by the compensatory exaggerated feminine form, resulting in an odd combination of toughness and sexiness” (Brown 55). According to societal standards, an “increase of raw bodily power” is met with “increased erotic appeal” (Brown 54). Phillips also brings up how female superheroes are drawn in a sexually suggestive manner – the characters’ proportions are highly exaggerated, they are placed in provocative body positions, and they wear skimpy clothing (Phillips and Strobl). While this is extremely problematic for those who wish to follow a powerful woman who doesn’t need to resort to sex, “Bloggers diligently dissected every up-skirt image of the new Supergirl gone wild, who seemed to spend more time flaunting ass than kicking it” (par. 7). For example, Wonder Woman’s breasts are clearly larger than the norm and she wears an especially revealing top – her fierceness and aggression is offset by her erotic appeal. DiPaolo, the scholar that focused his studies on Wonder Woman, saw this as an obstacle for the fate of his beloved heroine. “After all, as one of the earliest popular icons of twentieth-century feminism, Wonder Woman deserved to be treated with respect by those who currently write adventures with the character, and should not be sanitized by clever marketing, turned into a one-dimensional fetish object, or appropriated by a writer with an axe to grind against everything she stands for” (DiPaolo 152).

It is clear that the model of heroism of the past that was once relevant to male superheroes no longer works for female superheroes. Scholars have distinguished the many ways that females are seen as

subordinate in the scope of comics, ranging from the way they dress, the way they interact in groups, and even the way they die. While each of these aspects may seem dismissible individually, they accumulate and the overall effect is strongly felt. It is disturbing that the female superhero has not found its own niche yet, and it demonstrates that females still have difficult finding empowerment in reality. We should be troubled by the fact that women cannot be aggressive without also compensating by being overtly sexual. We should be troubled by the fact that women are still seen as being responsible for domestic tasks, a role never expected of men. While more female comic creators and readers could fix the issues present in the comic book industry, it is clear that there also needs to be a change in our cultural stereotypes of women.

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Instructor: Lawrence Abbott, Critical Writing Seminar in English, Comic Art

A Modern Perception of Color: Blurring the Lines between Art and Science

Claudia Li

When faced with artwork from the age of Modernism, people typically respond with a clearly articulated and highly educated statement of utter confusion. Modernism, an artistic and philosophical movement beginning in the late 19th century and ending in the late 20th century, entailed a major change in the general mindset of Western society. Its constituents rejected tradition by adopting and then visualizing entirely unorthodox ways of thinking, often to the disgust and confusion of the public. The obscure subject matter, unregulated use of color, and seemingly inappropriate titles characteristic of Modern artwork often perplex those who fail to or have not yet attempted to understand the key principles behind such masterpieces. Nevertheless, each of these three elements is rife with meaning, having been chosen only after a great deal of trial-and-error on the artist's or designer's part. What previously separated art and science—the ability to evoke emotion—eventually merged the two together when Modernists began using scientific methods to determine which colors to use in their work.¹ As a result, scholars portray color theory as highly influential to nineteenth and twentieth century Modernism.

Academics describe color theory as the basis around which teachers at the Bauhaus school of Modern art shaped their curriculum. That is, Bauhaus staff and students experimented with color as a unique entity, not as a means to an end. In his essay on the marriage of philosophy and art at the Bauhaus, Peter Galison—a science professor at Harvard University—states that the school's curriculum attempted to “interiorize an image of the machine world they saw on the outside...through color, geometry, and architecture.”² And to achieve this goal of bringing to life the impersonal “machine world,” the Bauhaus embarked on an

intellectual journey to investigate the various artistic routes offered by shapes and modern color theory. However, members of the Bauhaus refrained from using color as decoration or ornament. John Gage describes one of the most notable Bauhaus teachers, Wassily Kandinsky, as an artist who used his paintings to investigate the effects of color in terms of not its association with common objects but its effects on the human psyche.³ In one class, Kandinsky requested his students to match the three primary colors—blue, red, and yellow—with a square, circle, and triangle. Kandinsky was also especially fascinated with the psychological implications of color and music because he suffered from synesthesia, a neurological phenomenon in which he could hear color and see music. Through a series of abstract compositions, Kandinsky explored methods by which he could visualize classical music and thereby evoke the same emotions and thoughts from people that music could. Adolf Hoelzel, a fellow professor at the Bauhaus whose research would later inspire the theories of Johannes Itten and Schlemmel, focused on more than just the psychological aspects of color. Nina G. Parris, an art historian at the University of Pennsylvania, states that Hoelzel embraced a wide range of interests and approaches to develop his structural and color theory.⁴ Such a range included analytical study of old masters' paintings, finger exercises, and experimental contrast. All this was aimed to enlighten Hoelzel's students on the availability of structural forms and color for their manipulation. To many Bauhaus artists and architects, color was the primary characteristic of a design that defined how viewers perceived it.

Scholars indicate that for Modernists in general, however, color theory aroused both negative and positive opinions from artists, who demonstrated their judgments in their work. A faithful follower and translator of Ostwald's work, Egbert Jacobsen revered rigid color theory as an infallible path to beautiful art. Jacobsen's *Color Harmony Manual* is visual proof of his admiration of Ostwald, providing color panels from Ostwald's hue circle and organizing them according to the black and white content of each. *Basic Color*, Jacobsen's companion book to Ostwald's *Color Primer*, further demonstrates Jacobsen's faith in the chemist's promise. Not everyone welcomed a definitive color theory, though. Philip Ball, an English science writer, indicates that the painter Henri Matisse believed that expressiveness "could not be planned

from ‘theories’ of color use but must flow directly from the sensitivity of the artist.”⁵ Matisse avoided consulting color theories because they would only prevent artists and designers from achieving their full expressionistic potential in art, which was only possible through an intuitive attitude towards color. Accordingly, Matisse used color in an almost slapdash, impulsive manner. After all, what is art if not pure emotion? Matisse was not alone in this thought. After the publication of Ostwald’s *Color Primer*, Bauhaus painter Paul Klee denounced color theory completely, arguing that by accepting science-based rules for art, an artist forfeited the wealth that the soul had to offer for self-expression.⁶ Peter Galison adopts a more neutral stance towards color theory. Through Kandinsky, who “despite [his] attempt to make a ‘practical’ science of color and form...often referred to the ‘temperature’ or the ‘weight’ of particular colors,” Galison leaves the impression that artists who championed the intuitive use of color may have actually resorted to scientific facts to compose their artwork.⁷ Eventually, artists could not ignore the inevitable intersection between synthetic and analytic methods. Regardless of whether they ended up incorporating color theory in their work, artists and designers viewed color theory differently.

Furthermore, scholars agree that color theory, especially Wilhelm Ostwald’s color theory, transformed Modernists’ perceptions of color. According to Peder Anker’s book on ecological design, *From Bauhaus to Eco-House*, the graphic designer Herbert Bayer attributed a new symbolic purpose to color in creating his atlas, which boasted “a design differentiating the physical attributes of nature through the use of colors with increasing or decreasing intensity following geographical contour lines.”⁸ The result was a compilation of illustrations showcasing the power of color to convey a relevant message about the environment—without the invasive use of text. Ball asserts that “the most important aspect of Ostwald’s color theory, however, was the role that he assigned to the gray component of colors: he introduced the dimension of gray scale value (or brightness) into color space.”⁹ Previously, artists had either considered the gray scale separately from chromatic colors or unsuccessfully attempted to merge the two together. Ostwald was unique in that after creating a standardized gray scale based on the percentage of light each color absorbed, he applied the same percentages to his hue circle.¹⁰ Rather

than combine the two, Ostwald instead chose to simply acknowledge their relation to each other. Likewise, Gage argues that Ostwald's color theory encouraged Modernists to view colors from a mathematical point of view, "a feature which would especially appeal to the De Stijl group members who were establishing a geometrical aesthetic."¹¹ One member of the De Stijl group, Piet Mondrian, found Ostwald's inclusion of green as a primary color highly intriguing, and so he used rectangles and other geometric shapes to explore the effects of green when placed alongside the other primary colors. He especially embraced the idea that adjacent colors could be harmonized by balancing their black and white content.¹² As for Ostwald's impact on the commercial world, Egbert Jacobsen suggests that by following the conception of Ostwald's color theory, which allowed for a better understanding of color relationships, artists and designers could fearlessly combine colors to produce harmony.¹³ That is, following Ostwald's fool-proof set of rules would invariably produce an aesthetically pleasing image. Textile companies and graphic designers, such as those working for the Container Corporation of America, embraced Ostwald's color theory for its ease of application and reproduction, especially for a world that depended so heavily on mass-production and technology. Though absolute in nature, Ostwald's statement resonated with the Modernist mantra that color was the key to a beautiful design.

Whether by forming the undercurrent of an artistic school, evoking polemical comments from participants in the Modernist movement, or reforming people's perception of color, color theory proclaimed itself as an indisputable contributor to a new age in art and philosophy. Understanding how individuals progressed through this new age with their varying views on color theory will also shed necessary light on their often obfuscating artwork. In fact, confusion may just have been the intended effect of Modernism. Color was the perfect physical manifestation of the marriage between science and art, a unification that had always been heavily denied by traditional artists. To the Modernists, however, tradition was something meant to be disrupted, and color was one way to do it.

Notes

- 1 Johan Gage, *Color and Meaning: Art, Science, and Symbolism* (Berkeley: University of California Press)

- 2 Peter Galison, "Aufbau/Bauhaus: Logical Positivism and Architectural Modernism," *Critical Inquiry* 16.4 (1990), 750.
- 3 Ibid, 252.
- 4 Nina Gumpert Parris, *Adolf Hoelzel's Structural and Color Theory and Its Relationship to the Development of the Basic Course at the Bauhaus* (PhD diss., University of Pennsylvania, 1979), 90.
- 5 Philip Ball, *Bright Earth: Art and the Invention of Color* (New York: Farrar, Straus and Giroux, 2002), 303.
- 6 Ibid, 313.
- 7 Peter Galison, "Aufbau/Bauhaus: Logical Positivism and Architectural Modernism," 730.
- 8 Peder Anker, *From Bauhaus to Ecohouse: A History of Ecological Design* (Baton Rouge: Louisiana State University Press, 2010), 63.
- 9 Ball, 314.
- 10 Ibid, 314.
- 11 Gage, *Color and Meaning*, 259.
- 12 Ibid, 260.
- 13 Egbert Jacobson, *Basic Color: An Interpretation of the Ostwald Color System* (Chicago: P. Theobald, 1948), 54.

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Instructor: Enrique Ramirez, Critical Writing Seminar in Architecture, Eco-Design

Leonardo and Modern Neuroscientists: Searching for the Soul

Kanika Mohan

The concept of the soul has fascinated scientists and philosophers alike for as long as written history has existed. While the idea of the soul has evolved with time, focusing on a more religious life-after-death aspect, throughout history many scholars viewed the soul as that which animates the body of a living organism. Artist and scientist Leonardo da Vinci was one of those scholars, interpreting the soul as that which processes sensory impressions and dies along with the body (*Notebooks* 48). Similarly, modern cognitive scientists constantly attempt to search for the source of consciousness in humans. They specifically focus on “higher order consciousness,” which “includes self-awareness and self-reflection, which allows for a moral compass and organized culture” (Capra, *Hidden* 39). Many scholars have researched the way both Leonardo and modern scientists approach the problem of consciousness, detailing their methods and studying their styles of research. Leonardo scholars Fritjof Capra, Kenneth Keele, and Rolando Del Maestro along with modern neuroscientists Alexey Ivanitsky and Melanie Boly and Leonardo’s own writings show that Leonardo’s approach to studying the soul bears remarkable similarities to modern cognitive scientists’ research regarding consciousness.

All scholars examine how both Leonardo and modern cognitive scientists focus their research on sensory reception when investigating what creates consciousness. Modern cognitive scientists have found that “consciousness-related activations are frequently found in higher-order sensory areas” of the brain (Boly et al.). Similarly, Leonardo believed that the soul is responsible for all voluntary body movement, and he traced sensory nerves across the body to find its location (Capra, *Science* 248). Leonardo found that the sensory nerves converge in one location

he called the *senso commune* and interpreted it as the place where all senses come together; this location is now known as the third ventricle of the brain (Del Maestro). Based on his own findings and previous research, Leonardo performed experiments vivisectioning frogs in order to see how manipulating that area affected the organism (Keele 238). Keele explains that Leonardo “was driven to the conclusion, shared today, that ultimate death is brain death. And if the soul is the essence of life, this is where the soul must be located” (238). From this discovery, Leonardo was able to formulate complex theories directly relating to human consciousness. Leonardo describes his understanding of the relationship between body and soul in his own writings: “Thus the joint of the bones obey the nerve, and the nerve, the muscle, and the muscle the tendon and the tendon the *senso commune*. And the *senso commune* is the seat of the soul” (*Notebooks* 104). He also made the observation, summarized by Del Maestro, that “the soul cannot reside in the entire body because then it would not be necessary for the senses to converge in one location” (Del Maestro). Modern scientists take Leonardo’s observations one step further. With advanced technology, scientists are not only able to trace the convergence of sensory nerves but also observe brain function when these nerves are stimulated. Scientists in the 1990s working towards consciousness research observed which parts of the brain were active when certain sensations were felt, and they were able to track impulse trains between those areas. The cognitive scientists found that multiple parts of the brain were activated in response to one stimulus and interpreted neural messages between those areas as potentially connected through neural pathways (Ivanitsky, Ivanitsky, and Sysoeva). This research supports one modern theory proposed by neuroscientist Francisco Varela and summarized by Capra – “each conscious experience is based on cell assembly, in which many different neural activities – associated with sensory perception, emotions, memory, bodily movements, etc. – are unified into a transient but coherent ensemble of oscillating neurons” (*Hidden* 50). In other words, multiple areas of the brain are activated in response to stimuli, and experience could potentially be derived from the fact that these areas are unified in their interpretations of the stimuli.

While Leonardo was not able to actively observe responses in the brain, he did explore different levels of thought-processes. Capra,

Keele, Boly and Leonardo's writings display how both modern scientists and Leonardo compare the comprehension of different animals in an effort to understand the different degrees of cognition. Keele describes Leonardo's theories regarding the differences between the human and animal experience: "Indeed it is only in this creativeness that humans differ from animals except in accidental things; it is in soul that he shows himself to be a thing divine. . . . Such comprehension can be obtained only through senses, through 'experience the interpreter between resourceful nature and the human species'" (Keele 238). Leonardo specifically points out that a defining characteristic of the human soul is to be creative with resources and draw from experience as compared to other organisms, and modern scientists back that theory with evidence. According to Boly et al., researchers compare neuroimaging with non-human primate models to study the differences in the brain that cause consciousness (Boly et al.). Research shows that animals display evidence of "a working memory, social learning, planning, and problem solving," and a more complex brain correlates with higher levels of consciousness (Boly et al.). Boly et al. explain that in order to pursue the study of consciousness and its phylogenetic origins in a meaningful way, scientists use humans as a starting point and compare them to non-human cases (Boly et al.). In his own writings, Leonardo continues to develop the concept that each organism's soul innately draws on its own strengths to function. In *Codex Atlanticus*, Leonardo writes that the reason a human can never design a flying machine is because "such an instrument designed by man is lacking only the soul of the bird... the soul of the bird will certainly respond better to the needs of its limbs than would the soul of the man" (*DaVinci, Codex Atlanticus*). Leonardo furthers in his own notes that this capacity is "a sign of the bird's intelligence – a reflection of the actions of its soul" (qtd. Capra, *Science* 252). While Leonardo interprets the bird's innate ability to fly as a part of its soul, modern scientific language would call the bird's interactions with air currents cognitive processes (Capra, *Science* 252), and both Leonardo and modern scientists study them to understand how different organisms interact with their world.

The most significant similarity, as supported by Ivantitsky, Ivanitski, and Sysoeva; Boly et al.; Capra; Del Maestro; and Leonardo's own writings, between Leonardo's and modern scientists' work is their

investigation of how the brain commits sensory interactions to memory. Despite the centuries separating the research, both parties found the relationship between memory and sensory interactions crucial to the study of consciousness. Leonardo, from his studies of the brain and nervous system, concluded that the “senses transmit [images] to the organ of perception, and the organ of perception transmits them to the *sensus communis*, and by it they are imprinted on the memory” (*Notebooks* 103). In other words, Leonardo believed that the soul commits physical experiences to memory. Specifically, Leonardo hypothesized that the *impresiva*, the receptor of senses, “collects wave patterns of sensory impressions, makes selections by some process of resonance, and organizes them into harmonious rhythmic forms” (Capra, *Science* 246). Then, a muscle in one of the ventricles of the brain would lengthen and shorten in order to allow the passage of the *impresiva* to memory so that humans could remember everything they perceived (Del Maestro). While modern scientists’ hypotheses differ from Leonardo’s, they still involve observing the relationship between memory and sensory interactions. Scientists conduct experiments in order to study the excitation of sensory nerves in relation to decision criterion (Ivantitsky et al.). One earlier hypothesis describes the “sensation circle,” where, as impulses traveled through sensory recognition areas, they also traveled to the cortex where information about the sensations being felt were retrieved from memory (Ivantitsky et al.). This means that as sensations are being experienced, the brain pulls from previous experiences when similar stimuli were presented. Through advanced brain imaging technology, scientists have also been able to differentiate between subconscious recognition of stimuli vs. conscious recognition of stimuli. While Leonardo made remarkable discoveries in the study of consciousness, modern scientists have provided a depth of understanding to the field of which historical scientists could never dream (Boly et al.).

While modern scientists have remarkable technology and hundreds of years of scientific advances to aid them in their research regarding cognitive abilities, Leonardo developed his theories with the most basic of tools. However, while the progress in the past 500 years has been monumental, no scientists have been able to clearly understand how experience functions in relation to the brain, let alone find the definite source of it. The development of theories in the future will come with

an increased understanding of brain architecture and how different neural processes contribute to the experience of consciousness (Boly et al.). However, that development can only come with methodological advances as well. Recent technology includes “large-scale electron microscopy and brain slices histology and 2-photon microscopy of the cortex in behaving animals,” fMRI advancements, and even the complete genetic map of the human brain (Boly et al.). These advancements will allow scientists to better understand the functionality of both micro- and macro-scale brain anatomy and consequently allow scientists to further study the relationship between form and function in the brain (Boly et al.). Leonardo made impressive contributions to the study of consciousness, and modern scientists will continue to build upon his innovative research.

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Instructor: Jo Ann Caplin, Critical Writing Seminar in Cultural Studies and Criticism, DaVinci: Scientist and Artist

What Makes a Species: Roles and Perspectives on Reproductive Isolation

Jennifer Wu

There has been great interest in animal studies of reproduction and sexual behavior throughout the twentieth century. Scientists and sociologists alike have sought to use these studies to investigate mechanisms of speciation and ultimately, how Earth's biodiversity evolved. A key component in the process of evolution is the development of reproductive isolation – a myriad of mechanisms that prevent individuals of two different species from interbreeding.¹ In fact, species are scientifically defined to be reproductively isolated populations: individuals within a given species are only able to reproduce with other members of the same species.² Given the importance of reproductive isolation, scholars have extensively investigated the behavioral and physiological processes that contribute to these reproductive barriers. However, the methodologies, study organisms, and assumptions that researchers have used varied widely. New scientific advancements changed the lens through which scholars studies reproductive isolation from the mid-twentieth to twenty-first century.

Scholars' have shifted away from viewing the maintenance of reproductive isolation as a male dominated function. Early experimental designs around the 1950s used a male choice model that spotlighted the male's role in maintaining reproductive isolation In a male choice experimental setup, a single male is placed with two females – one of the same and one of a different species – to see which female is chosen.³ An

1 “Biological Species Concept.” Evolution 101: Speciation. Accessed December 1, 2014. <http://evolution.berkeley.edu/evo101/VA1BioSpeciesConcept.shtml>

2 Ibid.

3 Theodosius Dobzhansky, “Experiments on Sexual Isolation in *Drosophila*. III. Geographic Strains of *Drosophila Sturtevantii*,” *Proceedings of the National Academy of Science of the United States of America* 30, no. II (1944), 335.

isolation index is then calculated by assessing the percentage of matings that occur within the same species.⁴ Since the male was given the power of choice, this model assumes that the male exercises judgment and makes the decision to mate. Scientists also described females as passive reactionaries during courtship and copulation. Edna Haskins and Caryl Haskins explained the process of mate selection as “a matter of female reaction to the highly distinctive stimuli of color, form, and behavior offered by the males of the proper species.”⁵ In this case, a male’s flamboyant coloration or courtship behavior is meant to elicit a favorable sexual response from the female. The male is seen to actively court the female who will mate with the first male that sufficiently stimulates her above a certain threshold. If a female refuses to cooperate, George Streisinger attributed it to how “the alien male does not give the necessary specific stimulus and there is no reaction on the part of the female.”⁶ The eclipse of the dominant male assumption was represented by the introduction of the no-choice mating model in the 2000s. Both Janette Boughman’s and Motomichi Doi’s investigation of reproductive isolation used a no-choice model in which a single male and a single female of either the same or different species were allowed to interact.⁷ Reproductive isolation was quantified by comparing the overall successful interactions with homo or heterospecific pairs.⁸ This placed no implicit expectation on which gender held the power of discrimination since the noncooperation of any individual would lead to reproductive failure. Modern journal articles also made no judgments as to which gender played a more passive or aggressive role during mating when

4 George Streisinger, “Experiments on Sexual Isolation in *Drosophila*. III. Geographic Strains of *Drosophila* Sturtevantii,” *Proceedings of the National Academy of Science of the United States of America* 30 no. II (1944), 335.

5 Caryl P. Haskins and Edna F. Haskins, “The Role of Sexual Selection as an Isolating Mechanism in Three Species of Poeciliid Fishes,” *Evolution* 3, no. 2 (1949), 168.

6 Streisinger, “Experiments on Sexual Isolation in *Drosophila*. XI.,” 188.

7 Janette Wenrick, Boughman, “Divergent Sexual Selection Enhances Reproductive Isolation in Sticklebacks,” *Nature* 411 (2001), 947

8 Motomichi Doi et al, “A Locus for Female Discrimination Behavior Causing Sexual Isolation in *Drosophila*,” *Proceedings of the Natural Academy of Science* 98 (2001), 6714. Homospecific: between same species; Heterospecific: between two different species.

describing copulation. The differences in methodologies and background descriptions in experiments reflect the scientific community's changing beliefs on gender roles in reproductive isolation.

The change in perspective on gender roles in sexual isolation was spurred by new scientific evidence. The first clues came from Streisinger's discovery in 1948 that interspecies matings occurred more frequently when female fruit flies were etherized.⁹ This showed that females were more likely to be the ones distinguishing between species. The results of Streisinger's research prompted a critical study from Angus John Bateman that measured the actual number of offspring produced by homo versus hetero pairings; the study concluded that females exhibited clearer mate preferences.¹⁰ Since live offspring rather than insemination is the ultimate metric for reproductive fitness, Bateman's experiment offered conclusive proof that females were a critical player in maintaining sexual isolation. Erika Milam points to the key roles these studies played in getting "drosophilists to accept the idea that females, not males, exerted primary control over the degree of sexual isolation between two populations."¹¹ If scientists continued to use male choice models they ran the risk of not detecting isolation between two species. However, the role of each sex in reproduction can vary depending on the species. Instead of becoming reliant on a female choice model, present day scientists have avoided repeating historical mistakes of creating gender biases in their studies by using a no-choice model.

Over time, scientists also began studying how reproductive isolation is maintained through the lens of physiological rather than behavioral mechanisms. In 1949, early scientists such as Haskins and Haskins chiefly observed the behavior of their study organisms, guppies, in their experimentation. They looked to see whether females reacted differently in terms of their body movements when they were

9 Streisinger, "Experiments on Sexual Isolation in *Drosophila*. IX." 187. Etherized: A method of rendering fruit flies unconscious.

10 Angus John Bateman, "Intra-Sexual Selection in *Drosophila*," *Heredity* 2 (1948), 359.

11 Erika Milam, *Looking for a Few Good Males: Female Choice in Evolutionary Biology* (Baltimore: John Hopkins University Press, 2010), 76.

approached by males of the same or different species.¹² Streisinger also characterized copulation as a chain of interdependent behavioral stimuli with incorrect responses resulting in the termination of mating.¹³ However, as scientists moved into the twenty-first century, they began investigating physical traits that prevented cross breeding. In 2001, Doi et al. explored the effect of a certain genetic marker on whether or not it made *Drosophila* females more likely to mate with males of another species.¹⁴ He hypothesized that certain genes can predispose a fruit fly to behave differently in the courtship sequence, thus leading to the breakdown of reproductive barriers. Similarly Boughman looked at the correlation between red coloration on male sticklebacks and mating successes.¹⁵ She hypothesized that regional female preferences for the degree of redness in males contributed to isolation and speciation. The different observations that scientists quantified display a change in the assumption that physiological rather than behavioral qualities were chiefly responsible for preventing cross breeding.

The shift away from behavioral explanations of reproductive isolation was powered by new discoveries in molecular biology during the 1960s. Previously organismal biology was the leading area in the life sciences; organismal biologists observed traits that were a property of the entire animal such as courtship dances, displays, or mating rituals. The excitement in the field of molecular biology was spurred by events such as the Nobel Prize being awarded for the discovery of DNA's structure in 1962 and the discovery of how to isolate proteins using a Western blot in 1979.¹⁶ Molecular biology is primarily concerned with "immediate physiological or mechanical causes of traits" while organismal biology looked at "longer term historical and functional causes."¹⁷ Thus instead

12 Haskins and Haskins, "Sexual Selection as an Isolating Mechanism," 168.

13 Boughman, "Divergent Sexual Selection Enhances Reproductive Isolation in Sticklebacks," 946.

14 Ibid.

15 Ibid.

16 Sunny Auyang, "Scientific Convergence in the Birth of Molecular Biology," *Creating Technology*. Accessed December 3, 2014. <http://creatingtechnology.org/biomed/dna/htm>

17 Erika Milam. *Looking for a Few Good Males*, 148.

of seeking to answer why an individual exhibits a certain mating display, scientists began asking what genetic component leads to these behaviors as was seen in Doi et al.'s exploration of the genetic basis of reproductive isolation in *Drosophila*.¹⁸ The nature of molecular biology also brought with it a greater emphasis on quantifying both dependent and independent variables. Boughman's stickleback illustrated this by using light wavelengths, a quantifiable variable, to determine a fish's sensitivity to red light.¹⁹ The pervasive influence of molecular biology pushed scientists to dig deeper to find definitive, quantifiable characteristics responsible for maintaining species isolation.

A scientist's underlying belief system can have a great impact on experimental design and thus the results of the study. The changes in methodology used in reproductive isolation experiments have shown that scholars have become more inclined to frame their investigations with less behavioral and male biases. Research is a constantly evolving field that builds upon previous discoveries. As new evidence is introduced, assumptions change and new insights can be brought to light. In particular, the study of reproductive isolation is especially dynamic and contentious due to its clear implications for speciation as well as human evolution. As new findings are introduced, there will surely be changes in how scientists approach the study of sexual selection.

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18 Doi et al. "A Locus for Female Discrimination Behavior," 6717.

19 Boughman. "Divergent Sexual Selection Enhances Reproductive Isolation in Sticklebacks," 947.

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Instructor: Samantha Muka, Critical Writing Seminar in Science, Technology, and Society, Finding Mr. Right: Female Sexual Selection

Born to Remember: Insights into Infantile Memory

Yoon Ji Moon

Infants lack linguistic, cognitive, and biological maturity. Their day consists of an endless routine of crying, eating, sleeping and exercising. As a result, infants rely on the guidance and support of adults to survive the world. Due to this dependency, people have traditionally believed that individuals lack the ability to learn and remember during the first few years of life. After all, we fail to remember any autobiographical events before the age of two or three, a phenomenon known as infantile amnesia (Nelson, 1993). However, creative approaches have allowed us to investigate infant memory in unprecedented depth. These new techniques have led to the realization that newborns do have a remarkable and dynamic capacity for memory. Experts in developmental psychology agree that infants display a limited but adaptable memory.

Development psychologists must employ unconventional methods to assess memory during infancy. Due to the unique challenges of working with pre-linguistic children, a flexible and creative perspective is necessary. As Schacter (1995) mentions, one significant obstacle encountered when studying infants is that newborns cannot simply say what information they remember. As a result, researchers rely on non-verbal indications to assess memory capacity. For example, Rovee-Collier (1993) looked at a motor response, the repeated kicking of a foot tied to a mobile, to evaluate the infant's ability to recognize previously presented stimuli. During the "acquisition" phase, infants would realize that kicking would cause the mobile attached to their foot to move, creating an enjoyable and stimulating spectacle (Rovee-Collier, 1993). After 1 to 42 days, investigators tested long-term memory by presenting the infants with the same mobile, this time not physically attached to the foot so that the kicking reflects only what the infant remembers

from the acquisition phase. The researchers established that the infants recognized the mobile if they voluntarily executed significant kicking movements upon seeing it (Rovee-Collier, 1993). In addition to motor movements, many studies also assess memory through reflexes. For instance, DeCasper and Fifer (1980) relied on the sucking reflex, the instinctive action of sucking objects that touch the roof of the mouth, to study memory of auditory stimuli. In this experiment, infants could produce either a recording of their mothers' voices or that of a female stranger by sucking on a nonnutritive nipple in different ways (DeCasper & Fifer, 1980). It was determined that an infant demonstrated preference and memory of their mother's preferred voice if he or she produced the maternal recording more often (DeCasper & Fifer, 1980). In another example, Kaldy and Sigala (2004) assessed object-working memory, transient memory of an object that lasts a few seconds, through the orienting reflect, the tendency to look at new stimuli longer than familiar ones (Gazzaniga, Heatherton, & Halpern, 2011). While Schacter (1995) points out that there is a limit to memory research in pre-linguistic children, simple motor events and reflexes have led to the discovery that infants have the capacity for learning and memory.



Figure 1. Types of memory; explicit vs. implicit memory (Stagor, 2010).

Specifically, developmental research has established that infants have implicit memory since birth. Implicit memory is the memory that is unconsciously encoded and retrieved such as the automatic muscle movements activated when riding a bike (Schacter, 1995, p. 9). This type contrasts with explicit memory, which can be voluntarily recalled or recognized. An example of explicit memory would be the memory of the first time learned to ride a bike (Figure 1). Schacter (1995) commented that while it is difficult to establish whether a baby's memory is explicit due to its lack of language, implicit memory can be noticed

very early in life. For instance, DeCasper and Fifer (1980) demonstrated the capacity for implicit memory in newborns by studying the sucking reflex. Results of their experiment showed that subjects younger than three days of age preferentially produced their mother's voice over the voice of a female stranger. In other words, infants retained memory of the maternal voice, instinctively discriminated between sounds, and controlled the sucking reflex in the first few days of life (DeCasper & Fifer, 1980). Likewise, infants also demonstrate a rudimentary working memory when they involuntarily look at novel stimuli longer than older stimuli (Kaldy & Sigala, 2004). As described above, simple modifications of automatic reflexes provide proof of implicit memory since birth.

All forms of memory strengthen with age during the first few months of infancy. The most salient improvement is in the duration of memory or how long a memory lasts. In the study looking at kicking in response to mobiles, Rovee-Collier (1993) established that older infants remember the mobile longer and more readily. According to her results, older infants demonstrated greater retention ratios, the ratio of the infant's kicking during the long-term test to their kicking right after the acquisition phase. Additionally, memory grows increasingly complex with age, incorporating more details and making greater associations. For instance, Rovee-Collier (1993) demonstrated that by two months, infants have context-specific memory that is more precise. Indeed, in the mobile experiment, infants no longer remembered the mobile when presented with a slightly altered apparatus or placed in a different laboratory setting. Kaldy and Sigala (2004) further highlighted memory's increasing complexity by revealing that older infants can link different types of sensory stimuli into a single memory. Rather than simply recognizing the novelty of a given stimulus, 9-month-old infants have working memory of both the objects and their location (Kaldy & Sigala, 2004). Finally Schacter (1995) reported that by eight or nine months, strong signs of explicit memory emerge. Although not identical in strength and complexity to memories of adults, infantile memory develops the fundamental mechanisms of processing and the sensitivity to time and context by the first few months of infancy (Rovee-Collier, 1993).

The development of the immature brain during infancy accounts for the unique aspects of infantile memory. In a mature adult brain, the

cortex, the outer layer of the brain that controls higher level cognitive processing, covers the subcortical regions, which are responsible for rudimentary functions often related to survival. Newborns must rely on subcortical regions at birth because cortical structures are not fully developed until later in life. As a result, implicit memory systems, which are stored by subcortical structures and other non-cortical regions, emerge before explicit memories, which are usually governed by the cortex (Schacter 1995). Kaldy and Sigala (2004) provide clear examples of infantile memory that rely on regions outside the premature cortex. Although working memory is often associated with the cortex, studies indicate that working memory in infants involve subcortical structures, including the temporal lobe regions such as the hippocampus (Kaldy & Sigala, 2004). Throughout infancy and childhood, however, this underdeveloped brain as a whole goes through a dynamic period of morphological change to yield more complex memories. For example, Matsuzawa et al. (2001) explains that myelination and physical growth of the brain during infancy increase the capacity for intricate memories. Myelin forms a protective coat around neurons, which helps them send signals across long distances and make connections with other regions of the brain. Increased myelination, which can be visualized by a larger amount of white matter in the brain, indicates better connectivity between brain areas (Figure 2).

Likewise, Akers et al. (2014) claims that active birth of new neurons in the hippocampus during infancy allows the brains of newborns to quickly evolve and acquire the capacity for higher levels of memory. On the other hand, Akers et al. (2014) point out that the integration of new neurons may also disrupt existing connections, offering one possible explanation for infantile amnesia. Both the immaturity of the brain and the dynamic biological change during infancy explain an infant's limited but adaptable memory capacity.

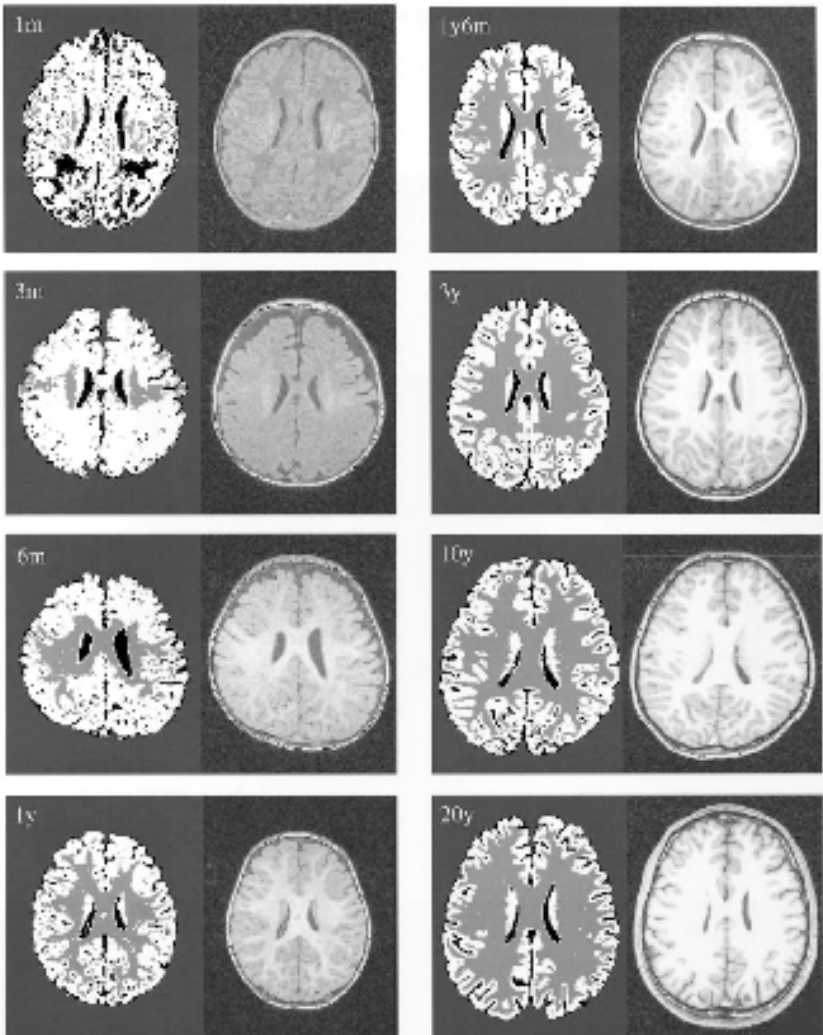


Figure 2. Increased myelination with age. Brain scans were used to identify levels of myelination in individuals ranging from 1 month (1m) to 20 years (20y) of age. At each age, the same brain scan image is represented by two panels that display different contrasts. The image to the right at each age represents the original brain scan. Myelinated areas are depicted in white. The image to the left at each age represents the same brain scan with the colors inverted for the purposes of enhancing contrast for quantification. Here the myelinated areas are depicted in gray. (Matsuzawa et al., 2001)

While seemingly static and inept, an infant is faced with the taxing task of experiencing a plethora of novel stimuli, discerning different types of information, and slowly learning to adapt to the world. This process of rigorous learning continues throughout life. The rudimentary capacity for memory at birth not only initiates this development but also is crucial for survival. After all, implicit memories of familiar stimuli ensure security, develop mother-infant bonds, and help find patterns in the chaotic world. From these innate memory systems ultimately develop higher forms of thinking and reasoning that make us human. Indeed, the capacity for memory reveals that infancy is not a period of ineptitude but a dynamic stage of potential.

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Instructor: Kristen Hipolit, Critical Writing Seminar in Psychology, How Memories Define Us

“But Work She Does...And You Hardly Know It”¹: The Forgotten Half of the Feminist Movement

Rachel Walter

Often people think about the second-wave feminist movement as a middle and upper class campaign for women’s rights.² Groups such as the upper-class secretaries who worked “at the boss’s right hand” are frequently recognized for their fight to maintain their elite class status and emphasize the value of their feminized skills.³ However, typically forgotten are the working-class women of America who fought equally as hard to be recognized as individuals and professionals. In 1970, one working-class woman, Debby D’Amico, felt so forgotten that she wrote, “No one says we are beautiful, no one says we are important, very few like to recognize that we are here. We are the poor and working-class white women of America, and we are cruelly and systematically ignored.”⁴ However, in the 1970s working-class women also came together to earn recognition, rights, and independence by participating in several forms of labor activism. Indeed, historians such as Dorothy Sue Cobble, Kathleen M. Barry, Nancy MacLean, and Katherine Turk contend that some

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- 1 This quote comes directly from a Delta Airlines printed advertisement that was published in 1969. Kathleen M. Barry, “‘Too Glamorous to Be Considered Workers’: Flight Attendants and Pink-Collar Activism in Mid-Twentieth-Century America,” *Labor: Studies in Working-Class History of the Americas* 3, no. 3 (2006): 122.
 - 2 The second-wave feminist movement is the feminist movement that took place from the 1960s to the early 1980s.
 - 3 Katherine Turk, “Labor’s Pink Collar Aristocracy: The National Secretaries Association’s Encounters with Feminism in the Age of Automation,” *Labor: Studies in Working-Class History of the Americas* 11, no. 2 (2014): 98-100.
 - 4 Debby D’Amico, “To My White Working-Class Sisters,” in “*Takin’ it to the Streets:*” *A Sixties Reader*, eds. Alexander Bloom and Wini Breines (New York: Oxford University Press, 1995), 520-521.

working-class women contributed significantly to the professionalizing of women's work. In addition, historians Jefferson Cowie and Emily Honig, as well as sociologist Ruth Milkman, argue that working-class women who participated in women's unions and strikes also helped improve gender equality. Overall, several scholars assert that working-class women's participation in labor activism during the 1970s played a pivotal role in the fight for increased gender equality.

Many scholars argue that working-class women in the service sector formed women's unions that helped them gain respect and professionalize their occupations. Management and women of higher status often looked down upon women in the working class, which led to their struggles to gain respect as "real workers with real jobs."⁵ For example, flight attendants finally organized themselves after decades of expectations that forced them to sustain a certain weight, appear cheerful to passengers, and remain flawlessly groomed at all times. Despite being required by employers, Barry explains that this "management of self" was never thought of as real work, and Cobble asserts that it also promoted harassment by male passengers.⁶ Therefore, to separate themselves from this glamorous and sexual image, flight attendants formed the first all-female organization of this sector. Through these organizing efforts, flight attendants won increased wages while ending marriage and age restrictions. More importantly, they forced their employers to respect them not for their beauty but rather for their hard work.⁷ Additionally, Cobble points out that clerical workers raised opposition to the everyday duties in which their male bosses treated them as "office wives."⁸ Often, instead of performing office work, MacLean explains that preparing coffee for their male bosses became an everyday task.⁹ One boss even fired a clerical worker when

5 Dorothy Sue Cobble, "A Spontaneous Loss of Enthusiasm: Workplace Feminism and the Transformation of Women's Service Jobs in the 1970s," *International Labor and Working-Class History* 56 (Fall 1999): 31.

6 Barry, "Too Glamorous to Be Considered Workers," 121; Cobble, "A Spontaneous Loss of Enthusiasm," 28.

7 Barry, "Too Glamorous to be Considered Workers," 135.

8 Cobble, "Spontaneous Loss of Enthusiasm," 30.

9 Nancy MacLean, "The Hidden History of Affirmative Action: Working Women's Struggles in the 1970s and the Gender of Class," *Feminist Studies* 25, no. 1 (Spring 1999): 55.

she brought him a sandwich on white bread instead of rye.¹⁰ Thus, Turk contends that clerical workers organized in women's unions to protest the lack of respect that resulted in low wages.¹¹ Ultimately, these efforts increased pay and ensured that bosses' personal requests were no longer acceptable. While this research was focused on women within the service sector, throughout the 1970s, women often formed unions to fight for respect as they became exhausted from the monotonous work and gender inequality they faced.

Furthermore, other scholars assert that a few specific women's unions made their fight for gender equality a central dilemma within society. Some scholars contend that 9 to 5 and the Coalition of Labor Union Women (CLUW) are two of the most notable working-class women's unions that helped bring the feminist movement to the forefront of societal issues during the 1970s. Cowie argues that when these organizations were in their early stages, women were ignored and mistreated. Karen Nussbaum, who eventually became 9 to 5's executive director, explained, "They [union people] didn't care to take the time with us women who didn't know anything about unions."¹² However, after cementing themselves as prominent women's unions, 9 to 5 and the CLUW gathered a combined membership of over 15,000 working-class women to fight for recognition and equal employment rights.¹³ This large membership base allowed unions to grab the attention of the media. For example, when the *Chicago Tribune* asked women if they felt discriminated against because of their gender, 3,200 women said yes.¹⁴ Indeed, Milkman explains that 9 to 5 won support in public arenas by making "skillful use of the media," and the CLUW gained attention from the AFL-CIO, a major male-dominated union.¹⁵ Thus, due to the support

10 Barry, "Too Glamorous to Be Considered Workers," 121; Cobble, "A Spontaneous Loss of Enthusiasm," 28.

11 Barry, "Too Glamorous to be Considered Workers," 135.

12 Nancy MacLean, "The Hidden History of Affirmative Action: Working Women's Struggles in the 1970s and the Gender of Class," *Feminist Studies* 25, no. 1 (Spring 1999): 55.

13 Ruth Milkman, "Women Workers, Feminism and the Labor Movement Since the 1960s," in *Women, Work, & Protest*, ed. Ruth Milkman (Boston: Routledge & Kegan Paul, 1985), 311-318.

14 MacLean, "The Hidden History of Affirmative Action," 51.

for gender equity that women's unions created, it became harder for employers to ignore such an important issue facing society.

Apart from unions, several scholars also contend that working-class women used strikes and caucuses to advocate for increased gender equality.¹⁶ While unions were certainly one of the most popular forms of labor activism, these additional forms of collective action were equally influential in promoting and improving gender equality. For example, in her extensive research of the Farah manufacturing strike, Honig argues that striking not only affected women's attitudes toward work, but it also impacted their personal relationships and community involvement. More importantly, striking gave women the ability to fight for gender equality long after the strikes were over. Honig notes that one Farah worker, Lilian S., remained involved in political activism and advocated for equal workers' rights for nearly twenty years after the strike. However, worker Isela A. used her experiences in more subtle ways when she fought her boss while negotiating vacation days.¹⁷ In addition to strikes, MacLean asserts that working-class women's caucuses also helped win concrete improvements for women. Primarily, the caucuses developed a gender consciousness by protesting small slights they believed emerged from a larger sense of discrimination. For example, when *New York Times* editors refused to use the title "Ms.," women believed this "was symptomatic of more basic problems."¹⁸ Furthermore, by crossing racial divisions, the working-class women's caucuses helped black women fight against both gender and racial inequalities. Indeed, because of the caucuses' efforts, black women soon earned the same rights as other women – better jobs, more respect, and increased pay.¹⁹

Additionally, numerous scholars assert that labor activism increased working-class women's confidence and independence, enabling them

15 Milkman, "Women Workers, Feminism and the Labor Movement," 311-318.

16 Women believed that caucuses differed from unions because the caucuses crossed occupations and enabled them to overcome the competition that placed unions against each other.

17 Emily Honig, "Women at Farah Revisited: Political Mobilization and Its Aftermath Among Chicana Workers in El Paso, Texas, 1972-1992," *Feminist Studies* 22 (1996): 425-452.

18 MacLean, "The Hidden History of Affirmative Action," 52.

19 *Ibid*, 51-54.

to redefine women's roles in the workplace and home. Whether women participated in unions or strikes, labor activism boosted their confidence to be strong, independent women, in turn leading to significant gains for women. For instance, Cobble asserts that women flight attendants hesitated to form their own unions when male bosses failed to eliminate the sexual exploitation they faced. However, out of frustration women soon established several unions, which increased their confidence to promote their occupation in a professional manner.²⁰ Furthermore, Milkman indicates that organizations such as 9 to 5 and the CLUW developed women's leadership skills and their confidence to compete for male-dominated union leadership positions.²¹ In turn, some women started holding the same positions as men, thus improving gender equality in the workplace. As women increased their confidence and voice within the entire labor movement, they used their experiences and roots in labor history to challenge male-dominated unionism.²² Not only did this improve gender equality, but it also transformed the meaning of "gendered labor." For example, women gained confidence to perform men's jobs and started winning jobs in the coal mining industry. Finally, they realized they could perform men's work as well as their own.²³ This boost in confidence increased their independence, and when it came to their personal lives, women no longer feared being on their own. In her research, Honig noted that several women felt confident enough to leave their husbands and live independently after experiencing success in strikes.²⁴ Therefore, as participation in organized labor impacted women's self-confidence and increased their sense of independence, women began heading households, and men's identity in society soon changed as well.²⁵

Women's increased wages and entry into men's work along with heightened respect and confidence illustrate the successes of their working-class campaigns in the 1970s. In fact, Barry asserts that the accomplishments of women's labor activism from the 1970s allowed

20 Cobble, "A Spontaneous Loss of Enthusiasm," 27-30.

21 Milkman, "Women Workers, Feminism and the Labor Movement," 303-318.

22 Cowie, *Stayin' Alive*, 65.

23 MacLean, "The Hidden History of Affirmative Action," 62.

24 Honig, "Women at Farah Revisited," 437-440.

25 MacLean, "The Hidden History of Affirmative Action," 63.

them to create a legacy “that would serve them well in the years to come, when women were better able to demand greater equality in the workplace.”²⁶ The impact of this movement is particularly evident when examining the benefits working-class women enjoy today. From 1973 to 2012, women in the lower to middle classes experienced an average increase in wages of 16 percent (adjusted for inflation).²⁷ In addition, in 2013, President Obama released the Women’s Economic Agenda, a plan to increase medical benefits and childcare options, ensuring women’s success in the workplace.²⁸ However, women’s gains have come at a time when the working class has been fighting to stay afloat, while upper class Americans have enjoyed a steady growth in their income.²⁹ Thus, because minimum wage has failed to adjust for inflation and working class opportunities and benefits have declined, women’s gains are less significant. Therefore, it is clear that while working-class women certainly succeeded in redefining women’s roles and improving gender equality during the 1970s, the fight for gender equality still continues today.

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Instructor: Julia Gunn, Critical Writing Seminar in History, the 1970s

Milton Friedman's Influence on Corporate Social Responsibility

Caroline Ohlson

Is it unethical for businesses to engage in practices that improve society if their underlying goal is to increase their sales? This question is often asked when discussing companies that engage in corporate social responsibility. Corporate social responsibility (CSR) refers to businesses' efforts to improve their impact on society. Responses to corporate social responsibility are mixed; scholars differ on their beliefs about the ethical and financial implications of CSR. Milton Friedman's argument, that the social responsibility of businesses is to maximize profit, has been at the forefront of CSR debates for decades. Friedman states, "there is one and only one social responsibility of business--to use its resources and engage in activities designed to increase its profits so long as it stays within the rules of the game, which is to say, engages in open and free competition without deception or fraud" (Friedman, 1970, p. 5). Richey and Ponte, Newell and Frynas, Lantos, and Freeman and Liedtka all build off of Milton Friedman's theory of profit maximization while discussing different opinions on the legitimacy of corporate social responsibility.

Richey and Ponte, Newell and Frynas, Lantos, and Freeman and Liedtka all recognize, as Friedman did, that the primary goal of a business is profit maximization. This is not necessarily selfish on behalf of businesses; many scholars argue that it is businesses' duty to society to act in accord with this goal. Richey and Ponte (2001) point out that "Friedman stated unequivocally that 'the social responsibility of business is to increase its profits'" (p. 125). Simply by focusing on this goal, businesses are contributing to society in the best way that they can. By increasing profits, businesses fuel the economy and create more jobs. Even without the practice of CSR, "business-as-usual private investment

can increase employment among the poor, provide new market opportunities for smallholders, [and] increase the access of the poor to essential services” (Newell & Frynas, 2007, p. 674). While society can benefit from business-as-usual practices, it can also suffer from CSR practices, if these practices stand in the way of a business’s financial performance. Scholars argue, “to the extent that ‘doing the right thing’ prevents business from pursuing its own business affairs, the social benefits that derive from business are also curtailed. The indirect social consequences of innovation, technological disruption and social progress are most at risk” (Mullan, 2014). Businesses have a responsibility both to themselves and to society to focus on maximizing profits, and deviating from this goal may be counterproductive.

Some scholars believe that because businesses’ goal is profit maximization and businesses therefore engage in CSR out of self-interest, CSR is both unethical and ineffective in addressing social issues. Often, businesses cause the problems that they then try to counteract through CSR, which can be an unproductive cycle. For example, Newell and Frynas (2007) examine the ways in which CSR is ineffective in addressing poverty and argue that “contributions to poverty alleviation which rest solely on the potential of business to promote growth or provide jobs are, therefore, limited in addressing underlying causes of poverty which exclude people from labour markets in the first place” (p. 673). Despite this ineffectiveness, many businesses feel the need to engage in CSR to compensate in the public eye for ways that the company has left a harmful footprint. With this intention, businesses think of the impact CSR will have on themselves rather than on the parties they claim to be helping, and “managers turn social programs into corporate strategies, subordinating the needs of external constituencies to the needs of corporations” (Freeman & Liedtka, 1991, p. 94). Such exploitative relationships leave non-profits powerless and under the control and direction of the business that is donating money to the cause (L’Etang, 1994). Not only is this not of much financial benefit to the social cause, some scholars argue that the business is also corrupting the ethical foundation of the non-profit. Such scholars believe, “the goal of the for-profit organization...is perceived by some to be in direct conflict with the objective of the non-profit...Critics of [CSR] worry that the worthy missions of non-profits are being co-opted

by rapacious marketers” (Berglind & Nakata, 2005, p. 449). Scholars that believe CSR should be abandoned for ethical reasons draw on Friedman’s theory to explain that CSR is used for the company’s good and therefore is often ineffective and misguided in aiding society.

On the contrary, some scholars believe that the goal of profit maximization is exactly why businesses should practice CSR. Lantos describes two different types of CSR: altruistic CSR, done for the benefit of society, regardless of its effect on the company, and strategic CSR, which benefits society while increasing the profits of the company. Lantos says, “like Friedman, I shall conclude that altruistic CSR, although appearing noble and virtuous, lies outside of the firm’s proper scope of activities” (Lantos, 2001, p. 605). However, Lantos is a proponent for strategic CSR, which aligns with the goal of profit maximization. He describes this form of CSR as “a win-win situation in which both the corporation and one or more stakeholder groups benefit” (Lantos, 2001, p. 605). Because of this win-win situation, many companies choose to engage in CSR. For example, many companies take part in RED, a campaign that raises money for African AID victims through brand imaging. Richey and Ponte say that “RED is a manifestation of CSR that does not question the core objective of profit maximization...RED achieves a double capitalization: Capitalization via sales and profit; and capitalization via improvement of brand image” (Richey & Ponte, 2001, p. 149). Companies that partake in RED, and other similar campaigns, are able to maximize profit while also contributing financially to a good cause. For example, with the introduction of CSR, American Express saw increased card usage by 28% and an applicant increase of 17%. When General Food began using CSR, sales of its Tang product increased by 13% (Berglind & Nakata, 2005, p. 447). Scholars view increases in sales like these as an indication that CSR practices are in line with businesses’ goals. Scholars that advocate for CSR for financial reasons use Friedman’s theory to argue that CSR is a legitimate investment of businesses because it increases their profits.

Furthermore, some scholars believe that CSR does not lead to profit maximization, so firms should forgo the practice. These scholars are not arguing that there is anything wrong with using CSR to maximize profit; they simply believe that CSR does not maximize profit. Numerous empirical studies have examined the correlation between CSR and firm

financial performance. While the results of these studies are somewhat inconclusive, the overarching conclusion is that there is little correlation between CSR and financial performance (McWilliams & Siegel, 2000; Beurden & Gossling, 2008; Aupperle, Carroll & Hatfield, 1985). Firms put a lot of money into CSR campaigns, and many scholars believe that firms should only do so if there is clear evidence of a positive correlation between CSR and financial performance. While some studies do find a positive correlation, scholars believe that this is due to a third-variable—the firm’s past financial performance (McGuire, Sundgren & Schneeweis, 1988). Firms that have been financially successful in the past are more likely to take the risk of putting money into CSR campaigns. If these firms continue to make high profits, it may very well be due to their initial financial success, rather than their use of CSR. In these cases, it is unfair to conclude that CSR leads to high profits. If the goal of businesses is profit maximization, scholars believe that “corporations must decide if the long-term gains will justify making a contribution to a nonprofit cause” (Wulfson, 2001, p. 144). With inconclusive evidence on this claim, many scholars “propose that firms incur costs from socially responsible actions that put them at an economic disadvantage compared to other, less responsible, firms” (as cited in McGuire, Sundgren & Schneeweis, 1988, p. 854). Scholars that are against CSR for financial reasons use Friedman’s theory to argue that CSR is not a proper role of business because it does not conclusively maximize profits.

Although these scholars all build off of Friedman’s profit maximization theory, they are not in consensus on its implications on the legitimacy of CSR. CSR can be very costly, so when firms decide to engage in the practice, they want to know that it is an intelligent decision. This decision may have a large influence on a business’s success. It may greatly improve the sales and profits for a company, or it may use up many of the company’s funds with no return. Or, it may have no financial impact at all and simply be a waste of effort. As long as the majority of empirical studies on the correlation between CSR and financial success are inconclusive, businesses are forced to make this risky decision in the dark. Further studies of this correlation, with better controls, are necessary in order to equip businesses with the information they need to make intelligent decisions of whether or not to practice CSR.

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Instructor: Amy Brown, Critical Writing Seminar in Anthropology, Philanthropy and Capital

The Effect of Narrative on Health

Jessica Agas

Paulo Coelho, a Brazilian novelist, once said, “Writing means sharing. It’s part of the human condition to want to share things – thoughts, ideas, opinions” (Shaitly). Throughout history, people have always kept journals and wrote stories or poetry as a hobby. Writing was and still is a leisure activity for many. Although some people write simply because they enjoy it, researchers have begun to observe a relationship between writing and mental and physical health. One of the most beneficial aspects of writing is the formation of a narrative. In psychotherapy, narrative involves forming a story based off of one’s thoughts and feelings towards a certain event. Over the years, researchers have tried to understand the specific aspects of narrative that make writing beneficial to one’s health. In addition, they have studied the effects that narrative writing can have on specific mental and physical disorders. By conducting studies, many researchers have observed various effects writing can have on one’s overall well-being. Therefore, experts agree upon the positive health effects of self-expression in writing.

Narrative can help people cope with traumatic events. When a person experiences a traumatic event, “memories are not integrated into a personal narrative, possible resulting in the memory being stored as sensory perceptions, obsessional ruminations, or behavioral reenactments,” rather than being organized and processed (Smyth, True, and Souto 162). Narrative writing causes a person to organize his or her thoughts and view the situation more objectively, which then allows the person to find the meaning of this experience and come to a conclusion on what to do. Noted psychologist James C. Kaufman explains that, by shifting from first-person to third-person, one is forming a story that gives a better perspective on a situation. He explains that the “formation of a story has been identified as a key component in the health effects of

writing” (Kaufman 137). The new perspective allows a person to accept the situation, which is an important aspect in dealing with traumatic experiences. Joshua Smyth, a professor and researcher in the field of Biobehavioral Health, also agrees that narrative plays an important role in having an effect on mental health. He states that narrative can cause an “event [to] be summarized, stored, and assimilated more efficiently,” decreasing stress levels (Smyth, True, and Souto 162). American social psychologist James Pennebaker also studies this concept focusing on the fact that narrative can give an experience “structure and meaning,” which allows a person to reach a resolution. This allows the “emotional effects of that experience [to be] more manageable” (Pennebaker and Seagal 1243). This technique of using narrative writing has been especially useful in helping patients with Post-Traumatic Stress Disorder (PTSD). In a recent study, narrative therapy was used on a group of veterans diagnosed with PTSD. Seven out of eleven of those who completed treatment showed signs of improvement in PTSD symptoms (Erbes et al.). Therefore, all three psychologists believe the narrative aspect of writing can help patients cope with traumatic events.

Writing can improve one’s physical well-being. Pennebaker states that writing about emotional experiences can help immune function. Specifically, it has been shown to improve T-helper cell growth, which helps the immune system fight off foreign substances, and also increase antibody response to certain vaccines such as Hepatitis B (Pennebaker and Seagal 162). Kaufman and Smyth also briefly mention the effects of writing on physical health. Because writing can have an impact on a person’s immunity, it can potentially help decrease a person’s chances of getting sick. In fact, Kaufman explains that writing can also be related to decreased physician visits (136). These reductions in visits to the doctor can last anywhere from two months to over a year after beginning writing (Pennebaker and Seagal 163). Additionally Smyth, True, and Souto believe that writing can “lead to symptom reduction in patients with chronic illness” (161). Specifically, Smyth studies the effects of writing on patients with rheumatoid arthritis as well as patients with asthma. Four months after beginning writing therapy, participants in this study displayed reduced symptoms of their disease as well as improvements in immune function, blood pressure, and heart rate (Smyth et al. 1308). Therefore, psychologists agree that, by writing about emotional

experiences, a person can also improve their physical health.

Writing therapy can be used to reconstruct a person's self-image in a positive way. A person's self-image can impact his or her mental health, especially when the poor self-image stems from a mental or physical disorder. For example, narrative is used in this way with overweight youth and with women who have Attention Deficit/Hyperactivity Disorder (ADHD). Keeley Pratt, for example, studies the effect that narrative therapy can have on overweight youth to not only improve mental health but also physical health. This technique involves asking the child to write about his or her thoughts on body size as well as how he or she thinks others view overweight people. In addition, Pratt suggests asking the child to write down his or her "strengths" and "worries." This helps begin the deconstruction process of the child's negative self-narrative (Pratt, Palmer, and Walker). This then allows the child to differentiate between the qualities that are affected by his or her body size and ones that are not affected. For example, being family oriented is a quality that will remain unchanged whether or not the child begins to lose weight (Pratt, Palmer, and Walker 23). This helps the child see that his or her body size has not affected one of his or her strengths, increasing self-confidence as well as improving mental health. Additionally, using this strength and getting the patient's family involved in the "health lifestyle intervention" can help create possible weight loss methods which improve physical health as well (Pratt, Palmer, and Walker 23). Another interesting example is the use of a similar technique on female patient with ADHD. Because women with ADHD are often undiagnosed and untreated, they may begin to believe they do not fit into society's "ideas of womanhood" (Robinson, Jacobsen, and Foster 26). This could have a negative impact on their self-esteem and lead to "problem-saturated behavior," which is defined as a set of narrowly focused ideas on which individuals base their identity" (Robinson, Jacobsen, and Foster 26). Tina Robinson's technique involves deconstructing the negative narrative brought on by society's norms and then focusing on the women's strengths. The women then begin to develop a "strength based story" that can improve their self-image and positively affect their mental health (Robinson, Jacobsen, and Foster 31). By using similar strategies to incorporate narrative into psychotherapy, psychologists have been able to improve the mental health of women with ADHD and the physical and

mental health of overweight children. Therefore, narrative therapy can help a multitude of patients reconstruct their self-image in a positive way and, in turn, improve their mental health.

Although most research on narrative therapy focuses on specific disorders and health conditions, narrative therapy has benefits for everyone. A task as simple as writing in a journal every day can have an enormous impact on one's health, even if one has not experienced a traumatic event or has not had problems with his or her self-image. Instead, a person may experience similar positive health effects by writing in a journal about new situations in which he or she has had to step out of his or her comfort zone. This can be especially beneficial to college freshmen who may be intimidated or scared to live away from home and start taking more challenging classes. By writing about their experiences as freshmen, students could learn to process their emotions and overcome any fears or anxiety in order to make the most of their first-year experiences as college students. This is just one of the many examples in which narrative writing can be incorporated into people's daily lives. Narrative therapy has the potential to provide better health outcomes in all populations if its use is expanded to incorporate people without disorders.

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Instructor: Jacqui Sadashige, Critical Writing Seminar, Craft of Prose

Apollinaire, the Engine of the Avant-Garde

Jason Zhang

Guillaume Apollinaire embodied the spirit of the avant-garde in early twentieth-century Europe. A Frenchman of Polish descent, Apollinaire rose to fame as an iconoclastic poet. The French literati appreciated Apollinaire's willingness to explore new poetic styles, and many intellectual circles held him in high regard. Later in his life, encouraged by his close friend Pablo Picasso, Apollinaire wrote art criticism despite his lack of experience in the field. From a purely literary standpoint, Apollinaire achieved less success as an art critic than he did as a poet; he had only published one volume of art criticism by the time of his death in 1918. Yet in terms of its significance in the avant-garde movement, Apollinaire's art criticism was just as remarkable as his poetry because it was written in the mold of his new aesthetic form. In his introduction to *Apollinaire on Art*, an English compilation of Apollinaire's works, French art critic LeRoy Breunig presents Apollinaire as a leader of the avant-garde. Picasso scholars Peter Read and Arthur I. Miller similarly note Apollinaire's important role in inspiring new art forms during the avant-garde period in their respective books *Picasso & Apollinaire* and *Einstein, Picasso*. In *The Banquet Years*, art historian Roger Shattuck provides an in-depth study on Apollinaire's poetry and its breakthroughs. Likewise, David Chapman Berry discusses examples of Apollinaire's creativity in *The Creative Vision of Guillaume Apollinaire*. Scholars Breunig, Read, Miller, Shattuck, and Berry all present Apollinaire as the catalyst of the changing aesthetics that characterized the avant-garde period.

Apollinaire's innovative poetry presented a new aesthetic. At the time, European poetry was rooted in Symbolism, a style that emphasized fantasy and eluded the physical world. Apollinaire acknowledged the merits of Symbolism but sought to incorporate symbols into his poetry in a different way. Unlike traditional symbols, Apollinaire's symbols were

multidimensional; they did not represent a single idea. For instance, in Apollinaire's *L'Enchanteur pourrissant*, the sun is a source of light that represents the resurgence of life; on the other hand, in *Le Poète assassiné*, the rising sun is described as an armada on fire, an image of utter destruction (Berry 65). Berry finds that Apollinaire's symbols aimed to evoke an emotional response from the reader—it was the reader's reaction that gave meaning to the symbols (3). Apollinaire also found inspiration for his poetry from a different source. While traditional Symbolist poets found their creativity in music, Apollinaire and the “Antisymbolists” turned to art (Miller 23). Another facet of Apollinaire's poetry, his poetic ambiguity, garnered praise as well. In his works, Apollinaire embraced the “plasticity,” a concept that allowed artists and poets alike to manipulate appearances as they wished; as a result, Apollinaire's poetry could be seen from different dimensions of time and meaning (Shattuck 238). However, Apollinaire's greatest feat lies in his recurring theme of creativity (Breunig xxv). Perhaps the most striking were his later works of poetry written in the form of a *Calligramme*; Apollinaire reshaped the layout of his text to form an image that not only captured the essence of the poetry but also added another aesthetic aspect that made his works even more stylistically appealing (Shattuck 221).

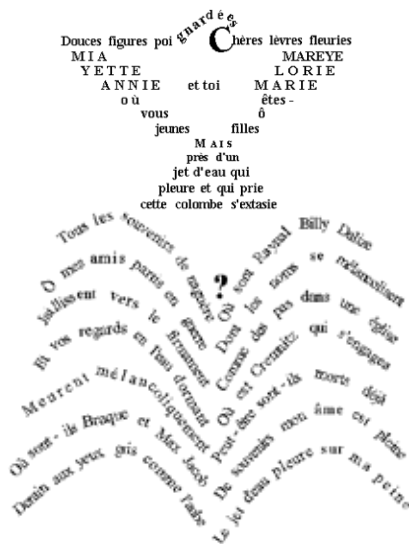


Fig. 1. Guillaume Apollinaire. *La Colombe Poignardée* et *le jet d'eau* from *Calligrammes; Poèmes De La Paix Et De La Guerre*, 1913-1916.

Apollinaire spread his unconventional poetic style to the visual arts. Because of his highly regarded status in the avant-garde circles, Apollinaire influenced disciplines beyond literature and poetry. In particular, scholars discuss Apollinaire's significant impact on Picasso as the young artist was still exploring different styles. Apollinaire and Picasso met in 1905 at an art exhibition in Paris, and the two quickly became close friends. Picasso still had a low profile in the Parisian art scene, but he had found a valuable ally and mentor in Apollinaire (Read 7). Art historian Pierre Diax wrote, "in talking to Picasso, I always had the impression that Apollinaire was the congenial friend with whom he could share everything, the friend no one else replaced" (qtd. in Read 249). In meetings with Picasso and the artist's inner circle, *la bande à Picasso*, Apollinaire encouraged Picasso to think beyond the constraints of traditional art forms, "to liberate himself from absolute rules, to listen to the proportions of his art, and generally to widen his horizons" (Miller 22). It was Apollinaire who introduced Picasso to the aesthetic themes in poetry that could also apply to art; as Breunig describes it, Apollinaire taught Picasso "the independence of art from nature, the 'divinity' of the artist as creator, the autonomy and purity of the work of art, and the concept of simultaneity" (xxiv). Apollinaire enhanced Picasso's perspective of art, providing the spark that the young artist needed in order assert his personality into his works and express his creativity (Shattuck 230).

Apollinaire's art criticism itself was uniquely poetic in substance. Traditional art critics were perhaps more familiar with art than Apollinaire was, but their prose often did not adequately convey the beauty of the piece that they were critiquing. Apollinaire, a poet by nature, used a different approach when writing about art. According to Shattuck, the ambitious Apollinaire possessed a desire "to impose his tastes and whims on the amorphous artistic scene" (204). In his art criticism, Apollinaire employed a poetic style that not only made subtle references to works of art, but also embodied the artistic essence of the pieces (Breunig xxiv). Apollinaire essentially transposed artistic images into poetic prose (Read 70). For instance, in his 1905 article titled "Young Artists: Picasso the Painter," Apollinaire uses vivid, descriptive imagery to reflect the bold dimensions of Picasso's art that made the paintings so unique and so provocative. The way Apollinaire

describes Picasso's Harlequins is particularly striking: "The Harlequins live beneath their ragged finery while the painting gathers, heats up, or whitens its color in order to tell the strength and duration of passions" (15). The reference to Picasso's famous Harlequin series is apparent, but more importantly, in his prose, Apollinaire effectively echoes the aesthetic qualities of the very work he is praising.

With his high standing in French literary circles, Apollinaire acted as the ambassador for the new art styles of the avant-garde. As his friend James Ominus recalled, Apollinaire had a preference for the new and extraordinary: "[I]n his love for a new art, he was attacking the foundations [of classical art], impeccable in themselves, but the consequences of which lead to the academic style" (qtd. in Breunig xxiii). Although Apollinaire was not an artist himself, he was a fervent supporter of new emerging art. Apollinaire especially enjoyed Picasso's bold new style, even in a time when it was not well-received by the art community (Miller 22). Apollinaire defended Picasso's daring style and was the first to accept the name "Cubism" (Shattuck 207). In fact, when renowned art critic Charles Morice condemned the negativity in Picasso's work, Apollinaire objected, choosing instead to praise Picasso's breakthrough in fusing "the delightful and the horrible, the abject and the delicate" (qtd. in Read 68). Many art historians, including Miller, also acknowledge Apollinaire's role in illuminating the artistic significance of Picasso's works to the general public. In his 1905 articles, Apollinaire praises Picasso's aesthetic sense and "perseverance in the pursuit of beauty" (16). Read interprets Apollinaire's endorsement of Picasso as his proclamation that the young artist would become "the ultimate hero... the greatest of all modern artists" (72). Apollinaire's bold prophecy was later justified as Picasso rose to fame with his 1907 masterpiece, *Les Femmes d'Alger (O. J. R. Version O)*.

Art and literary historians characterize the avant-garde period as a revival of art and literature not seen in Europe since the Renaissance. Apollinaire was central to the movement as he redefined European perceptions of beauty in both art and literature. In terms of aesthetics, Apollinaire served as the bridge between the nineteenth and twentieth centuries. His poetry embodied the boldness to explore the unknown and introduced themes of creativity and simultaneity that other artists and poets later adopted. His art criticism promoted the new art styles seen

during the period and was instrumental in Picasso's rise to fame as one of the greatest Modern artists. In 1916, Apollinaire proudly celebrated the flowering of French culture, writing:

Our period is unlike any other, And those who do not realize
this do not understand anything about the times they live in.
They have eyes but they see not how new and perfect, how
bold and beautiful, how young and sensitive and strong we
are! (qtd. in Breunig 446)

With his broad influence in art and literature, Apollinaire himself was a vital figure in the movement he describes. If artists like Picasso were the heroes of the avant-garde movement, then Apollinaire was certainly the engine that propelled them forward.

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*Instructor: Jo Ann Caplin, Critical Writing Seminar in Cultural Studies and
Criticism, Einstein and Picasso*

Expression through Lines in Comics

Sarah Allen

In an artist's hands, lines can transform into anything: an object, a person, a place, or more abstract concepts such as emotion and movement. Artists from the late nineteenth and early twentieth centuries, such as Edvard Munch, Vincent van Goh, and Wassily Kandinsky played with this idea of expression by experimenting with different styles of lines, shapes, and colors (McCloud 122-123). Their findings have been seen in a variety of fields, such as Ibanez and Delgado-Mata's research into categorizing lines from a computer graphics point of view. Also, since comics are designed with both art and narrative in mind, techniques that can combine the two allow for a more seamless depiction. Authors such as McCloud, Forceville, Cohn, and Groth analyze these trends in a wide variety of comics, while Abbott, Newgarden, and Karasik each examine one specific comic. These authors agree that lines in comics can represent a wide range of concepts.

First, lines can symbolize an assortment of emotion through the way they are drawn. Ibanez and Delgado-Mata categorize lines based on two qualities: valence and arousal. Lines with positive valence are smoothed and cored, and are "gentle, quieter, lazy ... serene and graceful," while lines with negative valence are sharp or angular, and correspond with feelings such as "agitating, hard, furious ... robust and vigorous" (Ibanez 100, 103). Arousal is measured by movement, height, and width, where the greater the arousal, the "higher and thinner then curves," and "greater the velocity," while a lower arousal corresponds to "shorter and wider" curves and "slower ... movement" (Ibanez 101, 103). Thus, by using different amounts of valence and arousal, different emotions can be produced. For example, lines containing positive valence represent feels such as "aroused, astonished, excited," (high arousal) or "content, satisfied, relaxed, calm," (low arousal). On the other hand, lines containing negative valence represent "distressed, afraid, alarmed,

angry,” (high arousal) or “sad, gloomy, depressed, bored” (low arousal).

These findings are justified not only by a case study conducted by Ibanez and Delgado-Mata but also through the works of a variety of authors. For example, McCloud denotes a series of thick jagged lines with the emotion anger (McCloud 118). These lines in Ibanez and Delgado-Mata’s model would be classified as high arousal, negative valence lines, which the authors of the model agree correspond to anger. In another case, McCloud correlates Schulz’s smooth, sweeping line-style in his Peanuts comics – a low arousal, positive valence method – with “calm, reason, and introspection,” once again corresponding to Ibanez and Delgado-Mata’s model (McCloud 124). Cohn, while examining Japanese manga, explains that characters with wide eyes – typically a high arousal, high valence line – represent innocence and purity, while sharper, narrower eyes – high arousal, low valence lines – correlate with “serious[ness]” or “evil” (Cohn chapter 8). Forceville, in his examination of the comic *Asterix*, discusses the appearance of pictorial runes, which are “non-mimetic graphic elements that contribute narratively salient information” such as speed lines or twirls (Forceville 875). One such example is a spiral, a flat “corkscrew-like” line found primarily around a person’s head or face, which is meant to invoke a “generically negative emotion, such as anger, disgust, or frustration” (Forceville 880). These lines correspond to the model’s high arousal, negative valence category, which contains similar emotions (Ibanez 100). Another pictorial rune that falls into this category is a spike, which can either be used like spirals or be used to draw attention to an object or in other cases the emotion depicted may be alarm (Forceville 879). The first type of these spiky lines appears in *Understanding Comics*, though McCloud classifies them as a symbol (McCloud 129). Forceville also describes another type of pictorial rune, the droplet, which is harder to categorize using Ibanez and Delgado-Mata’s method. Depending on the artist, droplets can be sharp, almost triangle shaped lines or rounded oval-like shapes. Based on their sense of motion, this would place them in either the high arousal, positive valence grouping or the high arousal, negative valence grouping. However, this spread across categories actually fits Forceville’s description of droplets, as they can represent “surprise” with positive valence as in “astonished” or “anger ... anxiety ... and fear” with negative valence (Forceville 879).

Lines can also be used to depict characteristics such as motion. Forceville analyzes three pictorial runes representing motion: speed lines, movement lines, and twirls. Speed lines and movement lines are very similar; both can be represented by curved lines of varying length, and both depict motion, though movement lines emphasize the action “of something relative to an entity to which it is physically connected,” such as the shifting of a body part (Forceville 877). Twirls represent spirals but are “broader” and have at least “one open loop” (Forceville 882). They are either found behind the legs, where they have a similar function to motion lines, or above the head, where they represent “dizziness, drunkenness, confusion, or unconsciousness” (Forceville 882). McCloud also discusses movement. He explains that single lines depicting motion, along the lines of Forceville’s speed and movement lines, are components of another type of line: the motion line (McCloud 110). These motion lines are drawn in pairs of straight or curved lines, containing either white or lighter space in between and/or some hint of an afterimage (McCloud 111-112). Another way to depict motion with motion lines is to fill the entire background with speed lines, while keeping the character or object in focus (Cohen chapter 8). These types of speed lines originally were only present in manga, but in the mid-eighties American comics begin to adopt such techniques (Cohn chapter 8, McCloud 114).

These techniques appear in a variety of comics with different artistic styles and backgrounds. *Nancy* is a gag-a-day strip that would find its home in the funnies page, *Trash* is from a 1980s anthology comic, and *Soirs de Paris* is a comic made by a French artist and writer team (Newgarden 98, Groth 3, Forceville 884). *Nancy* and *Soirs de Paris* are drawn with a much simpler style than *Trash*, and *Soirs de Paris* is the only one of the three that contains any color. Despite these differences, each of the three comics shows surprise in a similar fashion. They each depict three or more vertical lines radiating from the character’s head, or, as Forceville would call them, spikes. Further, characters in each of the three have their mouths open, eyes wide and eyebrows (if he or she possesses them) curved and pulled high. These lines have high valence and arousal, further representing the characters’ astonishment. In *Azumanga Daioh*, a Japanese manga, surprise is portrayed slightly differently. In one panel, Chiyo-chan and Tomo, the two characters in

the background, have their eyes and mouths widened in shock. However, the spikes are noticeably different. Instead of simply surrounding the head like before, the lines are scrunched up in the corner, and take on a similar appearance to motion lines. Even so, these lines are still high arousal, low valence like the spikes, and serve the same purpose: they direct the reader's eyes towards the two girls and heighten the sense of "alarm" that the two are feeling (Forceville 879). The motion in *The Road to Manhood*, another comic, contains a similar emotional connection. In one scene Junior is frantically running around the room with a vacuum cleaner. Junior's most easily noticed emotion is his alarm, which is conveyed through the character's quick, sharp lines. Furthermore, around his head is the pictorial rune of droplets. These droplets serve a two-fold purpose: both to highlight Junior's sense of anxiety as well as to depict his exhaustion as he runs around (Forceville 879). These droplets, and their associated emotions, also appear in a variety of other comics. Because of the nature of lines and their inherent emotions, symbols and specific lines are constantly being used, no matter the origin of the writer or the art-style of the work.

Lines can represent emotion or movement, and all comics contain lines in some form. By examining a comic down to its most basic level, one can gather a richer understanding of the comic. Furthermore, since this analysis of lines holds true even between radically different art styles, one can use lines to find relationships between two different comics, or even comics in general. Also, lines can be used as a storytelling technique. By placing emotion into lines instead of using up valuable panel space, a comic creator can spend more space on another subject or combine words with pictures to provide more depth to the character's emotions. Thus, a study of lines can be used as a jumping off point for researchers, and help further the investigation into what exactly comics are and how they are depicted.

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Fall of a God: Uncovering Japan's Most Humbling Archaeological Crisis

Ryan Fan

Before Shinichi Fujimura made his first monumental archaeological find, the history of human habitation on the islands of Japan was only about 30,000 years old.¹ Over his nearly two decade long career, Fujimura single-handedly found archaeological evidence for human habitation nearly 600,000 years old, extending this history by a factor of twenty. He pushed back Japanese Early/Middle Paleolithic antiquity to nearly the same age as neighboring countries on mainland Asia.² Fujimura, christened with the title “God’s Hand” for his nearly miraculous discoveries, became one of the most revered archaeologists in the country. On the fateful morning of October 22, 2000, however, Fujimura was knocked off this pedestal. A national newspaper caught him on video planting artifacts at the Kamitakamori excavation.³ The resulting scandal cast a dark cloud over Japanese archaeology, especially when subsequent investigations proved that all 180 sites Fujimura excavated showed signs of forgery.⁴ Many experts in the field of archaeology and members of the Japanese archaeological community have discussed the reasons Fujimura’s scandal succeeded so well and the scandal’s wider implications for Japanese archaeology. These experts all agree that major problems with the practice of archaeology in Japan allowed Shinichi Fujimura to commit his frauds without detection.

Archaeology, as with all sciences, aims to abide by strict guidelines of peer review and other processes that guarantee the validity of findings

1 Kenneth Feder, *Frauds, Myths, and Mysteries: Science and Pseudoscience in Archaeology* (New York: McGraw Hill, 2014), 47.

2 Ibid.

3 Ibid., 48.

4 Ibid., 49.

before the results are published. Japanese archaeology, however, usually forgoes these basic scientific principles. According to Charles Keally, an American archaeologist with over thirty years of experience in Japan, archaeological conclusions almost never undergo critical evaluation or scholarly debate before being published.⁵ In a field such as archaeology, conclusions almost completely depend upon speculation and the assessment of physical evidence. Peer reviews by fellow experts are therefore necessary to reduce the possibility of mistaken conclusions or forgeries. Japanese archaeology's dangerous scientific oversight has damaged the legitimacy of any archaeological publications and has created a culture that discourages any type of formal criticism of other archaeologists. Hisao Baba, a paleoanthropologist at the National Science Museum in Tokyo, admits, "In Japan, it is hard to criticize people directly, especially those in established positions, because it is considered a personal attack."⁶ Balancing this established cultural custom with the needs of a scientific community has been a continuing struggle for Japanese archaeologists and other scientists.

The lack of scientific critique gave Fujimura the means to successfully conceal his forgeries successfully from the archaeological community because his work was never subjected to appropriate evaluations. As was the case with most archaeological discoveries, archaeologists rarely debated the scientific merits or even studied artifacts found by Fujimura after they were first discovered. According to Feder, "it is difficult to find even a single Japanese archaeologist who wondered, at least in print, how one man could be so lucky."⁷ The few who actually attempted publicly criticizing or even speculating about the validity of Fujimura's findings were met with severe obstacles inappropriate for a scientific community. Toshiki Takeoka, an archaeologist at Kyoritsu Women's University, submitted a paper to the Japanese journal *Paleolithic Archaeology* after concluding that some

5 Charles T. Keally, "Japanese Scandals – This Time It's Archaeology," *Japanese Archaeology*, last modified November 17, 2000, <http://www.t-net.ne.jp/~keally/Hoax/pal-hoax-1.html>

6 David Cyranoski, "Fake Finds Reveal Critical Deficiency," *Nature* 408, (November 2000): 280, doi:10.1038/35042725.

7 Feder, *Frauds*, 49.

of the artifacts Fujimura found were from the wrong time period.⁸ Not only was Takeoka asked to cut out nearly all critical sections or parts that alluded to planted artifacts in his paper by the editorial board, but he also faced warnings from his colleagues about his reputation if even a toned-down paper was published.⁹ With the censorship by the archaeological community of anyone who speculated about a respected archaeologist like Fujimura, Fujimura succeeded at deceiving an entire country for nearly twenty years.

Another serious issue is the tendency for Japanese archaeologists to invest too much presumptive trust in their colleagues' work. In Japanese academia as a whole, not just archaeology, there exists a closed and highly structured system in which lower ranked members of an academic group such as students must agree unequivocally with the ideas of their mentors or teachers.¹⁰ Any student who disagrees is viewed as shamefully disrespectful and risks expulsion from the group.¹¹ Because of this strict academic culture, members of an archaeological team will almost never question the discoveries or conclusions of their team leader, and the word of a respected excavator is simply accepted without doubt. According to Kunio Yajima, a member of the Japanese Archaeological Association who investigated Fujimura's other sites, the extent of this trust is so extreme that Japanese archaeologists often never consult other experts, such as geologists, about their finds or even reexamine artifacts after their initial discovery.¹² In archaeology, as with any other science, genuine evidence is the only way to prove a hypothesis. In Japanese archaeology, however, only the opinion of a senior archaeologist is needed to come to a conclusion about an artifact.

The problematic trust Japanese archaeologists place in discoveries that match their expectations allowed Fujimura to plant forgeries

8 Dennis Normile, "Japanese Fraud Highlights Media-driven Research Ethic," *Science* 291, no. 5501 (January 5, 2001): 34.

9 Ibid.

10 Keally, "Japanese Scandals."

11 Ibid.

12 Kunio Yajima, "Investigations into Faking Early and Middle Paleolithic Sites in Japan," in *Recent Paleolithic Studies in Japan: Proceedings for Tainted Evidence and Restoration of Confidence in the Pleistocene Archaeology of the Japanese Archipelago* (Tokyo: The Japanese Archaeological Association, 2004), 6.

undetected. Because of this trust, none of his colleagues questioned the validity of his finds. According to Lepper, the Japanese archaeologists who worked with Fujimura were “too trusting and too ready to accept evidence for what they believed to be true.”¹³ Although they did not consciously assist Fujimura in his forgeries, his colleagues fell victim to a poor scientific culture that overlooked analysis in favor of the generally accepted opinion of other archaeologists. Keiichi Omoto, an anthropologist at the International Research Center for Japanese Studies, notes that everyone accepted Fujimura’s findings at Kamitakamori without even a hint of doubt because they matched the expectations of leading scientists and supported work from his previous excavations.¹⁴ Even though Fujimura’s previous sites also contained mostly forged artifacts, his reputation commanded so much respect and admiration that his associates continued to buy into his lies without suspicion. They simply expected Fujimura’s artifacts to be genuine. Fujimura’s forgeries also matched the expectations of leading scientists because they provided these researchers with proof that their nation’s history matched that of other Asian countries like China and Korea, something that most Japanese archaeologists had hoped to find. Fujimura’s colleagues saw no need to reexamine finds that helped prove their theories.¹⁵ The expectation that Fujimura’s findings were true became so strong that not even clear evidence against the validity of his claims could shake the foundation of trust his fellow archaeologists placed in him. For example, in some excavations, Fujimura planted artifacts in inappropriate archaeological strata, the layer of earth where an artifact is found.¹⁶ Natural anthropogenic and geophysical processes dictate exactly where an artifact could reside below ground depending on the age of an artifact, with older artifacts almost always found deeper than newer ones. Fujimura, however, sometimes planted ancient artifacts in upper strata where they realistically could not have been found due to their

13 Bradley T. Lepper, “Paleolithic Archaeological Frauds,” *Current Research in the Pleistocene* 18, (2001): viii.

14 Normile, “Japanese Fraud,” 34.

15 Feder, *Frauds*, 71.

16 Shoh Yamada, “Politics and Personality: Japan’s Worst Archaeology Scandal,” *Harvard Asia Quarterly* 6, no. 3 (2001): 51.

age. Despite this obvious oversight that should have prompted further examination of the artifacts, Fujimura's colleagues simply came up with alternate explanations for Fujimura's findings, not even once considering the possibility of forgery.¹⁷ With a team of credulous archaeologists whose confidence in their own expectations about Fujimura was unshakeable, Fujimura never had to fear anyone looking too closely at his forgeries.

The Japanese archaeological institution's role in facilitating Shinichi Fujimura's nearly twenty years of forgeries severely embarrassed the field and exposed critical flaws within the practice as a whole. The outpouring of criticism against archaeology in Japan after Fujimura's revelation included both internal and external ridicule from the Japanese public and Western media, prompting many Japanese archaeologists to call for a complete overhaul of the practice in the country.¹⁸ Charles Keally, who wrote a scathing review and self-critique of Japanese archaeology, concludes that "[Fujimura] deserves our sympathy, for he is ultimately a product of a system that is producing a lot of scandals."¹⁹ Only an overhaul of how archaeology is conducted in Japan can allow the field truly to regain its legitimacy after Fujimura's scandal. Many archaeologists, however, agree that the problem extends even further than just amending policies, and they believe changing the current practices of archaeology will require overhauling entire cultural standards such as the unconditional respect lower ranked archaeologists hold for those of a higher rank. Nevertheless, Japanese archaeology must make strides to avoid allowing another "Fujimura" to cause such tremendous harm to the field. Despite the damaging legacy Fujimura leaves behind, the critical review that his scandal brought upon Japanese archaeology will be a silver lining as the field ultimately changes for the better.

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Examining Vespasian's Propaganda: Garnering the Loyalty of Soldiers

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Although many would consider propaganda a modern political art, its origins can be traced back to the ancient world. The emperor Vespasian, for example, expertly disseminated his beliefs to the burgeoning Roman Empire as early as AD 66. The question as to whether his actions can be considered propaganda by modern standards, however, is one that has received much attention from scholars. The negative connotations of propaganda today may not accurately capture the behavior of ancient figures, such as Vespasian. Although its definition needs further clarification, and it is unlikely that scholars will reach a consensus about its exact meaning, the term propaganda is valid and should not be removed from application entirely.¹ As long as it is interpreted with caution, the term propaganda can be effective for describing how figures in positions of influence broadcast their ideas. It is for this reason that scholars commonly refer to Vespasian's actions as propaganda. More specifically, several scholars suggest that Vespasian targeted his propaganda at soldiers.

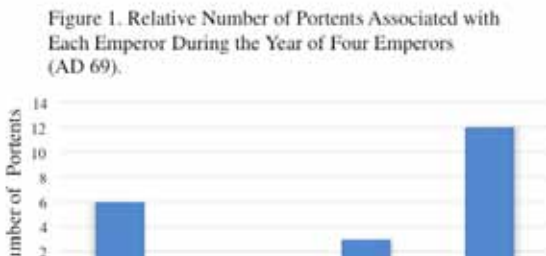
Even before becoming emperor, Vespasian employed propaganda to convince soldiers he was destined to rule Rome. Lattimore and Levick agree that divine prophecies, which were widely circulated among soldiers, aided in establishing Vespasian on the imperial throne.² While serving in Judaea in the years prior to becoming emperor, Vespasian witnessed numerous strange occurrences that prophesied his ascent. For example, while held hostage in Jotapata, the historian Josephus claimed to have

1 Olivier Hekster, *The Army and Imperial Propaganda* (Oxford: Blackwell, 2007), 340.

2 Richmond Lattimore, "Portents and Prophecies in Connection with the Emperor Vespasian," *Classical Journal* (1934): 448; Barbara Levick, *Vespasian* (London: Routledge, 2005).

experienced a divine revelation that predicted Vespasian would become emperor.³ In addition, after consulting the shrine at Mount Carmel, Vespasian was informed by a priest that greatness awaited him.⁴ Even during AD 69, these supernatural occurrences did not lose momentum. At the Sanctuary of Serapis, Vespasian purportedly saw a man named Basilides, who in reality was situated miles away, crowning him emperor.⁵ In addition, two eagles were seen fighting over the Battle of Bedriacum, only to be defeated by a third eagle which came from the east.⁶ The implication once again was that Vespasian, who had just emerged victorious from the eastern province of Judaea, would soon become the emperor of Rome. Lattimore and Levick note that these prophecies were documented diligently by contemporary historians.⁷ Lattimore suggests that if these portents were superfluous, it is unlikely that they would have received this degree of attention from ancient authorities.⁸ If ancient historians believed in these superstitions, it logically follows that so too would soldiers and members of the public.⁹ Vespasian, indeed, was

associated with more prophecies than the emperors Galba, Otho, and Vitellius combined, all of whom, unlike Vespasian, failed in the civil war (fig. 1).¹⁰ Finally, both Lattimore and Levick agree



3 Levick, *Vespasian*, 67.

4 Lattimore, "Portents and Prophecies," 445.

5 Levick, *Vespasian*, 68.

6 Richmond Lattimore, "Portents and Prophecies," 443.

7 Richmond Lattimore, "Portents and Prophecies," 443; Levick, *Vespasian*, 65.

8 Richmond Lattimore, "Portents and Prophecies in Connection with the Emperor Vespasian," *Classical Journal* (1934): 447.

9 *Ibid.*, 448.

10 *Ibid.*, 443.; Figure 1: Data courtesy of Richmond Lattimore.

that Vespasian's modest background augmented the influence of these portents.¹¹ To soldiers, the fact Vespasian advanced so far through the ranks, ultimately assuming the emperorship, could only be explained by the notion that the gods were guiding him.

After Vespasian became emperor, scholars suggest that his propaganda toward soldiers served numerous purposes, the first of which was promising them peace. Lattimore observes that Roman soldiers commonly persisted in states of "nervous emotionalism," at times approaching what appeared to be mental illness.¹² Consequently, the promise of peace was especially appealing to soldiers, many of whom had already fought for months in the civil war. Thus, in assuming the role of a bringer of peace, Vespasian was further improving his reputation with soldiers. Darwall-Smith, Hekster, and Levick comment on the prime significance of Vespasian's Temple of Peace. The Temple was adorned with a wide array of triumphal spoils, including golden vessels from the Jewish temple and Egyptian-themed statues.¹³ These authors also note that the items shared the common purpose of showcasing Vespasian's military campaigns, in which troops played a prominent role.¹⁴ Hekster explains that the emperor was ultimately responsible for the maintenance of Rome, and therefore buildings reflected what people believed he wanted. Thus, the Temple demonstrated that Vespasian valued military success and periods of tranquility.¹⁵ The name assigned to the Temple was highly symbolic because it broadcast Vespasian's commitment to achieving peace.¹⁶ Hekster notes that in addition to structures like the Temple, Vespasian also employed mobile mediums of propaganda such as coinage which enabled him to influence a larger audience.¹⁷ Scholars have noted a large number of coins containing peace-related virtues that

11 Lattimore, "Portents and prophecies," 447.; Levick, *Vespasian*, 67-68.

12 Richmond Lattimore, "Portents and prophecies," 447-48.

13 Levick, *Vespasian*, 67.

14 Robin Haydon Darwall-Smith. *Emperors and Architecture: A Study of Flavian Rome* (Michigan: Latomus, 1996), 58-61.

15 Hekster, *The Army and Imperial Propaganda*, 342.

16 Darwall-Smith, *Emperors and Architecture*, 67.

17 Hekster, *The Army and Imperial Propaganda*, 349.

were minted under Vespaſian's rule.¹⁸ More ſpecifically, Ramage notes that Pax (the divine perſonification of peace) appears in ſix different forms, and Levick draws attention to the ſudden inclusion of *Fortuna* (the goddess of luck and fortune).¹⁹

In addition to promiſing ſoldiers peace, Veſpaſian's propaganda alſo aimed to bolſter their confidence in achieving victory. This is exemplified by Ferrill who deſcribes one of Veſpaſian's firſt propaganda ſchemes, which involved forging a letter allegedly from the prior emperor Otho. In this letter, it appeared as if Otho was urging Veſpaſian to avenge him and reſcue the empire. Numerous legions were composed of ſoldiers fanatically loyal to Otho, and theſe ſoldiers ſuffered a maſſive loſs of morale following his ſuicide. By faking loyalty to Otho, Veſpaſian acquired the ſupport of theſe ſoldiers who became optimistic about achieving victory under their new leader.²⁰ Hekſter and Kemmers deſcribe how Veſpaſian alſo uſed coins to galvanize ſoldiers into achieving victory. Roman leaders frequently diſplayed military-related qualities on coins. More ſpecifically, one-quarter of all coins minted between AD 69 and AD 238 were composed of the qualities Virtus (the perſonification of courage/military/ daring) and *Providentia* (the foresight neceſſary to ſafeguard the empire).²¹ Veſpaſian's coins in particular, ſuch as the Judea Capta ſeries, portray defeated and hopeleſs enemies, while ſhowing Romans as all powerful conquerors. Enemies were often depicted naked and bound, in contrast to Roman ſoldiers who were ſurrounded by trophies and other ſpoils.²² Theſe coins ſerved as a reminder of the role of Roman ſoldiers as victors. Kemmers obſerves that Veſpaſian may have uſed coins for this ſame purpoſe during the Batavian Rebellion, which tranſpired when a powerful Germanic tribe that inhabited the Netherlands revolted. During this uprising, there was a lack of diversity in the ſymbols on the back faces of coins, commonly

18 Darwall-Smith, *Emperors and Architecture*, 61-63

19 Levick, *Vespasian*, 67; Ramage, "Denigration of predecessor under Claudius, Galba, and Vespasian," 211.

20 Arther Ferrill, "Otho, Vitellius, and the propaganda of Vespasian," *Classical Journal* 60 (1965): 268.

21 Hekster, *The Army and Imperial Propaganda*, 339.

22 Hekster, *The Army and Imperial Propaganda*, 349.

known as reverse-types. The themes of victory, security, and stability were frequently repeated, suggesting that these coins may have been intended to encourage troops to achieve victory.²³

Finally, Ferrill and Hekster agree that another aim of Vespasian's propaganda was to inspire soldiers to feel connected with the emperor. Hekster explains that Roman Emperors, including Vespasian, frequently emphasized their military backgrounds in order to relate to soldiers. In propagating his military valor, Vespasian demonstrated that he, too, shared the same hardships as his troops. This is also why emperors chose to be portrayed in military attire.²⁴ In order to strengthen their affiliation with soldiers, emperors commonly named legions after themselves. Vespasian's legions bore the name Flavia for his family.²⁵ Ferrill suggests that Vespasian manipulated propaganda to maintain a good rapport with various legions. By refusing to use his propaganda to denigrate the previous emperors Otho and Vitellius, Vespasian demonstrated his desire to remain on positive terms with soldiers formerly loyal to them.²⁶ Vespasian also issued special gifts of money called donatives, such as *Vict(oria) Aug(usti)* ("the emperor's victory").²⁷ His donatives not only specifically targeted soldiers, but also commended their service and contributions to his victory.²⁸ Thus, these coins served as mementos to aid Vespasian in cultivating strong relationships with soldiers. Finally, ceremonies, in particular triumphs, were important forums in which the emperor could personally interact with soldiers. During triumphs, the emperor had reason to march through Rome, where he was accompanied by a multitude of soldiers donning full battle gear.²⁹ Vespasian's subjugation of the Jews, for example, was an occasion that warranted a full-fledged triumph. Josephus describes how soldiers paraded through

23 Fleur Kemmers, "Not at Random: Evidence for a Regionalised Coin Supply?" in *TRAC 2014*, ed Martyn Allen et al. (Oxford, Oxbow Books, 2015), 48.

24 Hekster, *The Army and Imperial Propaganda*, 352-53.

25 *Ibid.*, 352.

26 Ferrill, "Otho, Vitellius, and the Propaganda of Vespasian," 269.

27 Hekster, *The Army and Imperial Propaganda*, 341.

28 *Ibid.*, 351.

29 *Ibid.*, 347.

the streets carrying spoils as they reenacted victories on floats several stories high.³⁰ Throughout this spectacle, Vespasian and his son Titus presided over the entire procession.³¹

It is apparent that Vespasian employed propaganda to foster a positive reputation with soldiers. The extent to which Vespasian controlled this propaganda, however, remains unknown. Although coins have been widely referenced by scholars as salient examples of propaganda, there is much debate over whether the emperor controlled the coin supply at all. For example, it is plausible that the imagery on ancient denarii was decided by officials who operated mints, rather than the emperor. Nevertheless, even if the emperor did not govern coins, those who were in charge would have depicted the emperor in the most pleasing manner possible by inscribing virtues which he valued most. In addition, although Vespasian is associated with a wide array of prophecies, it is unclear whether he truly believed in them. Of course, due to the ubiquity of these prophecies, it can be implied that Vespasian did not take substantive action to quell them. However, the viewpoint that Vespasian believed in them without qualification is entirely incompatible with his last words. When Vespasian stated, “Oh dear, I fear I’m becoming a god,” he was poking fun at the practice of worshiping earlier emperors as gods following their deaths.³² This naturally suggests that Vespasian attached little credence to prophecies depicting him as a god. Thus, if Vespasian genuinely believed he was divinely chosen to rule, it would render his entire quote illogical. Regardless of the extent to which Vespasian believed in his own propaganda, one point is for certain: propaganda had a profound impact on the way in which ancient soldiers viewed and modern scholars continue to view the Roman Emperor.

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