A COURSE IN CYBORG SEMIOTICS:
ENCODING AND DECODING THE TECHNORGANISM

by

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I dedicate this research to my wife and children. You are the only organisms I want comprising

Family.

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ABSTRACT

Cyborg theorists such as Donna Haraway often comment that cyborgs "signify"; however, the nature of cyborg signification is largely underexplored. This dissertation seeks to provide an explanation within a structuralist paradigm for the unique manner in which cyborgs signify. Positioning the cyborg as neither a futuristic posthuman fusion of bodies and radical technologies envisioned in science fiction, nor yet as the post-World War II unintegrated yet technologically qualitatively more sophisticated construct suggested by noted cyborg theorists such as Haraway and Chris Hables Gray, I argue with Andy Clark and Bruce Mazlish that the cyborg condition is inherent to being human. Clark contends that humans are hardwired to accept technology as a part of their identities, while Mazlish claims that the rejection of the integrated nature of technology with humanity creates a discontinuity that leads to a misunderstanding of the human condition. Cyborg semiotics, then, redresses this perceived discontinuity, revealing the intrinsic nature of technology to signifying as human.

Cyborg semiotics must follow the same rules as any other signifying system. To demonstrate the specific manner in which cyborgs signify, I return to Ferdinand de Saussure's definitive work, *A Course in General Linguistics*, and apply the rules which he establishes for a linguistic system to those of a cybernetic system (or *cy-syst*). For example, I explore the arbitrary nature of the cybernetic sign (for which I have created the neologism *cygn* for the cybernetic equivalent of the linguistic sign). This exploration reveals the possibility of resistance to traditional culturally constructed interpretations of cygns. The unique combinations that form specific cygns are comprised of individual elements in the same manner that words are formed out of individual letters; however, instead of vowels and consonants, cygns are comprised of bodies and technologies. Just like the physical letters (either the written letters or sounds vibrating in the air) that form words have no bearing on the meaning of the word, the physical components of a cygn are also unrelated to the meaning associated with it. In each case, the associated meaning is culturally constructed; there is no intrinsic relationship between the parts and the whole.

Since cy-systs function as signifying systems, the ramifications of other theories regarding such systems may be applied equitably to them. For instance, examining Derridian concepts such as *sous rature* and supplementation within the context of cyborg semiotics reveals the manner in which alternate technologies may be used to cygnify within a cy-syst or even displace functions previously identified as essential to the biological organism. Furthermore, exploring Foucault's models in "The Discourse on Language" reveals the nuances of technologies of power as they apply within cybernetic systems. All of these applications are considered within the parameters of feminist inquiry, which is used as one possible (although by no means the only) extension of cyborg semiotics.

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Cyborg politics is the struggle for language and the struggle against perfect communication, against the one code that translates all meaning perfectly, the central dogma of phallogocentrism. That is why cyborg politics insist on noise and advocate pollution, rejoicing in the illegitimate fusions of animal and machine. These are the couplings which make Man and Woman so problematic, subverting the structure of desire, the force imagined to generate language and gender, and so subverting the structure and modes of reproduction of 'Western' identity, of nature and culture, of mirror and eye, slave and master, body and mind. 'We' did not originally choose to be cyborgs, but choice grounds a liberal politics and epistemology that imagines the reproduction of individuals before the wider replications of 'texts'. (Donna Haraway, "A Cyborg Manifesto: Science, Technology, and Socialist Feminism in the Late Twentieth Century")

In short, the body, and its constitutive parts, behaves much like a signifier within a postmodern information system, its meaning determined not by a self-adhering presence but by its position within the overall pattern. (Carl Silvio, "Refiguring the Radical Cyborg in Mamoru Oshii's *Ghost in the Shell*.")

INTRODUCTION

Jacques Lacan famously claims that the unconscious is structured like a language. He is not claiming that it follows the individual grammars and exceptions of a particular language, such as Latin or Tagalog, but rather that it functions through metonymy and metaphor – transference and condensation – as does a linguistic system. This dissertation makes a comparable claim: cyborgs and cybernetic systems function in a similar manner to that of words within a linguistic system. The concept of cyborgs as signifiers is a common theme in cyborg theory, one that traces its origins to Donna Haraway, the founder of cyborg theory. Her book, *Modest_Witness@Second_Millennium_FemaleMan©_Meets_OncoMouse*™ (1997), discusses the semiotic nature of modern cyborgs, creations made of silicon and electricity which have swept the globe over the past several decades.

Contemporary theorists debate whether the cyborg condition is an exclusively modern state or, rather, if the creation of cyborg consciousness separated humans from their primate ancestors millennia ago. Some of the most prominent cyborgologists contend that the cyborg is a relatively recent status for humanity. Haraway, for example, argues in *Simians, Cyborgs, and Women*: *The Reinvention of Nature* (1991), that cyborgs originated only within the context of twentieth century technologies. She claims, "cyborgs are compounded of special kinds of machines and special kinds of organisms appropriate to the late twentieth century. Cyborgs are post-Second World War hybrid entities" (1). In *The Cyborg Handbook*, Chris Hables Gray, Heidi J. Figueroa-Sarriera, and Steven Mentor concur with Haraway in questioning the origins of the cyborg, ascribing it only a modern existence:

> But haven't people always been cyborgs? At least back to the bicycle, eyeglasses, and stone hammers? This is an argument many people make, including early cyborgologists like Manfred Clynes and J.E. Steele. The answer is, in a word, no. Certainly, we can look back from the present at some human-tool and human-machine relationships and say, "Yes, that looks very cyborgian," but this is only possible because of hindsight. . . . Cyborgian elements of previous human-tool and human-machine relationships are only visible from our current point of view. In quantity, and quality, the relationship is new. (6)

The editors of *The Cyborg Handbook* propose that in order for a cyborg relationship to exist, there must be both specific qualitative and quantitative measurables; however, at no point do they define the parameters for these measurables. While an argument can reasonably be made that the number of available technologies dramatically increased after World War II, how can the proliferation of technological interaction transform people from "humans" to "cyborgs"? Technology (considered succinctly as objects made by humans) existed prior to the post-World War II increase that Haraway notes in her work on the topic; therefore, why does a proliferation of what already existed alter the fundamental relationship between humans and technology?

The second component of the claim Gray, Mentor, and Figueroa-Sarriera make is that the quality of the relationship between humans and technologies underwent a fundamental transformation following World War II. This point is contentious, and they fail to explain the precise manner in which the quality of the human-technology relationship was altered, or what forces drove this change. I disagree with their

conclusion that the quality of the human-technology relationship fundamentally changed since World War II; rather, I would maintain and will demonstrate that this relationship is ancient, embedded in humanity's nature, and has maintained an intrinsic and singular depth from its inception. Does the modern farmer have a qualitatively different "relationship" with her tractor than the French peasant did with his horse and plow? Was the pioneer involved in a qualitatively different manner with her covered wagon than the modern businesswoman is with her Mazda RX-7? In other words, how were technologies of tilling soil or transportation any less critical to prior generations' identity formation than modern technologies are to humans now? The editors' contention seems exceptionally temporal-centric; that is, they prioritize the condition of modern humans at the expense of those of past generations, especially the ancients. I believe that this relationship between humans and technology is, in fact, a condition of human existence, not something recently created by modern electronics.

In *The Artificial Ape: How Technology Changed the Course of Human Evolution* (2010), Timothy Taylor examines how technology shaped the human body's evolution into its current form. According to Taylor, humans' evolution is now and has always been intimately connected to their technologies. As Taylor claims, "Human life as we know it assumes the presence of artifice – objects we have made ourselves, without which life would have no meaning or be physically impossible. Not only did we make these necessary objects, but, within a framework of some 2 or 3 million years, the objects have physically and *mentally* shaped us" (location 148, emphasis mine). That is, technology has not only molded humanity's physical structure (body shape, head size, etc.) but our

mental processes (including the physiological changes necessary to enable them) have also been formed to accommodate specific technologies as well.

In *The Fourth Discontinuity: The Co-Evolution of Humans and Machines* (1993), Bruce Mazlish argues that the evolution which Taylor describes between humans and technologies is a reciprocal relationship, with each transforming the other in an ever-expanding and increasingly sophisticated symbiosis. Their relationship is essential for both humans and technology, as neither may exist in their current state without the other's active presence and intervention:

> We are now coming to realize that humans and the machines they create are continuous and that the same conceptual schemes that help explain the workings of the brain also explain the workings of a "thinking machine." Human pride and its attendant refusal or hesitation to acknowledge this continuity form a substratum upon which much of the distrust of technology and an industrialized society has been reared. Ultimately this distrust . . . rests on the refusal by humans to understand and accept their nature – as beings continuous with the tools and machines they construct. (4-5)

Mazlish argues that humanity's refusal to accept this continuity between itself and its technologies leads to both individual and group denial of responsibility for the sociocultural difficulties technological innovations may cause. Effective and lasting progress towards solving the problems created by technological evolution may only be enacted through acceptance of this continuity.

Numerous scholars refuse to accept Mazlish's proposition of human and technological co-evolution and insist upon human independence from technology, especially as it relates to individual control and destiny. Henk G. Geertsema, for example, argues strenuously against the existence of cyborg, claiming that the individual can make decisions outside of the systems and structures of which s/he is a part. In fact, Geertsema argues that the need for distinction between biological and technical components which are integrated into the human body supports the essential differentiation between human and machine (295-6). However, Geertsema never explains how an individual can function outside of a system, or without at least accounting for the system in either a decision-making or identity-forming process. Geertsema also does not account for the integration of components in creating a new whole, instead viewing components as wholes in-of-themselves.

Unlike Geertsema, Andy Clark, Chair of Logic and Metaphysics at Edinburg University, concurs with Mazlish's theories of interdependence. In *Natural Born Cyborgs: Minds, Technologies, and the Future of Human Intelligence* (2003), Clark claims that the relationship between humans and technologies have always been virtually inseparable. He observes, "The line between biological self and technological world was, in fact, never very firm. Plasticity and multiplicity are our true constants, and new technologies merely dramatize our oldest puzzles (prosthetics and telepresence are just walking sticks and shouting, cyberspace is just one more place to be)" (8). He continues, arguing that what he refers to as the "skin-bag," the organic and (more so in modern times) technological components that are part of the "body," is not sacrosanct. Rather, humans are in the grip of an illusory Cartesian dichotomy which prioritizes the human

mind over the body or any other material existence. Clark observes that, as a result of this deception, humans have a false impression of the necessity of physical integration with technology to create sophisticated technological symbiosis. He comments, "What goes on in there is so special, we tend to think, that the only way to achieve a true human-machine merger is to consummate it with some brute-physical interfacing performed behind the bedroom doors of skin and skull" (26). Clark believes that we must abandon this false dichotomy and recognize that humans are, in fact, comprised of all the technologies with which we inter(face)act (*interfact*), regardless of whether or not they are directly fused to the skin-bag (I will utilize the neologism *interfact* from here forward as a combination of "interface" and "interact." It refers to the intimate and complex connections between human and technologies, regardless of the level of physical connectivity; "interface" carries neither the connotation of the depth of intimacy which I wish to convey, nor the appropriate structural sophistication. Interfact may thus refer to connections which take place between an individual body and technology/technologies, or those which occur between cyborgs). The cyborg is a combination of brain, body, and technology either physically fused together or otherwise interfacting; if any of these components are lacking, then the entity which we commonly refer to as "human" does not exist (27). In *Technicity* (2006), Arthur Bradley and Louis Armand agree with Clark, stating that technology is a *de facto* condition of being human. They claim that technology "appears less an *instrumentum* of an a priori 'reason,' than an ontological *state*. Consequently, technicity names something which can no longer be seen as just a series of prostheses or technical artefacts – which would be merely 'supplemental' (or supernumerary) to our nature – but the basic and enabling condition of our life-world"

(location 100). While the significance of the supplement will be dealt with in more depth in a later chapter, the points Clark and Bradley and Armand raise are crucial; without technology, there is no human in the manner in which we currently understand the signifier *human*.

Furthermore, Clark claims that the human mind evolved so that it is plastic and adaptable in order to encourage human evolution, rendering accommodation of constantly developing technologies significantly easier. The premise of Clark's thesis is that the various technologies with which we connect form a continuously evolving matrix; it is the mind's unique elasticity which allows it to interfact with technologies to form an individual's persona and, consequently, fashion humans-as-cyborgs. Clark claims, "It is the presence of this unusual plasticity that makes humans (but not dogs, cats, or elephants) *natural-born cyborgs*: beings primed by Mother Nature to annex wave upon wave of external elements and structures as parts of their own extended minds" (31). That is, humans are not cyborgs because of the manner in which technologies are integrated into their bodies, but because human minds are uniquely conditioned to interfact with technologies so that they become an indispensable part of their daily functioning and identities. As such, attempting to formulate a clear distinction between the technology and the user is not only unnecessary but, in fact, counterproductive, as it creates a false synecdoche in which the part (the human brain contained within the body) is incorrectly assumed to be the whole (the cyborg). In turn, this false interpretation leads to fundamentally flawed assumptions about not only cyborg individuals, but also the cybernetic systems (cy-systs) within which they operate.

Cy-systs are no less essential to our cognitive functioning than systems created by biological structures. Clark notes that when the battery on his laptop died, he was left in a state of anxiety and confusion, comparing his resultant mental state to that created by mild stroke – a cyberstroke, so to speak (10). His comparison is apropos, as a stroke victim may suffer from symptoms such as disorientation, inability to access information, and apprehension. While a dead laptop isn't necessarily life-threatening (although when other technologies fail, such as automobile brakes, mortal peril is just as imminent as danger instigated by a biological malfunction), the mental state created by the interruption in access to the technological "brain" results in comparable symptoms. This level of integration, developed when the technology becomes such a fundamental part of the individual that his or her standard functioning is disrupted should the technology fail, shapes the individual's identity. That is, the individual with a functioning laptop and the same individual with a malfunctioning laptop are so profoundly dissimilar that he or she could not truly be considered the "same" individual; functionally, cognitively, and emotionally there will be dramatic differences in identity.

Since an individual's capabilities are radically dissimilar with and without access to a laptop (or a comparable device), people will interact with and react differently to an individual according to their access to this common technology. Without access to the information offered via a laptop, cell phone, or other web-connected device, an individual in modern society is virtually considered mentally handicapped, as he or she is unable to access modern standards of information; my children even deplore the slow speed of my typing on my phone, shaking their heads as I plod through a short text or pull up a website. Society "reads" disconnected individuals as limited both mentally as well as

socially; lacking adequate access to information via this particular technology in modern American culture is interpreted as inadequacy. Disconnection is a cultural and intellectual impairment; this status would be the same whether the individual is unable to access the technology through the inability to possess it or because the person lacks the skills to utilize the technology. Either way, the sociocultural interpretation of that individual as a cybernetic organism would be comparable: flawed. The cause of the inadequacy may be construed differently depending on the cause, but the status of the resultant cyborg as less than sufficient is equivalent.

The purpose of this work is to examine the ways in which we interpret cybernetic organisms. Specifically, it seeks to define the rules by which we make meaning from the interfactions of technology and organic bodies. It will argue that the rules by which we make meaning from cyborgs operates in a similar manner to those Saussure defined for making meaning from language in his seminal text, *Course in General Linguistics* (1916). Specifically, it will examine the concept of signification, and how the cyborg functions as a sign in a comparable manner to a linguistic sign. The individual cyborg will be shown to be equivalent to Saussure's "utterance," or *la parole*, while a cybernetic system, or cy-syst, operates in a comparable manner to a linguistic system, or *la langue*. In *The System of Objects* (2005), Jean Baudrillard claims that delimiting this division within technology is an impossible task:

> Apart from technical objects, with which as subjects we never have anything to do, we shall see that the two levels of objective denotation and connotation (whereby the object is cathected, commercialized and personalized, whereby it attains utility and enters into a cultural system)

> are not, under today's conditions of production and consumption, separable in the way that the levels of language [*langue*] and speech [*parole*] are separable in linguistics. (*System* 8)

The goal of this project is to demonstrate that not only can such a division be adequately demonstrated, but also that such divisions also function largely in the same manner as those described by Saussurian linguistics.

The first chapter, "An Introduction to Cyborg Semiotics," will examine the introduction of *The Course in General Linguistics* in relation to cyborg signification. Specifically, it will set the parameters for the study of cyborg semiotics, defining what lies within the scope of this type of study. Both cyborgs and cybernetic systems will be delimited, and the historical evolution of cyborgs and cy-systs will be compared to that of words and linguistic systems.

Chapter two, "Principles of Cyborg Semiotics," will move on to Part One of the *Course*, "General Principles." First, it will place the concepts of sign, signification, and signal in relative position to cyborgs, cultural concepts of cyborgs, and physical organic/technological combinations. Next, Saussure's rules of variability and invariability of the sign will be applied to cyborg signification. The arbitrary nature of the sign will be shown to apply equally to cyborg signification, as will collective inertia as it relates to maintaining meaning. Additionally, the axis of simultaneity and the axis of succession will be shown to be useful tools for drawing distinctions between the types of examination of cyborg signification. Finally, this chapter will reveal the comparable merits of Saussure's chessboard metaphor for cyborgs.

The third chapter, "Cybernetic Valuation and Grammar," will look at Part Two of the *Course*, "Synchronic Linguistics." This section considers the rules governing a semiotic system at a given temporal point as opposed to those which control its evolution. This chapter will examine what comprises a cy-syst, including how to delimit one system from another. The principles raised by Bruce Clarke in *Posthuman Metamorphosis: Narrative and Systems* will be used relative to Saussurian linguistic concepts to help define this delimitation. Next, the concept of linguistic value, specifically as it relates to the principle of exchange, will be placed into the context of technological equivalency; what is dissimilar that a technology can be exchanged for, and what can be substituted for a given technology? This examination of values will lead to a discussion of syntagmatic and associative relationships in a linguistic system, and how cybernetic signification bears a comparable relationship. The chapter will conclude with a discussion of the principles of grammar, and how those same principles are used to create a cyborg grammar.

Chapter four, "The Deconstruction of Cybernetic Semiotics," moves away from Saussure and structuralism to focus on the implications that the theories one of his sharpest critics, deconstructionist Jacques Derrida, may have for cyborg grammatology. In this chapter, Derrida's concept of *sous rature,* or using a term "under erasure," will be shown to have equivalency in cybernetic constructs, especially in the modern era, as we are in a period of rapidly evolving technological innovation which excludes some bodies, leaving them to find alternate methods to signify. When does a person utilize a technology for a purpose other than for what it was intended, simply because it is the only one in her proverbial "tool-box"? Supplementation will also be discussed in this

chapter, and the question of what is considered essential and inessential in the cybernetic symbiosis will be raised, which will require reexamining what constitutes an individual human. For Derrida, the mere existence of the supplement revealed the incompleteness of that which was being supplemented, which actually meant that the supplement was not incidental, but necessary. Critics often dismiss technology as inessential to human identity, a supplement which permits expression of identity, but is not formative. This chapter will argue that technology is, in fact, crucial to identity formation and provides a completeness to human identity which would otherwise be impossible. Derridian play will also be explored, especially as it relates to standard notions of gendered signification.

Chapter five, "The Discourse on Cy-Systs," examines the manner in which the controls upon discourse as explained by Michel Foucault in "The Discourse on Language" transfer to regulating cy-systs. I will argue that cybernetic discourse functions in the same manner as linguistic discourse. Examples from bell hooks and the toy industry will be utilized to demonstrate how these disciplinary tools control the discourse of a cy-syst.

In the conclusion, "Cyborgs Past and Future," the applicability of this project to centuries-old cybernetic constructions will be demonstrated using Chaucer's knight as an exemplar. Additionally, possibilities for alternate applications of this theory will briefly be explored, such as African-American and Postcolonial literary theory.

The importance of this project's implications is growing rapidly as our technological innovations continue to gain both complexity and magnitude. This work contends that humanity has never fully understood the ways in which it makes meaning of technologic and organic interfactions. Its flawed understanding of its interpretive

actions has resulted in severe “misreadings” of cyborgs and contributes to the creation of inequality, injustice, and prejudice. The goal of this project is to shed light on the mechanisms by which cybernetic meanings are formed and, hopefully, encourage the destruction of the cultural barriers which currently isolate disenfranchised groups, preventing legitimate access to given technologies. Their isolation may result from legal restrictions which prevent ownership of a technology, social pressure from within or without the isolated group against the use of a technology, or preventing or avoiding active training in the use of a technology. All of these tactics preclude technologies from being used to dismantle or reform hegemonic cy-systs. While there are many avenues of exploring such technological isolationism (race studies, colonialism, Marxism, etc.), for purposes of consistency this dissertation will confine itself to utilizing examples from feminist and gender studies; however, future research exploring the implications of cyborg semiotics for racial minorities or the proletariat, for example, will undoubtedly find equally fruitful results.

CHAPTER ONE: AN INTRODUCTION TO CYBORG SEMIOTICS

While the history of linguistics is relatively easy to trace (as Saussure does in the first section of the introduction to his *Course in General Linguistics*), tracking a comparable path for cyborg ontology presents greater difficulty. However, from antiquity, humans have historically attempted to differentiate themselves from other forms of life as well as from inanimate objects. Allison Muri points out in *The Enlightenment Cyborg: A History of Communications and Control in the Human Machine 1660-1830* (2007) that such attempts at delimitation may be traced back to the Greeks. She recalls, "Aristotle proposed souls in *De anima*: the vegetative soul responsible for growth and decay, possessed by plants, animals, and humans: the animal soul, which confers motion and sensation upon animals and humans, and the rational soul, which is the conscious and intellectual soul in the heart, and is possessed solely by humans" (104). This taxonomy not only privileges the human condition by isolating humanity from all other lifeforms, but it also completely disregards the inanimate objects which form the conditions of human existence.

Classification and taxonomy are linguistic methods which generate, not identify, reality. Haraway points out that language is not an innocent observer of what exists *a priori*, but creates knowledge through its delimitation of concepts: "Language *generates* reality in the inescapable context of power; it does not *stand for* or *point to* a knowable world hiding somewhere outside the ever-receding boundaries of particular social-historical enquiries" (*Simians* 78). Aristotle's classification, therefore, does not simply acknowledge a pre-existing reality, but brings a particular reality into existence. The reality that Aristotle generates is individualistic, prioritizing the abilities of the human

body (the brain, of course, is considered a part of the body) above those of plants and animals. Furthermore, his taxonomy fails to create or acknowledge the possibilities of interconnectedness between humans and the technologies that they create; he completely ignores the potential of non-organic entities to form an essential component of the human condition. Aristotelean concepts provide the foundation of Western philosophy; as such, Aristotle's dismissal of the machinic resounds throughout Western culture, positioning the machine as the bastard step-child of the organic.

In her examination of early concepts of the cyborg (or the machine-man, as the proto-concept was referred to), Allison Muri notes that Galen's notion of animal spirits animating physical bodies, providing motion and sensory experience, dominated the medical and scientific fields during the pre-Enlightenment era. However, scientists came to understand more about the mechanisms of the human body during the Enlightenment, regarding the body as mechanistic rather than spiritually enlivened:

> no longer did immaterial spirits, governed by the heavens and God's will, animate the blood and enliven the heart. With William Harvey's treatise on the circulation of the blood, the heart was seen to be a mechanism, a pump. The new anatomy examined the body as a composite of mechanistic systems, displacing older humoral-astrological versions of physical and mental functions determined by celestial bodies under God's direction. (37-8)

During the Enlightenment, the boundaries between machanic and organic entities began to show spider web cracks. Humans were no longer blessed creations of divine origin, but organic beings functioning on mechanistic principles. As the Enlightenment progressed,

Muri notes that scientific discourse shifted to considering the creative processes of humans and natural forces as similar in scope. She observes that there emerged a "discourse of human-machines characterized by both suspicion and hope, and they contributed to a growing body of medical, philosophical, and technical literature that has increasingly defined the creative processes of god or nature and of humans in the same terms" (27). Humans were increasingly viewed in the same terms as the machines which they created, which either reduced humans to the status of base machines, or elevated them to the celestial heights of the divine.

Post-Enlightenment writers warned against such equivalency, cautioning against attempts to mirror Icarus by using mechanistic means to ascend (much less surpass) the lofty heights intended only for nature. Mary Shelley's *Frankenstein* (1818), regarded by many as the first science-fiction novel, portrays the disastrous results of attempting to reduce humanity to simple mechanics. Nathaniel Hawthorne's classic short story, "The Birthmark" (1843), explores the destructive consequences of humanity endeavoring to achieve perfection through scientific means, chastising scientists for using technology to compensate for their perception of nature's inherent failings.

The twentieth century witnessed an unparalleled explosion of technological innovation and expansion. This flood of technology also resulted in previously unimaginable integrations between humanity and the tools/machines/devices/technologies it creates. In 1960, two scientists working for NASA, Manfred E. Clynes and Nathan S. Kline, coined the term "cyborg" to describe the sophisticated biomechanical organisms created by these mergers. Clynes and Kline approach the morphology of this creature from a regulatory standpoint:

> What are some of the devices necessary for creating self-regulating man-machine systems? This self-regulation must function without the benefit of consciousness in order to cooperate with the body's own autonomous homeostatic controls. For the exogenously extended organization complex functioning as an integrated homeostatic system unconsciously, we propose the term "Cyborg." (30)

There are a few fundamental components of this definition which are worth noting for future exploration within this paper's context. First is the requirement of systemic self-regulation. The system created by the integration of machinic and organic components must be capable of independent self-regulation to be considered cybernetic. If a machinic/organic blending requires outside assistance to maintain adequate functionality, then it would not meet the parameters of a cyborg.

Clynes and Klein also require that a cyborg's functionality be unconscious. An organic entity's utilization of machinic components must be reflexive and automatic rather than requiring the organism to utilize higher-order consciousness to employ the technology. Clark distinguishes between technologies which could be considered parts of cyborgs, which he defines as *transparent*, and those which still require conscious effort, which he terms *opaque*. Clark defines the features of both transparent and opaque technologies, noting that transparent technologies are easily accessible, while opaque technologies need additional effort to be utilized:

> Transparent technologies are tools that become so well fitted to, and integrated with, our own lives, biological capacities, and projects as to become . . . almost invisible in use. An opaque technology, by contrast, is

> one that keeps tripping the user up, requires skills and capacities that do not come naturally to the biological organism, and thus remains the focus of attention even during routine problem-solving activity" (37).

Technologies become transparent through a combination of biological predisposition, training, and repetition of use (although Clark does not explicitly distinguish between training and repetition, focusing instead on biology and training, such a distinction is inherently implied in his analysis. Repetition is a part of training, though repetition may also be achieved through means other than active training; as such, for purposes of clarity and terminology I feel that it is important to separate the two distinct terms).

A minimal amount of biological predisposition is required to utilize a technology; without it, no amount of training will move the technology from opaque to transparent status. In *Cyborg Citizen* (2002), Chris Hables Gray comments on the deep immersion humans have with technology on a daily basis, though he differentiates between those Clark would consider transparent and opaque. Gray notes, "From the moment your clock radio wakes you in the morning, your life is intimately shaped by machines. Some of them we merge with unconsciously, such as the car we drive, the computer we work with, or the television we zone out in front of. Others involve more conscious interface. Overall the effect is an extraordinary symbiosis of humans and machines" (2-3). The distinction between opaque and transparent technologies is critical in order to achieve better cohesion between the organic and the machinic components of a cyborg. For example, if an individual desires to integrate with even a basic technology, such as a battle axe, but lacks adequate strength to lift it (or, to a more extreme extent, lacks arms), decades of intensive training will not allow the individual to successfully interfact with the weapon.

Conversely, if an individual possesses an extensive biological predisposition for a given technology but never receives training or the ability to regularly use the technology, then the results will be comparable; the technology will remain opaque. A burly and agile soldier may have a natural aptitude for wreaking mayhem with a battle-axe, but without sufficient training he may be as likely to geld himself as slay an enemy.

The cyborgian characteristics as demarcated by Clark are useful for redefining the cyborg in contrast to more traditional markers. Rather than using a technology's temporal space for the technology or the presence of a physical graft, neither of which speak to the sophistication of technological integration into an individual's identity, Clark identifies a combination of biological predisposition complemented by repetitious usage and training as the critical indicators of a technological distinctiveness. If an individual lacks or is limited by biological predisposition, adequate access to a technology, or improper training, his or her deficiency may be counterbalanced to a certain extent by one of the other factors; however, as previously discussed, the requisite quantity of any of these characteristics may be sufficiently inadequate that no amount of counterbalancing will serve to permit effective cybernetic integration. The technology will remain opaque, and while an individual may still utilize it, the depth and complexity of the integration will not result in the formation of a cyborg or permit meaningful participation in the cy-syst to which the technologies belong.

Cyborg semiotics, then, seeks to understand the ways in which the combinations, recombinations, and integrations of organic and machinic components interfact to create meaning within a given culture. Gyu Han Kang argues against the ascendency of the machine within a cultural structure, claiming that machines must always be subordinate

to humans. He argues, “the mechanism is established by men and that human viewpoints have, therefore, been projected onto the working principles of the machines. In this sense, machines by themselves cannot transcend the boundary of human perspectives, however highly advanced they may be” (188). Kang misses the point; if machines cannot transcend the limits of human perspectives, humans may not surpass the constraints of the technologies which define them. All cultures (and, in turn, subcultures) have their own cy-systs, unique to their own temporal and geographic positions. By using Clark’s definition of what serves as a cyborg (and, by extension, a cy-syst), cybernetic identities within any culture may be explored and analyzed, regardless of geographic or temporal position. These analyses need not be limited to formal and clearly delimited cy-systs, such as governments, businesses, or religious organizations, but may be extended to those which are more amorphic, such as families, social groups, and fandoms.

The goals of cyborg semiology, which this project begins but by no means concludes, will mirror in many ways those Saussure establishes for linguistics (6). First, it will strive to be able to describe all known cy-systs and record their history. As with the study of a language, this effort will involve tracing the history of families of cy-systs and determining, where possible, the composition and structure of the “parent” cy-syst. Additionally, cyborg semiology will investigate the forces which allow cy-systs to grow, mutate, and die. Finally, it will seek to find its own boundaries, distinguishing it from other unique fields such as linguistics, sociology, psychology, and anthropology. Though its range of study will undoubtedly overlap with all of these fields, it must seek its own definition and limits among them.

The applications of this area of study are readily apparent. If, as I propose, people constantly commit interpretive acts according to given cultural rules which bestow meaning upon entities resulting from the interfactions of technologies and organisms, then understanding how those rules function and the manner in which we create meaning from these entities may allow us to not only increase clarity of meaning, but also avoid interpretive acts based on cultural prejudice; we may, perhaps, even come to a greater understanding of the nature of prejudice itself through understanding the ways in societies form cy-systs and define which cyborgs are forbidden within them. The implications of this field are widespread, as technology is invasive in every aspect of human existence; every human interfacts with countless technologies daily, and often numerous technologies simultaneously. Each interfaction is an utterance, *la parole*, which those who witness it interpret. These interpretations are not conscious judgements, any more than the interfactions themselves are, but a socially constructed reflex(ion); these reflex(ion)s dictate which interfactions are deemed socially acceptable and which are unsuitable, unethical, immoral, or require disciplinary measures.

Defining an interfaction is not simple; it requires considering several factors. Obviously, there must be a created object present; additionally, there must be a minimum of one organic entity participating in the interfaction. The lineage and history of the object is also a factor in the interpretation of the cyborg which results from the interfaction. Usage requirements may dictate whether the interfaction succeeds; for example, a cell phone may have amazing apps, receptive capabilities, etc., but if there are no chargers available to power it or cell towers to relay its signal, then it will soon be rendered obsolete.

The cyborg created by an interfaction has a receptive quality to it; that is, it is perceived and, subsequently, interpreted by others who do not necessarily participate directly in the interfaction. With language, this receptive function is either an auditory impression in the case of spoken language or a visual impression when language is read (though Saussure still refers to this impression as a sound image). This physical interfaction and its consequences are separate from the social perception of the interfaction. Saussure describes these as individual and social aspects in language; I believe that this usage is appropriate for interfactions in a comparable light. The impact of the interfaction upon the individual must be analyzed separately from the social interpretation of the interfaction.

Addtionally, interfactions involve both the past and present (and, perhaps, even the future) of the cy-syst within which it transpires. Cy-systs constantly evolve, both through their own internal forces as well as a result of external pressures. Internally, cy-systs evolve as technologies and individuals which previously never interfacted with each other meet, collide, and struggle for supremacy, structure, and connectivity. The initial interfaction between technologies and people is almost always a violent one, punctuated by periodic failures, revelations, and varying degrees of structural shifts which transmit ripple effects (or shockwaves), many unforeseeable, throughout the entire cy-syst.

Interfactions with other cy-systs may also force an evolutionary step within a given cy-syst. Trying to delimit where (and even when) one cy-syst ends and another begins, especially in modern society, is a Sisyphean task. As soon as one settles upon what initially appears to be a clear delimitation of a given cy-syst, an interfaction appears which reveals the interdependence of the cy-syst upon a unrecognized component,

previously considered external to the system; this intrusion forces a reanalysis of the composition and functionality of the entire cy-syst. In *Posthuman Metamorphosis: Narrative and* Systems (2008), Bruce Clarke notes the difficulty in pinning down the shape of a given system due to the geometric expansion of difference which arises from a single observation:

> Systems observe by marking distinctions and crossing over between marked and unmarked states. The marking of a distinction produces the following elements, collectively referred to as "the form":
>
> - the indication, the marked state: "the inside the distinction"
> - the indication's exterior, the unmarked state: "the outside of the distinction
> - the distinction itself as the unity of marked and unmarked states
> - a second distinction between marked and unmarked states
>
> A single act of distinction always already produces another distinction from which an infinite series of distinctions can ramify – and conversely, a complex of systemic distinctions can often be collapsed back into (the multiplicity of) a single observation. (66-67)

The inside-of and outside-of the system are thus marked by an almost infinite set of arbitrary distinctions, both within a cy-syst itself as well as within the components of a cy-syst. In "Taxonomy for Human Beings" (2000), Londa Schiebinger notes that mammals are marked by the mammary glands, which approximately half the species does not possess; thus, technically, half the supposed members of the species are marked as outside-of the system (11-12). Heisenberg reigns supreme in these cases, and this

ambiguity of delimitation will be explored further in later chapters; the structures of cy-systs, their shifting morphology, and the social aspects which provide the interfactions for interpretive action are all worth analysis, and fall under the purveyance of cyborg semiotics.

Saussure describes language as marked by three elements and two owners. According to Saussure, "It is at the same time physical, physiological and psychological. It belongs both to the individual and society" (10). The morphology of cy-systs and their interfactions follows this same tripartite formulation of physical, physiological, and psychological manifestations. They are physical in that an actual physical interaction occurs between the technology and the organic component (at least some type of physical connection is still required to interact with technology, even with the most advanced technologies). The physiological component involves the participation of the body within the interfaction; this may include utilizing appendages, such as hands or fingers, to create an interface between the technology and the individual utilizing it, or the physiological aspect may involve a more complex interface, such as the direct hardwiring of the nervous system to the web. Professor Kevin Warwick of the University of Reading, for example, has grafted web technology into his body. He can open doors on campus or operate robotic arms with nothing more than a thought; however, this mere "thought" still creates a physical electrical current which in turn triggers a machinic reaction. The interfaction would fail without the physiological interface within his body; he could attempt to project his thoughts at the door until it rotted off its hinges, but it would not swing a centimeter without the physiological connectivity within his body. Finally, cy-

systs are psychological in that they form an observable structure for interpretive acts by those who perceive the interfactions.

The individual aspect of the cy-syst takes place between the user of the technology and the technology itself via an interface. As specific technologies are utilized by specific individuals, s/he creates a unique matrix of technological apparatuses connected to his/her own organic individuality. Every individual generates their own unique construct of flesh and machinic components, fabricating a cyborg as unique as a fingerprint or a snowflake; however, like a fingerprint or a snowflake, that uniqueness is tied inextricably to the system which creates it. The fingerprint would not exist without the finger, much less the hand (or DNA), while the snowflake requires precise combinations of moisture, altitude, temperature, etc., to form its crystalline structure. Social structures are equally critical to the formation of the individual manifestation; this constantly shifting structure molds each distinctive cybernetic incarnation.

However, is the structure itself natural, or is it merely an artificial construct? Saussure examines the argument made by Whitney (among others) as to whether the essential function of the vocal apparatus is to create language, or if the voice was simply the triumphant modus operedi which evolution eventually selected as the linguistic vehicle (as opposed to, say, gestures) (10). Saussure concludes that spoken language is, at least to some extent, a result of natural selection; however, he does admit that language is established through cultural convention, regardless of the apparatus used to convey meaning. According to Saussure, the construction of language is the natural element for humans, not its verbal articulation.

Technology and its relation to humanity is just as natural as linguistic architecture. In his text entitled *The Artificial Ape: How Technology Changed the Course of Human Evolution* (2010), archaeologist Timothy Taylor examines the influence of technology upon human evolution, arguing that humanity in its current embodied form would be radically different without the intercession of technology. Clark claims, "Human life as we know it assumes the presence of artifice – objects we have made ourselves, without which life would either have no meaning or be physically impossible. Not only did we make these necessary objects, but, within a framework of some 2 or 3 million years, the objects have physically and mentally shaped us" (6). Technology, then, possess a reciprocal relationship with humanity. Not only do humans shape and mold technology but, in turn, technology shapes and molds humanity. Taylor points out how simple human biological formations evolved intertwined through technological innovations, resulting in the current shape of the human head and body type (6). Had a primal ancestor randomly selected a slightly different technological configuration for her or his cybernetic self, the morphology of the human body itself could easily have charted a vastly different evolutionary track.

As Taylor describes it, technology is as integral an element of the human evolutionary methodology as the very organs of the body itself. Without technology, humans would not be *humans* in the manner which they are currently understood; in this light, technology is as natural and intrinsic a part of humanity as breathing air or bipedalism. Whereas evolution selected the vocal apparatus as the most suitable functionary for conveying language, the brain was selected to maximize technological

incorporation. Clark suggests that the brain is designed to readily integrate with non-organic components, thus creating the cyborg condition naturally:

> What the human brain is best at is learning to be a team player in a problem-solving field populated by an incredible variety of nonbiological props, scaffoldings, instruments, and resources. In this way ours are *essentially* the brains of natural-born cyborgs, ever-eager to dovetail their activity to the increasingly complex technological envelopes in which they develop, mature, and operate. (26)

The cyborg condition is hardwired into the brain in much the same way that language is. However, whereas Saussure claims that the vocal apparatus is the natural executor of the linguistic function (a claim subsequently disputed sharply by Jacques Derrida), the cyborg condition lacks a singular natural apparatus; instead, the human body *in toto* may serve as the natural facilitator for technological interfaction. Though humans certainly interfact with technology with their hands (perhaps the most plausible candidate for a so-called "natural" interfacting apparatus) they are not the only physical locus for interfactions. Feet, for example, provide physical interfaction with shoes, while the ear is the point of contact for a Bluetooth device; as such, there is clearly no "natural" physiological apparatus for technological interfactions.

Saussure proposes that there is a loop between the psychological, physiological, and physical aspects of spoken language. The first component of this loop is when a concept mentally registers with a corresponding sound pattern; this experience is psychological. This step is followed by the physiological process of the brain transmitting the necessary information to the vocal apparatus so that it may form the appropriate

vocalizations which match the sound image. Finally, the sound is transmitted via sound waves from the mouth of the person originating the vocalization to the ears of the person receiving it, the physical performance of the transmission. Upon reception by the individual, the loop restarts, or rather, it continues upon its infinite Mobius course. This combination of psychological, physiological, and physical traits allows the spoken word to function in the manner to which we have become accustomed, and permits information to be (somewhat) accurately transmitted from one individual to another.

This loop is comparable to that experienced by those in cyborg interfactions within a cy-syst. When a concept triggers within the mind of an individual which requires the interfaction of the human body with a technological artifact, this is a strictly psychological process. The signal is then sent to the body, requiring the body to act in order to fulfill this impulse; this is the physiological aspect. Finally, the body interfacts with the technology, which is a physical process. Clark describes this process of making meaning as a constant weave of bodies, minds, technologies, and cultural codes which dictate their interfaction:

> human thought and reason is born out of looping interactions between material brains, material bodies, and complex cultural and technological environments. We create these supportive environments, but they create us too. We exist, as the thinking things we are, only thanks to a baffling dance of brains, bodies, and cultural and technological scaffolding. (11)

This act of reason, of making meaning, through this complex and delicately balanced structure of psychological, physiological, and physical features (as well social factors, which will become a larger focus of this study further on) is the basis of cyborg

semiotics; it is this creation and decoding of meanings originating in interfactions that will be the focus of this study.

To understand meaning, a difference must be drawn between the meaning and that which indicates the meaning. Saussure draws this distinction in language, differentiating between sounds and the meaning indicated by the sounds. Saussure notes, "the sound patterns of the words are not to be confused with actual sounds. The word patterns are psychological, just as the concepts associated with them are" (12). The patterns of interfactions, like those of words, are also psychological as opposed to strictly physical. For example, Simone de Beauvoir (a noted feminist scholar of the mid-twentieth century whose contributions to modern feminism are too numerous to list) discusses the interfactions which form the psychological pattern for which we would use the word *housewife*. She claims, "Few tasks are more similar to the torment of Sisyphus than those of the housewife; day after day, one must wash dishes, dust furniture, mend clothes that will be dirty, dusty, and torn again" (474). De Beauvior describes the housewife's torment in terms of her interfactions – interfacting with the technology of dirty dishes (soap, dirty dishes, sink), the technology of dusting (furniture, duster, rag, furniture polish), the technology of mending (needle, thread, thimble, cloth). These interfactions define the housewife; she is understood within her culture as *housewife* by a particular series of relationships between herself, other cyborgs (in this case, the most prominent, but by no means the only, cyborg which she is positioned in relationship to is the one understood as *husband*), and specific technologies. Without relationships to technologies such as those discussed by de Beauvoir, the concept of *housewife* as it is currently understood would be null. This is not to say that other concepts would not fill a

similar function to that currently understood as "housewife", but this concept would have a radically altered constitution. *Housewife* must be understood as a series of specific types of interfactions between an individual, defined technologies, and the relationships that individual has to other cyborgs and their interfactions.

Yet in order for *housewife* to exist within a cy-syst as a delimitable cyborg, distinct from all others, there must be certain configurations of bodies and technologies that make it recognizable and distinct from all other cyborgs and for which it cannot be mistaken. Yet how does this delimitation take place? What factors determine that the cyborg identified as *housewife* is a different configuration of bodies and technologies interfacting in a specific manner is somehow distinguishable from a cyborg such as, say, *zookeeper*?

As Saussure notes with language, within a social context the physical characteristics can largely be ignored when making these types of distinctions. A decontextualized configuration of technologies and a body does not result in a meaningful understanding of the resulting cyborg. If we return to *housewife*, the mere presence or even interfactions with the technologies by a female body does not create an inherently meaningful cyborg. Without sociocultural contextualization, these technologies are simply physical objects which carry no inherent significance, while the body itself is indistinguishable from any other female body in any meaningful manner.

Instead of a physical scaffolding of body and technology which carries a so-called "natural" meaning within its construction, the import of each interfaction is located in the individual imprints created by social interactions; without society creating an agreed upon stock set of machinic and organic patterns, the individual would not have a

foundation upon which to base the imprint. As Saussure notes with language, the commonality of language allows it to be accessible to individuals:

> The individual's receptive and co-ordinating faculties build up a stock of imprints which turn out to be for all practical purposes the same as the next person's . . . If we could collect the totality of word patterns stored in all those individuals, we should have the social bond which constitutes their language. It is a fund accumulated by the members of the community through the practice of speech, a grammatical system existing potentially in every brain, or more exactly in the brains of a group of individuals; for the language is never complete in any single individual, but exists perfectly only in the collectivity. (13)

Within a cy-syst, every cyborg becomes recognizable by a unique configuration of body and specific technologies, organized and interfacting in a specific manner and utilized in specific fashions. These patterns allow for identification and classification of any cyborg within the cy-syst by individuals who participate in its usage.

Every cy-syst harbors individuated cyborgs that would not be meaningful in the same manner within another cy-syst; they are untranslatable. For example, the cyborg that operates within Japanese cy-systs that is referred to by the sign *geisha* has no recognizable equivalent configuration of body and technology within American cy-systs. As Bozena Duda explains in "From *Poule de Luxe* to *Geisha*: Source Languages Behind the Present-Day English Synonyms of *Prostitute*" (2014), the cyborg known by the term *geisha* interfacts with technologies and other bodies in a different manner than those known by the term *prostitute* in English; incorrectly, Duda attempts to maintain their

equivalency. The *geisha* cyborg requires extensive interfactions with traditional Japanese technologies, such as tea kits, musical instruments, and games, which are not found in the *prostitute* cyborg. Additionally, from a social perspective, they live in a tight knit community with other geisha. The manner in which they interfact with housing technology, therefore, is rather unique; though there are certainly brothels or red light districts in other parts of the world, these areas tend to lack the dignity associated with the geisha districts. Additionally, sexual relationships are not necessarily a component of the geisha/client relationship; bodies, therefore, do not necessarily interfact in the same manner for the cyborg identified as *geisha* as they do for those identified as *prostitute*. Despite these obvious differences, Duda argues for equanimity between the two terms:

> Looking at all the sociological and cultural aspects of geishas it is hard to escape the impression that the conceptual link between the life of a geisha and that of a prostitute is relatively obvious: living in communities/houses – living in brothels, both financially sponsored by: patrons – clients, and, finally, both work to please their patrons – clients. This culturally embedded picture of a geisha, simplified as it is, works perfectly well for language users to employ the word *geisha* as a euphemism for 'prostitute'. (40)

While there are distinct similarities between the connotations of the words "geisha" and "prostitute," which, according to Duda, allows linguistic equivalency, the differences between the cyborgs *geisha* and *prostitute* within a cy-syst are substantial and clear. The types of technologies with which they interfact, the ways in which the relationships between individual bodies are formed, and the rules which govern the interfactions

between individual bodies and technologies are all substantively different; there is no equivalent cyborg with corresponding interfactions to *geisha* within Western culture.

Though the culture which originally created the cyborg *geisha* within its cy-syst has been lost to the temporal tide, we may still retrospectively study this cy-syst, its cyborgs, and its interfactions. Often, these studies are conducted by those external to the cy-syst, who attempt to frame the interfactions of one culture within the rules which govern their own cy-syst. For example, in Edward Said's *Orientalism* (1978), his seminal analysis of Western study and domination of the East, Said describes Flaubert's journeys to the Middle East, as well as his sexual encounters, which Flaubert described to a friend, Louise Collette. In a letter, Flaubert describes his liaisons with Kuchuk Hanem, a noted Egyptian dancer and courtesan. According to Said, "After his voyage, he [Flaubert] had written Louise Colet reassuringly that 'the oriental woman is no more than a machine: she makes no distinction between one man and another man'" (186). The comparison to a machine is fascinating and, perhaps, revealing. Flaubert does not appear to be able to locate the woman, the organic component of the cyborg, behind the technological configuration with which she surrounds/constructs herself. Both the technologies of Eastern women and the interfactions between these technologies and Kuchuk are unfamiliar to Flaubert; as such, it is easier for him to simply identify her with the technologies with which she interfacts rather than attempting to discern the rules of the cy-syst within which both she and those technologies operate.

It is these unique rules which form the basis of cyborg semiotics. Saussure argues for the unique importance of language, claiming that it has a special status unparalleled by other signifying systems:

> A language, as we have just seen, is a social institution. But it is in various respects distinct from political, juridical and other institutions. Its special nature emerges when we bring into consideration a different order of facts. A language is a system of signs expressing ideas, and hence comparable to writing, the deaf-and-dumb alphabet, symbolic rites, forms of politeness, military signals, and so on. It is simply the most important of such systems. (15)

Cyborg semiotics, like a language, express ideas; however, unlike language, whose physical existence which frames ideas is limited to either sound waves or images, ideas expressed within a cy-syst are constructed out of tangible bodies and technologies whose interfactions are governed by social rules. As such, individual cy-systs, their cyborgs, and their interfactions must be studied within the context of the social systems which governed their formation.

Cyborg semiotics has been, to date, largely unrecognized as a field of study. This is not to say that objects and their meanings in relation to bodies have not been studied; however, there has never been a formalized field dedicated specifically to the study of objects in conjunction with bodies and their meanings within a given cultural paradigm. It is this void which the field of cyborg semiotics seeks fill. Previously, objects have usually been considered according to what they *do*; cyborg semiotics analyzes instead what objects *mean* when combined with a body; these are two distinctly different undertakings. While one a physical fact, such as the sound waves which travel through the air and fall upon the listener's ear, the other is a variable cultural construct. Just like a word that is unfamiliar to an individual sounds like gibberish, devoid of meaning, the observation of a

cybernetic interfaction about which an in dividual is ignorant will also be rendered meaningless; while the physical undertaking may be observed, the interpretation is amorphous. This study seeks to shift the emphasis away from that which objects *do* to that which they *mean* in conjunction with a body; in fact, this study will argue that culturally, what objects do pales in importance to that which they mean. Ironically, Sir Philip Sydney makes this same argument about language, using an object as a metaphor. He notes, "With a sword thou mayest kill thy father, and with a sword thou mayest defend thy prince and country" (location 566). Neither the object nor the action taken by the object is truly relevant within the context of interpretation; rather, it is the social structure which provides the framework for the interpretation of the bodies and objects within an interpretive format in a given cy-syst which is the most relevant factor; for example, perhaps there is a culture in which killing a father implies coming of age, while defending prince and country is frowned upon. Like Sydney's claim about language, which he states may be used for a variety of purposes, cyborgs within a cy-syst may also function in a wide range of manners, and do not contain any inherent "evil" or "goodness".

Members of a society learn how to interpret the utterances (la parole) of their native cy-syst by observing the ways in which others interfact with given technologies; society teaches them what it regards as the proper composition of a given cyborg. Thus, at a young age we learn which bodies may interfact with which technologies, the precedence of bodies within the command and control structure of a given cy-syst, and the rules which govern the interfactions of cyborgs (cybernetic grammar, which will be discussed in a later chapter). A cybernetic dictionary is then formed of the permissible

combinations of technologies and bodies. However, the interfactions of these cyborgs are all individually constructed; like the configurations of sentences, paragraphs, or stories, the lattice of a given cyborg's interfactions with other cyborgs may (must!) vary significantly from other cyborgs' interfactions. Though the cy-syst dictates the rules by which meaning is made from the interfactions of bodies and technologies, the possible combinations and structures of the interfactions generated by the individual are limitless; like speech, the formation of cybernetic utterances is contained within the individual.

However, when considering cybernetic interfactions, care must be taken to differentiate between factors which are internal to the cy-syst and those which are external. Ethnology as an external factor must be considered. Saussure mentions that there is an entanglement which grows between a nation and its language. He comments, "There are all the relations which may exist between the history of a language and the history of a race or civilisation. The two histories intermingle and are related to another. . . . A nation's way of life has an effect upon its language. At the same time, it is in great part the language which makes the nation" (21). Obviously, the same holds true for a nation's cy-syst(s). In fact, I would argue that the reciprocation between cy-syst and nation is even stronger than that between language and nation. The cy-syst physically embodies the nationalistic principles of a culture, acting and re-enacting those principles in a tangible and forceful manner which language simply cannot copy.

Saussure also makes mention of political history as a factor external to language (20). Can the same be said for cy-systs? After all, are not wars fought and won with technology, great monuments built with it, colonies built and indigenous peoples enslaved and destroyed through the technological prowess of the colonizers? How can

these be considered external factors? For these to be considered external, the differentiation between what technology *does* (a physical act) and what technology *means* in conjunction with a body (signifies) must here be reasserted. If this was an examination of the effects of technology, then all these factors must certainly be considered intrinsic and internal; as such, they would be a focal point of this study. However, such is not the case; cyborg semiotics focuses instead on what technologies *mean*. While such a study might prove useful to understanding the historical and political influences which brought the cy-syst into its current form, these influences (by Saussure's definition) are still external to the cy-syst itself.

There is also the question of formal versus informal systems. For example, within a military cy-syst there is almost always a particular, formalized chain of command. A general may have a certain number of soldiers, tanks, Humvees, etc., on her particular organizational chart; this is the official, refined version of the cy-syst over which she exerts influence. However, at any given moment, there could be numerous factors which impact the formation and function of this cy-syst. For example, Humvees may be in for repair, ammunition may be on backorder, or a new Executive Officer may be learning his position's functions. The formal table of operations which describes the parameters of the general's cy-syst is quite a separate consideration than the actual operation of the cy-syst. This formal table of operations is much like a literary language; it is an ideal, operating in the realm of imagination, but has little bearing on the day-to-day expression of an actual cy-syst. Like a literary language, official tables of operation, manuals, organization charts, etc., all portray an idealized system, one unobtainable in common usage. The average person does not speak in literary language during common conversation; if one

did so, then those conversing with him would, undoubtedly, regard him rather strangely. Comparably, reliance upon or expectations of ideal expression of formalized cy-systs would be viewed by most as a form of obsessive compulsive disorder, bordering upon social non-functionality.

Geography, as with linguistics, serves as an external component to cy-systs. It obviously serves a role in relation to a cy-syst, as technologies arise out of geographic factors; mountainous regions necessitate interfactions with technologies such as cramp-ons, rope, and woolen mittens. However, this would also fall under the category of external, as it does not belong to the structure of the system, but rather to the formation of the structure. That is, once again this is related to what the objects *do*, not what they *mean*. Saussure describes an internal element of language as one which "alters the system in any degree whatsoever" (26). The question then must be asked if the factors discussed actually alter the system of what these objects *mean*, rather than simply what they *do*. However easy it may be to claim that the alteration in function changes the interpretation of the interfaction, this is simply not true. Saussure uses the example of a chess game as an exemplar of internal and external components, noting that the geographic origins of the game are external; regardless of place of origin, the system continues to function unhindered. On the other hand, removing pieces will cause a radical alteration to the system's functionality:

> In the case of chess, it is relatively easy to distinguish between what is external and what is internal. The fact that chess came from Persia to Europe is an external fact, whereas everything which concerns the system and its rules is internal. If pieces made of ivory are substituted for pieces

> made of wood, the change makes no difference to the system. But if the number of pieces is diminished or increased, that is a change which profoundly affects the 'grammar' of the game. (23)

As difficult as it is to accept, transformations in what technologies *do* do not necessarily alter what those technologies *mean*; such alterations may or may not be an ancillary effect of these transformations, but they are not intrinsic to these changes.

Considerations of cyborg composition fall more under the category of internal considerations. Saussure discusses the concept of phonetics in depth in Chapter VII of the *Course in General Linguistics*, and phonetics are both useful and apt when examining the composition of cyborgs. Phonetics is the physical characteristic of the sound wave traveling through the air and falling upon the ear in a particular vibration pattern. Linguists, as Saussure points out, were attached to the letter, a physical inscription on the page, to dictate the phonetic structure of a word. However, it is actually physiological in origin, beginning with breath, vocalization, and particular formations of the mouth and vocal cords that create phonetic structure. As a branch of study, phonics does not tie directly to letters on a page; letters may have a variety of sounds affiliated with them, and those sounds may be altered by others appearing in the sequence. Although there are rules that supposedly govern these sounds based on sequencing, such rules can, at best, be described as generally applicable guidelines. The double "s", for example, found in "hiss" takes on a sharp quality, and lacks the "sh" sound found in "passion" or "mission". However, depending on a variety of factors, such as the region the person pronouncing it is from, the same letter combination may take on a buzzing "zz" sound. Jean Baudrillard

attempts to argue that phonetic difference is somehow different from sequences of technologies:

> Whereas a rolled *r* in contrast to a uvular *r* changes nothing so far as the linguistic system is concerned – in other words, the connoted meaning has absolutely no retroactive effect on the denoted structures – the connotation of an object may for its part may bring great weight to bear upon technical structures, and alter them significantly. For technology, unlike language, does not constitute a stable system. Unlike monemes and phonemes, technemes are constantly evolving. (*System* 8)

There are two inherently false assumptions contained within Baudrillard's argument. The first is that language is a stable system, an assumption that any examination of a linguistic system would prove false. Language is in a constant state of flux, and change in linguistics, while perhaps slower than that in technology, is inevitable. Also, he neither separates what the object *means* in conjunction with a body from what the object *does*, nor places the object within a cultural structure of interpretation or accounts for the individuated interpretive act; he has confused the object with the cyborg.

Cybernetic phonetics works in a comparable manner regarding sequence. Technologies are placed sequentially with other technologies and a body or bodies to form the equivalent of a sound image, in this case a particular mental image evoked by a specific sequencing of technologies and bodies. In the English language, the standard phonetic requirement is a minimum of one vowel per word, and in the vast majority of examples a minimum of at least one consonant must be present as well. Cybernetic phonetics have a comparable requirement; to form a cyborg there must be a minimum of

one body and one technology. The type of body and the technologies invoked, as well as their sequencing, create the cybernetic equivalent to Saussure's sound image, which is then interpreted by the observer.

Interpretations of gender are shaped by the sequence of bodies and technologies. In *Female Chauvinist Pigs: Women and the Rise of Raunch Culture* (2005), Ariel Levy gives examples of how specific technologies interfacting with a female body creates a cyborg which, in current Western culture, is interpreted in an overtly sexual manner:

> If we were to acknowledge that sexuality is personal and unique, it would become unwieldy. Making sexiness into something simple, quantifiable makes it easier to explain and to market. If you remove the human factor and make it about stuff – big fake boobs, bleached blonde hair, long nails, poles, thongs – then you can sell it. Suddenly, sex requires shopping; you need plastic surgery, peroxide, a manicure, a mall. (184)

The type of sexuality as described by Levy, then, carries connotations of raunch sexuality: loose, available, and tawdry. When interfacting with a female body, the technologies which she describes create a cyborg which, in Western culture, is interpreted to have a sexuality which opposes conventional morality. However, it is this particular combination of technologies and the manner of their interfactions with a female body that create this meaning. Independent of each other, they are simply technologies which can carry no meaning; they are inert objects, devoid of context. For example, a pole by itself is simply a piece of metal; in fact, place this same object on a bus or a subway (or in a firehouse with primarily male bodies), which are parts of radically different cyborgs, and it is virtually unrecognizable as the same technology found in raunch culture. Much like

the double "s", the placement of the technology in relation to other technologies (consonants) and the specifics of the body (vowels) with which the technology is interfacting, as well as the types of interfactions performed with it, combine to dictate its cybernetic phonetics.

Humans read language in two different manners. Saussure differentiates between reading words with which one is familiar and reading words which are unknown. He distinguishes, "A new or unknown word is scanned letter by letter. But a common, familiar word is taken in at a glance, without bothering about the individual letters: its visual shape functions like an ideogram. Here, traditional spelling has something to be said for it: for it is useful to separate *tant* from *temps*, *et* from *est* and *ait* . . ." (34). These conventional configurations of consonants and vowels, in other words, are useful in that, after sufficient exposure, they provide the ability for decoders to rapidly interpret the word.

Humans "read" cyborgs in the same two fashions that they decode written language. Cyborgs with which they have had multiple encounters eventually form a mental pattern, one which becomes instantly recognizable upon encountering a comparable one. Multiple interfactions with a variety of technologies do not need to be observed in order to ascribe meaning to a particular cyborg; a small sample, even one or two, are generally sufficient to start narrowing down the cyborg's connotations. For example, observe the following letter sequence: l-e-s. This particular sequence of letters, by process of elimination, removes the possibility of denotations such as those carried by sequences such as c-u-p, d-o-g, or t-a-r-a-n-t-u-l-a. However, it also leaves open the

possibility of conjuring the sound images from the sequence l-e-s-s, l-e-s-s-e-r, l-e-s-t-e-r, or l-e-s-b-i-a-n.

Cybernetic decoding takes place in a comparable manner. As various technologies are observed in conjunction with a body, a pattern is formed, one which is easily identifiable and decoded. However, upon encountering a new cyborg, each individual technology and their corresponding interfactions must be closely observed in order to ascribe meaning to their particular combination. Each individual technology must be considered in relation to each other and the body with which they are interfacting to determine the particular cybernetic phonetic impression that it will make.

A critical point of contrast to consider that differentiates cybernetic phonics from its linguistic counterpart is the sheer volume of interpretive possibilities available to the receiver. Within a language, the phonetic prospects for independent and unique sounds may usually be numbered in the dozens. Conversely, a cy-syst may incorporate hundreds or even thousands of independent and distinguishable technologies. Also, while the sounds produced by a given language remain relatively stable over a period of time (though they certainly evolve, gaining sounds or losing them, which is a critical point addressed in a later chapter), the same claim may not be made for technologies. Technological innovation is commonplace, especially in the modern era, leading to an ever increasing saturation of technologies requiring interpretive acts. In fact, Taylor makes the case that humanity may not be able to stop its exponential technological expansion, resulting in a lack of options for humans:

> We have never been wholly natural creatures, and we have evolved to be increasingly artificial. Even should we want it, escape from technology is

> no longer possible. It may in fact be that technology has escaped us: the inertia of the entire system of technological civilization is by now so immense that the sorts of choices left for us to make in the future are essentially trivial. (location 180)

This snowballing technological volume leads to a nearly limitless inventory of technologies, all of which may interfact with each other and various bodies. Consequently, cybernetic phonetics is, by nature of the sheer volume of both potential technologies and their subsequent available interfactions, a significantly more involved and complex process than linguistic phonetics. Additionally, since the potential technological inventory within a cy-syst is constantly increasing (and doing so more rapidly in the modern era), tallying an accurate inventory in a manner comparable to an aural inventory for a language is unfeasible; this claim does not deny that such an inventory exists, merely that an accurate accounting for the contents of said inventory is not possible. Even less viable is a complete accounting of the incessantly compounding rules for the interfactions of the technologies within the cy-styt between each other and bodies. While there are rules by which members of a cy-syst make sense of various cybernetic interfactions, a complete and accurate compendium of those rules would be antiquated before completed, at least in a modern society. The cy-systs of primitive cultures with only a limited number of technologies may possibly be described in some kind of complete manner, and thus could serve as a microcosm of the principles required to make a modern cy-syst function.

Examples of these more primitive systems may be found in the past of any given cy-syst; such studies may be useful in shedding light on the functionality of modern cy-

systs. Muri, for example, argues that primitive technologies provide templates which may serve as a basis for understand current technologies. She claims, “Older human-machines can help us grasp the subjectivities of new ones, but they require closer attention than the cursory invocation of representative images that they have so far received” (13). Muri’s point is a critical one, as the formulation of the rules for interpreting cyborgs within a given cy-syst are formed over time. Understanding how the rules which govern interpretation within a cy-syst were formed may lead to a clearer understanding of current interpretive methodologies.

Perhaps the easiest way of determining the cyber-phonetic values of individual technologies is to read about how values have been described in the past. Examination of texts which describe older technologies and their interfactions can provide an understanding of past technological values. This may be something as simple as an instruction manual, or as abstract as a novel describing technological interfactions; all of these are useful for building and inventory of the way in which these technologies are described, their relationships to other technologies, and their comparative merits and social standings. These factors provide a framework in which the values accorded to a given technology are measured. Saussure describes this type of evidence as *external evidence* (34).

Internal evidence, which Saussure considers much more reliable, he breaks into two categories (35). The first category he terms Evidence from the Regularity of Sound Changes. For example, even though measuring the precise sound of a given language at a given time may not be possible, knowing that it descends from another letter whose value is known and knowing what letter counts it as an antecedent can provide a reasonable

range for establishing the value of that letter. Likewise, tracing the history of the values of a given technology can help establish the value of a technology at a particular historical moment. By placing it within the spectrum of socially constructed values, determining a given technology's value at a specific temporal moment becomes, if not easy, at least a manageable task. Logical assumptions as to the range of the intermediate value may be easily drawn.

Contemporary evidence may also be used, such as technological "spelling" variations. Currently, we see police using both handcuffs and zip-ties in order to secure a prisoner's hands. Though the shape, composition, and mechanics of these two items bear little resemblance to each other, their value within the cy-syst is comparable. Though some participants within the cy-syst may utilize one and some the other, the value accorded to these technologies, though not interchangeable, is proportionate enough to function equally well for interpretive purposes.

Obviously, though, technologies are not interchangeable under all circumstances. If the handcuffs are located instead in a fetish shop, and the zip ties are being used to keep garbage bags closed, then their values are radically altered from their applications within the criminal justice system. Just as the values of letters are altered according to the configuration of letters, as well as simple social conventions of enunciation, so too are the values of technologies altered according to the technologies and bodies with which they are currently interfacting. Technologies clearly do not possess fixed values, though those values may be remarkably similar to each other even when the composition of the technologies themselves are completely unrelated. However, depending on the cybernetic configuration, comparable technologies may have different values.

Saussure mentions another method of determining values, which he describes as Play upon Potential Interchangeabilities of Value, such as parodies or foreign spellings of words (36). This type of play upon value is not limited to linguistic values, but extends to technologies as well. A very basic, and humorous one, which children learn early on and seem to take no end of delight in, deals with the position of clothing. When children play, they may move clothing from the location which is its culturally assumed proper location to one which is abnormal and deviates from social convention. For example, underwear may substitute for a hat, inciting rollicking laughter. The easy recognition of the value of both the underwear and the hat for which it substitutes provides the framework for the technological pun; if the underwear belongs to a member of the opposite gender, then the pun gains even more merit. The pun's worth, however, is contingent upon the relatively easy substitution of the hat by the underwear, since their values are somewhat comparable; both are clothing items, approximately the same size, shaped roughly the same, with an approximately head shaped opening. Using a socket wrench as a hat is not nearly as funny since there is no comparable cultural value between the two technologies.

With standard phonetics, the possibilities of audible constructions and their subsequent values are restricted by the limits of the vocal apparatus; larynx, mouth, etc. Cyber phonetics, however, are virtually unconstrained in their potential range of constructions. This abundance does not mean that we cannot attempt to classify existing ones into some type of taxonomy according to values; however, such a value system would inherently lack the specificity of a system of vocalized phonetics. Technologies can be ascribed certain value positions based on cultural understanding of their composition, structures, and current functionality; any further classification requires

interfactions with a body. For example, we can (loosely) create a classification of our technologies described as "clothing." Items within this category are designed to fit to the human body and are comprised of materials which conform to it. However, this is merely a taxonomy; there can be no interpretation of the object itself until there is a body interfacting with the technology.

As with language, there are syllabic units in technological phonetics. With auditory phonetics, Saussure argues that while speakers may create auditory sounds, they are limited in this creation by their physical ability to produce the desired sound:

> the speaker is free to produce [a] sound by any means he can. But matters are not so simple the moment we consider the pronunciation of two sounds in combination. We find ourselves obliged to take into account the possibility of discrepancy between the pronunciation intended and the effect produced. For it is not always within our power to pronounce as we intended. Freedom to link sound types in succession is limited by the possibility of combining the right articulatory movements. To account for what happens in these combinations we need a science which treats combinations rather like algebraic equations. (51)

Technological syllabics work in a comparable manner. One may wish to produce a desired effect through a particular combination of technologies; however, if those technologies lack the ability to interfact with each other in the prescribed manner, then the resultant combination of these technologies will be a sort of cyber-gibberish. Certain technologies, like certain letters, blend together easier than others. Individual cultures design some technologies to go together while rejecting other configurations, much like

certain letter combinations are considered acceptable within some languages, while others are rejected. For example, the letter combination *zmc* is not considered a functional syllable in English, though it may be considered perfectly acceptable within some other language's syllabic structures. While there are not structures in English to support this particular syllabic configuration, other languages may possess supporting mechanisms that permit this combination.

Technological syllabics are based on the ability of one technology to interfact successfully with one another and/or a body in a recognizable and accepted sequence. Consider a very simple example – a belt and a pair of pants. Together on a body, the two form a basic technological syllable; they function together smoothly, easily. Though meaning cannot be made out of the combination of the pants and belt by themselves if there is no body involved, in combination with a body the basics of a technological syllable are formed by these two simple technologies. These technologies, like certain phonetics, are designed to operate together smoothly. Allowances have been made for their interfaction; the pants have loops created to hold the belt, and the belt is manufactured to standard specifications of belt loops. In certain situations, the two are expected to go together - for example, a formal job interview in a financial institution. If a job candidate wears slacks with belt loops yet does not wear a belt, most financial institutions would downgrade the candidate, even if only slightly, for not understanding proper technological syllabics (which is different from technological grammar, which would govern the interfactions between cyborgs, as opposed to technologies). Jokes are made, for example, by comedians such as Jeff Foxworthy regarding how the Southern accent, which frequently drops certain letters, connotes a lack of intelligence. A key

feature of this accent is dropping middle consonants. For example, in the word "mountain" would be pronounced without the middle "t" – "moun-in". This "incorrect" assemblage of the word, lacking an identifying syllabic feature (the middle "t"), is considered to be a reflection of the lack intelligence or social acumen of the speaker in a similar manner to not wearing a belt with dress pants.

Determining technological syllabic breaks is similar to doing so in linguistics. Like language, the rules which govern technological syllabic breaks are governed by cultural rubrics; they are not essential to the nature of the syllables themselves. Rather, each culture dictates which technologies are to be considered as a unit and where breaks occur before another unit of consideration begins. Within modern American culture, for example, the belt and slacks may be assimilated into a technological syllable with a shirt, tie, shoes, socks, etc. Consideration of these technologies as a unit is mandated by the culture which utilizes them, and is not inherent in the technologies themselves. For instance, other cultures may consider the socks and shoes separately from the rest of the wardrobe if, for example, there is religious significance to the feet.

The positioning of an individual technology within the syllabic construction may also shift as the culture which is regarding it changes. Again, if the culture which attaches special religious significance to the feet is displaced by one which no longer holds them in sacred regard, then the technologies of socks and shoes, once considered as a separate syllabic unit from the rest of the wardrobe, may now be incorporated into the techno-syllable with shirt, tie, etc. However, tradition may continue to dictate that these technologies be considered separately, especially by conservative members of the culture

who are intent on preserving cultural heritage, even if they themselves are not part of the new, non-sacred feet religion.

Likewise, new phonetic markers may be added to existing syllables. The Old English word *butere,* for example, has become the modern English word *butter*. Over time, an extra "t" has been added to the word, leading to an additional phonetic marker in the word. This marker doesn't change the interpretation of the word itself, merely the word's composition. Likewise, a techno-syllable may incorporate a new technology, yet this incorporation does not mean that a new interpretation is required for the cyborg to which it has been added; like *butere,* the change merely means that the components which lead to the meaning have gained a marker. At one point, for example, a housewife would not have been associated with the control of a primary mode of transportation; now, however, the ever-present minivan loaded with soccer balls, remnants of Happy Meals, and church bulletins serves as a common part of her technological composition. This addition does not lead to an interpretive change, merely a new cyber-phonetic marker.

Likewise, one phonetic marker may substitute for one previously used. Charles Barber describes in *The English Language: A Historical Introduction* (1993) how this type of substitution was common during the shift from Old English to Middle English. Barber explains, "A number of new consonant-symbols were introduced . . . Where Old English had used *f* to represent both [f] and [v], ME scribes used *u* or *v* for the voiced sound. Similarly, *z* was introduced besides *s*, though not consistently" (location 1796). The substitution of one marker for another does not indicate that an actual change in sound has occurred (though some change may take place), simply that the indicator of its

phonetic enunciation has shifted. Returning to one of the previous examples, that of the housewife, the technologies which comprise her as a cyborg have changed drastically over time. The technologies of the sink, scrub brush, and rubber gloves have, by and large, been replaced by the dishwasher. No longer does she necessarily get on hands and knees with an accompanying scrub brush and bucket; instead, she wields a mop, or even a Swiffer ®. However, though the technologies themselves have changed, both what these technologies *do* and what they subsequently *mean* within American culture remains comparable (in this case, these are related, though they are not *essentially* related, as we shall see in the next chapter).

Thus far, this discussion has largely focused on the composition of individual cyborgs. In the next chapter, the focus will shift to broader concerns, such as the principles which govern the creation of meaning by a cyborg and the cultural rules which dictate the interfactions between cyborgs.

CHAPTER TWO: PRINCIPLES OF CYBORG SEMIOTICS

Saussure examines the way the average person considers language – a list of terms which correspond to a list of things. He provides the following diagram (see fig. 1) as an example of how Latin might function under this principle:

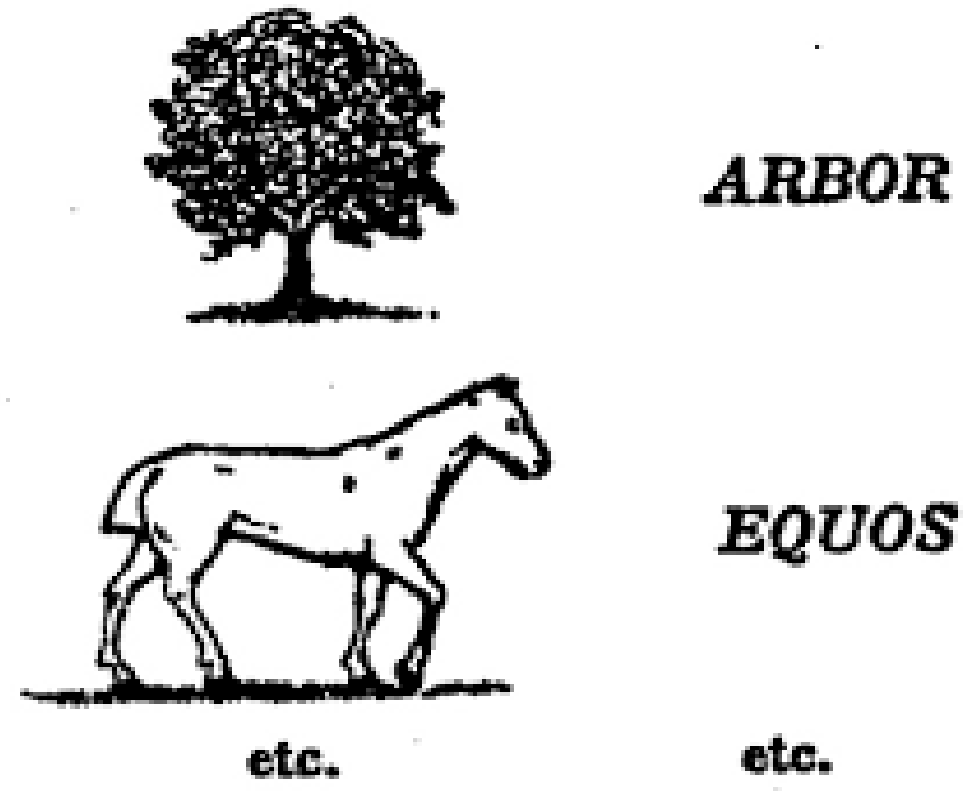

Figure 1: Common Assumptions about the Relationship between Word and Object (Saussure 66).

Saussure rightly points out that this paradigm 1) assumes that ideas already exist independently of word, and 2) is unclear whether the name (Arbor, Equos, etc.) is vocal or psychological. However, Saussure also claims that this simplistic approach does reveal a critical point: the dual nature of the linguistic unit (65-66). According to Saussure, "A linguistic sign is not a link between a thing and a name, but between a concept and a sound pattern. The sound pattern is not actually a sound; for a sound is something physical. A sound pattern is the hearer's psychological impression of a sound, as given to him by the evidence of his senses" (66). He places the *sound pattern* in a complimentary relationship with the *concept*, as expressed by figure 2:

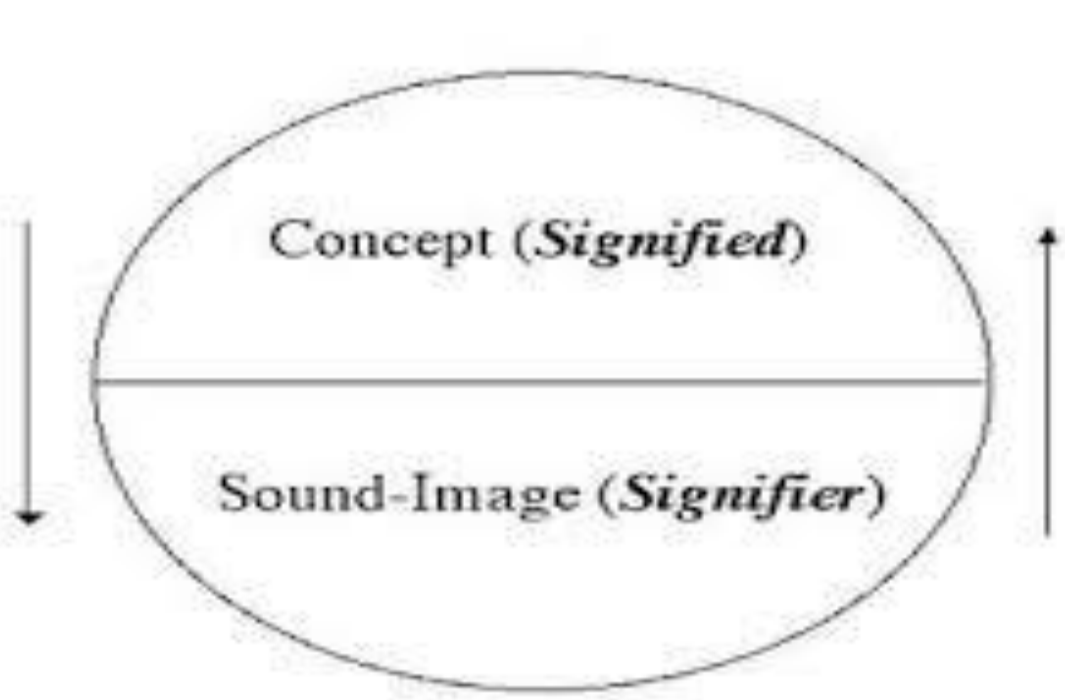

Figure 2: Saussure's Demonstration of the Relationship between Signifier and Signified (Saussure 67)

The sound-image or sound-pattern thus becomes the *signifier* or *signal* in Saussurian terminology, while the concept becomes the *signified*; the whole he terms as the *sign*.

Within cyborg semiotics, there is a comparable triad. For distinction purposes, these will be termed the *cygnifier* (or *cygnal*), the *cygnified*, and the *cygn*. The cygnified is the concept, such as *housewife*. In it is implied all the potential power relationships, access to technologies, organization, bodies, and the internal structure(s) inherent within an individual cybernetic composition. The cygnifier, on the other hand, is the actual combination of technologies and bodies which comprise the cyborg associated with the cygnified. Thus, when the female body is perceived in relation to dishwasher, mop, broom, etc., the culturally based cygnifier, its physical existence, is that of *housewife*, triggering the corresponding psychological cygnified.

However, at this point a critical Saussurian principle must be recognized, one which is even harder to grasp in cyborg semiotics than in traditional Saussurian linguistic theory – the arbitrary nature of the sign. Saussure rightly contends that there is no intrinsic relationship between a sequence of sounds and the meaning intended. He elucidates, "There is no internal connexion, for example, between the idea 'sister' and the French sequence of sounds *s-o-r* which acts as its signal. The same idea might as well be represented by any other sequence of sounds. This is demonstrated by differences between languages, and even by the existence of different languages" (68). That is, the relationship between the signal and the signified is completely culturally constructed, and is not tied to anything inherent in the sound image itself.

The same arbitrary connection Saussure demonstrates between the signal and the signified holds true between the cygnal and the cygnified. While on the surface this

appears ludicrous, the fact is that cyborgs are cultural constructs, and the technologies which comprise a given cyborg are also strictly arbitrary according to the values and principles of a given culture. As such, the composition of a given cyborg will vary immensely from culture to culture, with any overlap between the two almost insignificant and tangential to the cygnification. Again, the conflict of understanding this lack of connection between functionality and meaning lies in the difference between what technologies *do* and what they *mean*.

The technologies of semi-automatic rifles, camouflage uniforms, and ammunition may serve as a useful and, for purposes of clarity, an extreme example. Placed in particular relationships of control with the male body, American culture interprets these technologies as those of warfare, of combat (For purposes of brevity, I am stripping down the countless relationships and technologies here involved in a particular cybernetic formation to some that might be considered representative). Mike Bourne argues that the intricate relationship between technology, warfare, and subjectivity permits the insertion of new technologies which then impact the manner in which soldiers and others involved in warfare interpret themselves. He claims, "the relationship between technology and warfare and subjectivity can be argued to be closely entangled, whereby new technologies enter the networks of war through processes of non-linear adaptation, innovation and faltering assimilation, and affect how the humans (soldiers, policy makers, weapons scientists) behave and conceive of themselves" (158). Depending on the authority of those who hold them, and the access to which they are denied access to these technologies by their culture, these technologies may be interpreted as components

of the cygn "solider," "insurgent," or "guerilla." While these represent only a limited range of cygnifying possibilities, they provide an adequate sample for this purpose.

Until lately, the female body could not be placed into a military cybernetic construction and possess a comparable interpretation as the same construction with a male body in American culture; women only recently were allowed to fight on the front lines with their male counterparts due to concerns about the effect that having women on the front lines of a war would have on males involved in the conflict. Some potential problems suggested by opponents of women on the front lines included rape, men focusing more on injured women than men, and the inability of women to perform the same tasks required of a frontline soldier. However, Israel has had women fighting on the front lines for decades, including in its elite special forces. As such, a cyborg with a female body read in conjunction with these particular technologies in a comparable military format is interpreted in Israel in a vastly different manner than one in America. Interpreting cyborgs with female bodies in these circumstances in America can result in difficulty in interpretations. Rosemarie Arbur, speaking of narratives in which women best men in combat, points out that a female body triumphing over a male one in a military conflict results in a confused interpretation. She argues, "Feminist or not, woman or man, the reader of what happens when the 'better half' wins the war is personally dissatisfied, frustrated, and plain scared" (90). In cultures in which patriarchal structures are even stronger than in the United States and women are not even allowed to join the military, much less serve on the front lines, a female body would not even be considered a possible component of a "soldier" related cygnification. As the female body joins with this technology, the interpretation of that resultant cygn must change. Bourne concludes

that identities do not herald specific technologies, but are rather born from the. He states, "As cyborgs, social groups, identities and practices do not precede and constitute technology, but emerge with it" (158). The identity of "soldier" in conjunction with the female body, then, emerges with the body using the technology. The nature of the cygn is thus arbitrary, with the components comprising comparable cygnification differing either slightly or drastically depending on the culture.

While there is certainly overlap in the components comprising cygnification for comparable cygnifieds in different cultures, this overlay is not due to anything essential in the technologies themselves, but is owed to commonalities in culture; the more closely connected two cultures are, the more frequently the rules of interpretation within their cy-systs will find commonality. This principle is similar in language groups; if two language groups have a common ancestral language, then there will likely be significant overlap between the two languages; we find this in the Romance language group, for example, with crossover between Spanish and Italian. While nobody would argue that these two languages are the same, there is enough overlap that an in-depth knowledge of one would allow a native speaker to draw some meaning from the other.

The arbitrary nature of the cygn also must be commented on in Saussurian fashion. Saussure states that the sign has no intrinsic relationship to its signification. He notes, "It must not be taken to imply that a signal depends on the free choice of the speaker. . . .The term implies that the signal is *unmotivated*: that is to say arbitrary in relation to its signification, with which it has no natural connexion in reality" (68-69). This arbitrary nature of the cygnification of technology can be explained in the same manner. Despite the fact that given technologies *do* certain things in conjunction with a

given body, what the resultant cyborg *means* is entirely culturally based, and interpretation of the cygn is impossible without an understanding of the rules by which the connection between the cygnal and the cygnified is constructed.

Saussure mentions an objection to this arbitrary nature of the sign: the onomatopoeic word. This is a word which supposedly sounds exactly like noise which it is supposed to emulate, such as the French *ouaoua* for the noise a dog makes when barking. This counterpoises the German *wauwau*, used to demonstrate what is supposed to be the same sound. The phonetic gulf between these words in different languages is substantial. Even if, for example, we delimit the parameters to English onomatopoeic versions, such as *arf*, *bark*, or *bow-wow*, the variable phonetic markers and enunciations differ significantly from each other; *arf* and *bow-wow* do not share a single phoneme. When reading a cyborg, the urge is to assume that they function in an onomatopoeic manner – a straightforward reading of the cyborg *housewife* would appear to indicate specific relations to technologies and other bodies. Yet upon closer examination, much like with phonetics, we find dramatic differences in the relations between the composition of the cygnifier in different cultures, while the cygnified may be comparable. In some extremely conservative religions, for example, the housewife may be marked with a technology which covers the head, yet be denied the ability to control the technology of the automobile.

And yet, despite the apparent arbitrary nature of the cygn, control of the cygn and its cygnification cannot be controlled by the individual, at least according to Saussurian principles. Saussure's argument is that the signal is pre-selected by society, leaving the speaker with no choice but to choose the predetermined signal. He claims, "The signal, in

relation to the idea it represents, may seem to be freely chosen. However, from the point of view of the linguistic community, the signal is imposed rather than freely chosen. Speakers are not consulted about its choice. Once the language has selected a signal, it cannot be freely replaced by any other" (71). His implication is that once a particular signifier has been selected for a given signified, the inertia of the sign becomes increasingly resistant to alteration. As with a sign, as the collective weight of the community builds behind a cygn, any attempt by an individual to alter any aspect of the cygn, be it the cygnal or the cygnification, faces almost insurmountable obstacles.

Part of the difficulty in creating linguistic change, as Saussure points out, is the challenge of learning one's own language. He states, "linguistic changes do not correspond to generations of speakers. There is no vertical structure of layers one above the other like drawers in a piece of furniture; people of all ages intermingle and communicate with one another. The continuous efforts required in order to learn one's native language point to the impossibility of radical change" (72). For purposes of cygnification, there are comparable, if not greater, challenges for readers of a given cy-syst. As the observer decodes observed cyborgs, her challenge as she moves in a linear manner through temporal space is the quantity and variation of cyborgs encountered, requiring increased pattern recognition and understanding of potential interfactions forming new cygns. Especially in modern society, the sheer volume of techno-phonetics required of an individual simply to survive in a society may become nearly overwhelming; attempting to alter a pattern while simply trying to keep abreast of the sheer abundance of cygns may prove to be a nearly insurmountable challenge.

Saussure notes that there are four distinct challenges to the invariability of the sign, all of which are just as, if not more, significant factors in the invariability of the cygn (73). The first of these is that the nature of the sign *is* arbitrary. That is, there can be no definitive reason for preferring one particular sequence of letters to another for signifying a particular signified. There is a clear conflict in this challenge between what technologies *do* and what they *mean*; various groups desire changes in their relationship to technologies for a variety of reasons: power, prestige, etc. However, the dominant culture still relies upon the existing technologies forming meaning. Clark describes this as a persisting loop reliance upon certain technologies, in which the brain grows accustomed to having access to these technologies (78). The brain becomes habituated to making highly specific connections to specific technologies in certain relationships to make meaning; disrupting this by attempting to replace the sequence of one cygnifier with another sequence would result in a neural misfire, an inability to make meaning of the new sequence without a great deal of struggle.

Additionally, Saussure notes that the sheer volume of signs which constitute any given language makes it problematic to create change within a linguistic system. The vast quantity of potential signs make transformation troublesome: "A system of writing, comprising between 20 and 40 letters, might conceivably be replaced in its entirety by an alternative system. The same would be true of a language if it comprised only a limited number of elements. But the inventory of signs in any language is countless" (73). The same may be said of cygns within a cy-syst. The amount of cygns within a given cy-syst is virtually unlimited, and those cygns are in constant flux. Compared to the quantity of letters in an alphabetic system, usually a mere twenty to forty, the quantity of

technologies which comprise the inventory of a given cy-syst are nearly infinitely greater, most with subtle gradations of difference. In a comparison of infinities, a cy-syst contains the larger volume by a substantial margin.

This greater volume, of course, naturally leads to greater complexity of the actual system. The rules which govern the possible spellings and grammars of a linguistic system are, at least to a certain degree, constrained by the amount of letters within the system; only a certain amount of interactions are possible. However, Saussure notes that despite the limited quantity of raw materials (letters) with which a linguistic system has to work, it is still an extraordinarily intricate system, and altering it would require radical intervention by specialists; even then, such transformative efforts are historically doomed to failure. He observes, "a linguistic system is a complex mechanism. Its workings cannot be grasped without reflexion. Even speakers who use it daily may be quite ignorant in this regard. Any such change would require the intervention of specialists, grammarians, logicians, and others. But history shows that interference by experts is of no avail in linguistic manners" (73). Within a cy-syst with its larger volume of "letters," the system's potential complexity is exponentially greater than that of a linguistic system; possible variations of spellings, taxonomy, and grammar are all multiplied. This intricacy of structure resists transformative attempts, as pressure in one part of the system for change will be met by resistance from multiple parts of the system attempting to maintain the status quo.

This collective resistance raises Saussure's fourth point regarding system stability: the collective usage and communal aspect of these types of systems. Saussure comments that language develops inertia through its constant usage by the community.

He observes, "language. . . is something in which everyone participates all the time, and that is why it is constantly open to the influence of all. This key fact is by itself sufficient to explain why a linguistic revolution is impossible. . . . It is part and parcel of the life of the whole community, and the community's natural inertia exercises a conservative influence on it" (74). This is one area, perhaps, where there may be more opportunity for transformative cygnification within a cy-syst than within a linguistic system. While the majority of participants in a linguistic system have access to the bulk of words within a linguistic system (though certain words, phrases, and connections are severely limited according to power relations, which will be further explored in the final chapters), technologies tend to be more compartmentalized within a society. While the vast majority of linguistic inventory may travel across various social and economic strata (though there are certainly limitations to this movement), technology is often relegated to specific organizations, subcultures, classes, and groups in power. While this stratification of technologies does prevent free movement of cygnification among the users of a given cy-syst, the resultant compartmentalization permits users of a particular technology greater potential latitude to shift what that technology *means*; the potential for reappropriation of the cygnification of the cygns created by these technologies is increased compared to that of a sign, as only certain segments of society would struggle to keep the meaning static.

This does not mean that a given segment of society can suddenly transform the meaning of a technology or technologies in relation to the body and the interpretation of the subsequent cygn. The fixity of time is also a crucial factor in linguistic stability; Saussure makes this point clear, stating that time and tradition require continuity between past and present for a language:

> Bearing in mind that a language is always an inheritance from the past, one must add that the social forces in question act over a period of time. If stability is a characteristic of languages, it is not only because languages are anchored in the community. They are also anchored in time. . . . Continuity with the past constantly restricts freedom of choice. . . . Ultimately there is a connexion between these two opposing factors: the arbitrary convention which allows free choice, and the passage of time, which fixes that choice. It is because the linguistic sign is arbitrary that it knows no other law than that of tradition, and because it is founded upon tradition that it can be arbitrary. (74)

Even within a given subculture, the history of a sign resists alteration because of its temporal rigidity. This difficulty carries over into cygnification as well. Noted cyborg theorist N. Katherine Hayles comments in "The Life Cycle of Cyborgs: Writing the Posthuman" (1995) that there cannot be new technologies without reference to the technologies being displaced. She observes, "The new cannot be spoken except in relation to the old. Imagine a new social order, a new genetic strain of corn, a new car-whatever the form, it can be expressed only by articulating its differences from that which it displaces, which is to say the old, a category constituted through its relation to the new" (323). The cygnification of a given cyborg, then, must come out of its prior cygnification, one which will resist alteration even when only specific cross-section of a cy-syst is utilizing the technology.

However, just because there is difficulty involved in the transformation of the cygn doesn't mean that it is immutable; technologies obviously change on a regular basis,

and the meanings accorded to given cyborgs also undergo transformation. The cycle of transformation is currently quicker than that of language, especially as new technologies are being produced at an increasingly rapid rate. Saussure notes that these transformations may take a variety of forms, and are not exclusive to either phonetic changes or shifts in meaning:

> It must not be thought that we are referring particularly to phonetic changes affecting the signal, or to changes of meaning affecting the concept signified. Either view would be inadequate. Whatever the factors involved in change, whether they act in isolation or in combination, they always result in *a shift in the relationship between signal and signification* (75).

When the transformative nature of cygnification is examined, the transformation is comparable – there is a shift in the relationship between the cygnal and the cygnification. The possible causes of this shift are numerous; however, only a cursory introduction to this variability is necessary at this point to introduce the concept.

As an example, let us look at the cygn *secretary*. The composition of this cygn still predominantly requires a female body; much like the sign *nurse*, if a male body is involved in the composition, an explanatory addendum is usually required (male nurse, male secretary, etc.). The evolution of this cygn has shifted dramatically over time; the position formerly occupied by a cyborg cygnified by *secretary* now demands the appellation *executive assistant*. Though almost all of the interfactions of the two cyborgs would overlap on a Venn diagram, the cygnification of *secretary* has historical denotations that many women consider demeaning and subservient to cyborgs

constructed around a masculine body. The technologies comprising the executive assistant have also shifted; the typewriter, for example, is gone, as is the labor intensive memo pad. These technologies have been replaced by computers, tablets, and cell phones. As such, both the cygnal and the cygnification have shifted from the original cygn in relationship to the new cygn *executive assistant*; while the cygn *secretary* does still exist, the cyborg composed by the bodies and technologies which form *executive assistant* no longer fall under its cygnification. As cyborgs are constantly evolving, more changes are likely to occur in its composition and subsequent cygnification; for example, male bodies are components of an increasing percentage of these types of cyborgs. The composition of the cygnifier thus undergoes a dramatic change as variable components are considered permissible within this cyborg.

This variability of the cygn is greater than even Saussure gives it credit for. Saussure argues that there are limitations upon the cygn's cygnification, conflating what technologies *do* with what they *mean*:

> Other human institutions – customs, laws, etc. – are all based in varying degrees on natural connexions between things. They exhibit a necessary conformity between ends and means. Even the fashion which determines the way we dress is not entirely arbitrary. It cannot depart beyond a certain point from requirements dictated by the human body. A language, on the contrary, is in no way limited in its choice of means. For there is nothing at all to prevent the association of any idea whatsoever with any sequence of sounds whatsoever. (76)

Here, Saussure places too much emphasis on the variability of the sign while not recognizing the potential for variation of meaning of the cygn. Saussure argues, for instance, that language is limited in no way, while fashion is dictated by the contours of the human body. Yet the human body is limited in the types of sounds it can produce; ultrasonic waves, for example, are beyond the means of the human vocal apparatus to produce. Thus, language is just as limited by the physical parameters of the human body in the production of a sign as a cygn. Clothing is an excellent example of this variability; fashion comes and goes, styles change, and what was considered fashionable and indicative of power and social status at one time may cygnify low social status, poor fashion sense, or rebellion against social normativity at another time. Thus, the temporal nature of the cygn permits variable cygnification.

There are other ways in which technologies may be altered in the manner in which they participate in cybernetic cygnification. Condensation of technologies, for example, may lead to a new technology which, when combined with bodies, forms a different cyborg than the ones created by any of the prior technologies. A recent example of this type of technological condensation is the smart phone. At a minimum, the smart phone combines the technologies of a telephone, a personal data assistant (PDA), and a video game system. The individual components of these technologies have been combined to the point that they are unrecognizable as individual components any longer; the smart phone is a singular technology, not a cobbled together technological Frankenstein. It strikes the psyche as a singular cyber-phonetic unit. The businessperson with a PDA has been replaced by the teenager with her contacts and schedule on an iPhone, and the video game geek is now the businessperson playing *Angry Birds*.

Because of technological condensation, these functions have created new notes of cygnification with the cyborgs interfacting with them.

Control over technological cygnification would seem to belong to the manufacturer, as this entity creates the technology with the parameters of cy-syst which it is entering in mind; additionally, the manufacturer controls the marketing, pricing, etc., which would seem to position the technology within the culture. However, this is not the case. Saussure notes if an artificial language were created, the creators surrender regulatory proprietorship of the it as soon as it begins circulating among the public. He comments, "Anyone who invents an artificial language retains control of it only as long as it is not in use. But as soon as it fulfils its purpose and becomes the property of the community, it is no longer under control" (76). The same principle applies to technological cygnification. Though a manufacturer may attempt to position the cygnification(s) of a technology within a cy-syst through various techniques (branding, pricing, placement, etc.), ultimately, the participants within the cy-syst determine how the technology impacts a cyborg's cygnification. A recent example of this principle is duct tape. This technology has traditionally accompanied a configuration requiring male bodies in conjunction with technologies such as hammers, screwdrivers, and staple guns. In coordination with these other tools, it could help cygnify such cyborgs as *handyman* or *plumber*; However, teenagers have subverted the traditional cygnification of cygns this technology creates, using it to construct objects such as wallets, dresses, or purses. These types of creations interfacting with teenage bodies do not carry the same cygnification as the same technology interfacting with (primarily) male bodies utilizing technologies of labor trades, even though the creator of duct tape probably never envisioned this

particular usage and the resultant cygnification (which might be best described as *crafty*) and bears little resemblance to the manufacturer's intended cygnification(s). The responsibility for cygnification migrates from the manufacturer to the members of the cy-syst as soon as the technology enters the public purview; though the manufacturer may attempt various tactics to try to control the cygnification, the users will ultimately decide upon the meaning of the cygn.

The cy-syst cannot, then, be considered in isolation from either temporality or those who interfact with technologies. Saussure comments that a complete understanding of a language requires a clear comprehension of both the social and temporal influences exercised upon it:

> If a language were considered in a chronological perspective, but ignoring the social dimension (as in the case of a hypothetical individual living in isolation for hundreds of years), there might perhaps be no change to observe. Time would leave no mark upon the language. On the other hand, if one looked at the community of speakers without taking the passage of time into account, one would not see the effect of social forces acting upon the language. (78)

Taylor provides an example of how isolation might impact technological innovation and its subsequent cygnification within a cy-syst. Several thousand years ago, the rising ocean isolated the native Tasmanians from the Australian mainland. As such, certain multipart technologies which impacted other parts of Australia never reached this people, and they effectively utilized single-element tools for the subsequent millennia. Taylor discusses Jared Diamond's argument about the lack of outside influences upon them

resulting in a people subject to being shaped by random influences. Taylor cites Diamond as believing "the Tasmanians simply became isolated, and so were peculiarly vulnerable to the vagaries of time and chance" (40). The Tasmanian's isolation should allow technological cygnification to remain relatively unscathed, as they operated in an effectively isolated cy-syst.

Conversely, if a cy-syst is examined at a single moment in time rather than as an entity with temporal movement, the transformative aspects of a cy-syst disappear. Instead, the cy-syst becomes a fixed snapshot, cut off from the possibility of change. The social forces which normally enact change upon the cy-syst simply vanish in temporal seclusion, leaving only isolated elements functioning in a loop.

The difference between these two areas of study should be clear; the study of a cy-syst in temporal isolation would be a *synchronic* study, while the examination of the evolution of a cy-syst would be a *diachronic* study. Within a synchronic study, the composition of technologies, cyber-grammar, and the constructed narratives of a particular moment in time are the focus. The causative factors which created these compositions, grammars, and narratives are irrelevant to this type of examination. Conversely, causative factors should be at the forefront of a diachronic study. Saussure positions these two foci along two perpendicular axes, which he describes as the *Axis of Simultaneity* and the *Axis of Succession*. The Axis of Simultaneity concentrates upon things that exist in a temporal moment. Saussure notes, "This axis concerns relations between things which coexist, relations from which the passage of time is entirely excluded" (80). The Axis of Succession, on the other hand, examines change along temporal movement. According to Saussure, "Along this axis one may consider only one

thing at a time. But here we find all the things situated along the first axis, together with the changes they undergo" (80). This distinction is important, as it differentiates between a temporally bound value and one in transition.

In determining the value of a technology within a cyborg (or the cyborg itself, for that matter), it is important to distinguish between the value of what a technology *does* and what it *means*, as the exchange value of these two are different. Just because two different technologies *do* similar work doesn't mean that they have comparable *meanings*. A very simple example of this dichotomy is found in the contrast between designer products and so-called knock-offs. A Gucci purse, for example, carries connotations of sophistication, class, and class structure. The knock-off, on the other hand, if discovered as a knock-off, could well inspire derision and assumption of a lower class by those capable of possessing the original. Even if the knock-off were constructed better than the original to serve the function of a purse (stronger stitching, better material, etc.), its status as a knock-off would still carry different connotations than the original; despite its superiority as a functional or beautiful technology, what it *does* has no bearing on what it *means*. As such, its value within the system is not determined by what it actually *does*, but rather by the arbitrary value placed on a given technology by the users within the cy-syst.

Of course, this value is not fixed, as a technology's value may change over time. As trends come and go, the way in which value is measured may change. Fur, for example, was highly prized and considered a marker of high society in American culture for decades. Mink, chinchilla, and fox were all sought for their pelts, which were subsequently transformed into coats, mufflers, and stoles. However, organizations such as

PETA have gradually transformed the cygnification of these technologies when combined with human bodies within American society through educational efforts which expose furrier's inhumane practices. Consequently, the value of fur within the American cy-syst has shifted over time. Fur is still regarded as a marker of the upper-class, but now carries connotations of a traditionalist concept of class, closely linked to outdated aristocracy rather than forward-thinking values. Hints of cruelty and insensitivity, as well as a disregard for societal norms, are now attached to fur, rather than solely cygnifying an upper-class ethos. While it still cygnifies a certain societal class, it does not connote a positively regarded subset.

Various textual categories serve different purposes in relation to technology. For example, instruction manuals attempt a normative function within the synchronic axis. They try to isolate the ways in which technologies may be used and limit innovation. Prescriptive in their dictation of technological functionality, manuals restrict variability in usage as well as interpretation. They describe how a technology is to be interfacted with, who is to interfact with it, under what circumstances it may be utilized, and how it is not to be used. This type of dictatorial purpose refutes variability in favor of clarity of cygnification.

On the opposite end of the spectrum, science fiction texts function (almost inherently) as an anti-grammar. Science fiction speculates about possible incarnations of future technology, the ways in which interfactions may take place, and the variable cygnifications created by alternate cultures. These alternate grammars provide options for as-of-yet undreamt cygnification, as within these texts, bodies and technologies interfact in ways either currently restricted or unavailable. New technologies provide opportunities

for creative interfactions logically extrapolated from current interfactions. While this line of inquiry is very promising, it also lies beyond the scope of this paper, as the implications of cyborg semiotics for science fiction could easily fill the pages of several books in their own right.

It is important to realize how alterations within in a cy-syst function. Changes in cygnification on an individual basis do not necessarily imply that there will be alterations to the manner in which the cy-syst functions. Substitutions or alterations to the composition of specific cyborgs or categories of cyborgs do not mean that the actual rules which govern the cy-syst have undergone a change. For language, Saussure explains that the system itself is immutable; while constituent elements may undergo transformations or even enter and leave the system, the system itself remains intransigent in its monolithic invariability:

> the language system as such is never directly altered. It is in itself unchangeable. Only certain elements change, but without regard to the connexions which integrate them as part of the whole. . . . It is not the system as a whole which has been changed, nor one system which has engendered a second. All that happened was the one element in the original system changed. (84)

An assumption of a drastic alteration in the system itself based on movement or replacement of elements would be unwarranted.

An example of an element changing within a system while leaving the system intact would be changes in men's neckwear. According to dominant Western cultural norms, the proper technology for men to wear about their neck has moved from cravats to ascots to bow ties to the modern necktie; men now wearing bow ties are considered to be

donning an affectation, much like pronouncing a word in a manner associated with previous generations would be regarded. This transformation played out diachronically, and yet despite the transformation of the technological element, both the cyborg's cygnification and the system itself remained constant. The manner in which the male body interfacts with the various technologies of neckwear may change, and yet the cy-syst which supports the cygnification of these technologies as indicative of class, status, and refinement still exists. Any of these technologies could cygnify these traits equally well within this system, and the fact that the system remains intact despite this transformation indicates its stability.

Diachronic evolutions differ from synchronic oppositions. Within a linguistic system, Saussure asks whether synchronic and diachronic facts are comparable, and he determines that they are incompatible. Diachronic facts result from a transformation of a term, losing the old term as a result of the transformation, while the synchronic fact stays constant, permitting the comparison of one term to another (85). As a synchronic fact, the differences in the neckwear which men and women garb themselves can be marked (decorative scarves versus neckties in modern times, as an example). The difference between these technologies marks difference in the way in which the bodies interfacting with them are regarded; in this example, the technologies frequently mark the cyborg as a particular gender. By contrast, the movement from cravat to ascot to bow ties to neckties is sequential; one technology must fall into disuse for the next to gain functional cygnification within its cy-syst.

To paraphrase Saussure, then, a cy-syst is a system of which all the parts can and must be considered as synchronically interdependent (86). His next principle is equally

relevant to cy-systs. He contends that changes of succession and changes of simultaneity must be considered independently of each other:

> Since changes are never made to the system as a whole, but only to its individual elements, they must be studied independently of the system. It is true that every change has a repercussion on the system. But initially only one point is affected. The change is unrelated to the internal consequences which may follow for the system as a whole. The difference in nature between chronological succession and simultaneous coexistence, between facts affecting parts and facts affecting the whole, makes it impossible to include both as subject matter of one and the same science. (86)

Thinking of a cy-syst in these terms, practically, this principle means that the relationship of the cravat, ascot, bow tie, and necktie cannot be considered in the same terms as the relationship between a woman's scarf and a man's necktie. These relationships are vastly different, and generative factors in these relationships are not of necessity interconnected.

Saussure utilizes his famous example of the chess board to differentiate between synchronic and diachronic issues. This is a discussion worth having in-depth in relation to a cy-syst; however, Saussure misses opportunities in relation to this metaphor, focusing on the system rather than all the components of what a chess game actually *is*. For now, I will focus on the immediate implications of Saussure's metaphor rather than extending it, but I will return to this metaphor later to explain its shortcomings.

The first point Saussure makes regarding his chess board metaphor is that a constituent element only gains value through its relative position to other constituent

elements. According to Sassure, "The value of the chess pieces depends on their position upon the chess board, just as in language each term has its value through its contrast with all other terms" (88). How, then, does a given cyborg gain its identity? Not through what it *is*, but rather through its relation to the other cyborgs within the cy-syst. How does the cyborg *housewife* gain value, for example? This cyborg, constructed of an organic body and various specific technologies, is positioned in relations of power and identity to other cyborgs; for example, the cyborgs identified as *husband* or *children*. It is through these relationships of power and contrasting identities that *housewife* obtains value. Without *husband* or *children*, how would *housewife* be identifiable? If it did maintain an identity, it would not be with the same value it currently holds.

Saussure also notes that the position of the chess board is always fleeting and constantly in transition (88). The value of *housewife* is not fixed, but temporary, shifting in relation not only to *husband* and *children*, but countless other cyborgs, ranging from *teacher* to *minister*. Each one of these relationships may shift over time, creating new tensions and power relations. As these variables change, the value of *housewife* itself changes, growing, diminishing, occupying areas previously inaccessible, and deserting areas previously occupied.

Saussure's argues that these values are fixed by rules which are determined at the outset of the game. He claims, "values also depend ultimately upon one invariable set of conventions, the rules of the game, which exist before the beginning of the game and remain in force after each move. These rules, fixed once and for all, also exist in the linguistic case: they are the unchanging principles of semiology" (88). For cybernetic semiotics, this idea of fixed rules is exceptionally problematic. As expressed in the

epigraph which began this paper, cyborg communication objects to a singular code, rejoicing instead in muddled meaning; this objection to a monolithic code will be examined in greater detail near the conclusion of this project.

Saussure argues that within this system, only minimal transformation is required for transformation. In fact, a single change is all that is required to reach a new state. Saussure claims, "in order to pass from one stable position to another, or in our terminology, from one synchronic state to another, moving one piece is all that is needed. There is no general upheaval. . . One piece only is moved at a time" (88). With a cy-syst, new cygnifications may be assigned to cygns on a regular basis. Modern society is a disposable one; technology moves from state-of-the-art to obsolete in a period of a few years (or even months) rather than a few decades. The same smart phone that once formed cyborgs which cygnified *trendy* and *cool* in a period of a few short months connotes *lame* and *antiquated*, even when interfacting with the same body. However, just because a particular smart phone's cygnification changes does not mean that a tablet, even one made by the same company, has necessarily changed.

Yet this lack of global transformation does not mean that change in cygnification does not impact the entirety of a cy-syst, simply that transformations in cygnification are typically individual occurrences, not overarching metamorphoses. Even technologies with far-reaching implications such as the personal computer begin with subtle, individual shifts in cygnification. Only rarely does a technology immediately shift the structure of the entire cy-syst. Perhaps the best example of such a technology (one which was part of a mega-cyborg, the United States military apparatus) was the atomic bomb. With the dropping of this weapon on Hiroshima and Nagasaki, not only was the

cygnification of the United States changed, but the interpretation of every cyborg participating in war was also immediately altered; every cyborg immediately required cygnifying reappraisal and repositioning within the global military cy-syst.

Saussure's next claim is that for a synchronic analysis, the manner in which the current state of the system was reached is irrelevant. Saussure's claim that the progression of the system has no bearing on the comprehension of the current state of the system requires contestation, especially within the terms of cyborg semiotics. To clarify his argument about the radical distinction between diachronic and synchronic systems, Saussure uses the metaphor of a chess game:

> In a game of chess, any given state of the board is totally independent of any previous state of the board. It does not matter at all whether the state in question has been reached by one sequence of moves or another sequence. Anyone who has followed the whole game has not the least advantage over a passer-by who happens to look at the game at that particular moment. In order to describe the position of the board, it is quite useless to refer to what happened ten seconds ago. All this applies equally to a language, and confirms the radical distinction between diachronic and synchronic.

What Saussure fails to recognize in this claim is that chess, like the use of language, is an exchange between two players, with information being conveyed through the pieces over which each has control. By claiming that the position of the board may be interpreted equitably by either a passer-by or someone who has watched the game in its entirety (or even one who is participating in the game), he fails to account for the understanding of

the skill, strategy, and tactics gained by watching the entire game, or even multiple games by the same players. For example, certain chess tactics require control over long diagonals with bishops and pawns, while others look to create complex trades, resulting in positions favorable to one side or the other. The history between the two players is also discounted, as a player familiar with her opponent's tactics and strategies may favor a King's Indian opening while eschewing a Queen's Gambit; this information may be used to create a decisive advantage by an opponent familiar with her preferred structures. Saussure does briefly acknowledge this weakness in his theoretical structure before quickly dismissing it as irrelevant. He argues, "There is only one respect in which the comparison is defective. In chess, the player *intends* to make his moves and to have some effect upon the system. In a language, on the contrary, there is no premeditation. Its pieces are moved, or rather modified, spontaneously and fortuitously" (88-9). Within language this claim is dubious, as there are constant battles for control of signification, which will be demonstrated in the final chapters of this work.

Within the cygnifying process, Saussure's claim of neutrality becomes even more problematic, especially in the current era of mass marketing. Unlike language, technologies are created with specific strata of a society as the intended recipients of their cygnification. Technologies are marketed in a particular manner with specific cygnifications attached to them. As already discussed, the intended cygnification is not necessarily the one with which a technology will eventually be associated; however, there is a certain inertia bestowed by the manufacturers which support a given technology's cygnifying parameters. Once the technology is on the market, opposing market forces (especially from those who produce products which compete with that technology) will

contest its cygnification. Even if the claim could be made that there is no intentionality in the effect upon signification (a dubious proposition at best), the same claim cannot be made for cygnification. Intentionality absolutely factors into the current cygnification of any technology in conjunction with a given body, though the resultant cygnification may not be the intended one. A cyborg finds the parameters of its cygnification within a cy-syst in the push and pull between contesting forces.

CHAPTER THREE: CYBERNETIC VALUATION AND GRAMMAR

Saussure differentiates between the methodologies and complications of synchronic and diachronic studies of languages. He notes, for example, that synchronic linguistics is easier to study than diachronic since evolutionary facts are concrete and historically complete to the present moment, making them easier to study than a currently shifting linguistic system (99). Also, the study of a linguistic state does not focus on a single temporal moment, but rather on a period of time in which change to the linguistic system is minimal, which may be a period of a few years, decades, or even centuries. Saussure differentiates between an *epoch*, which is a point in time, and *periods*, which are lengths of time. Synchronic linguistics are concerned with epochs, though this term does not capture the constant transitions which languages are undergoing; as such, Saussure prefers the term *state* to *epoch*, as it avoids the implication of a marked beginning and ending (99-100). According to Saussure, there is no sudden upheaval in language which might serve as a marker in the same manner that such events do in history; *state*, therefore, is his preferred sign.

The differentiation between *state* and *epoch* is just as, if not more, important when attempting to understand the temporal nature of cy-systs. While language is constantly shifting, the movement can be exceptionally slow in comparison to the rate of change in technology, especially in the modern era. Technology may undergo drastic shifts in a relatively short period of time, whereas language is comparatively stable, though seismic shifts in signification may certainly occur. These changes may take decades or centuries, whereas numerous paradigm-altering transitions in technological cygnification may transpire in the period of years or even months. This is not to say that

there are not, or have not been, epochs for cy-systs, or that there are not still cultures in which technological progress is moving at a pace which permits study of a relatively stable cy-syst. Historians, for example, refer to the Bronze Age, the Iron Age, and the Industrial Revolution as technological epochs in which there was relative stability followed by a period of transition after certain technological obstacles were overcome, permitting a drastic shift both to what technologies did and what they meant. Modern technology, however, changes at such a rapid rate, both qualitatively and quantitatively, that attempting to distinguish between one state and another is a nearly impossible feat. With each shift, relationships between cyborgs and their subsequent cygnifications change, resulting in cy-systs which are not amorphous, but instead are persistently metamorphic.

This shifting in cygnification forces consideration of the interpretive separation between what a technology *does* and what it *means*; that is, as soon as the focus shifts to the physical nature of the technology, what it *does*, or even what it *is* physically, then all pretense of attention to what the technology *means* when interfacting with a body is lost. Unless there is an active interfaction with a body, the technology itself is meaningless. The body with which the technology is interfacting is required in order for an interpretive act to be performed; cyborg cygnification may not be enacted without a body involved. Technologies, especially individual technologies, are simply inert matter without a body with which to interfact; they are a physical presence without meaning. While one may attempt to attribute some sort of vague cygnification to an individual technology, such efforts are fruitless. Without interfaction with a body, any attempt at creating

cygnification for a lone technology will be vague and imprecise, the rough equivalent of attempting to draw meaning from a Neanderthal's grunts.

Conversely, a body without technology lacks the ability to cygnify within a cy-syst as well. A body, stripped of all technology, cannot cygnify within the cy-syst, as it lacks the components necessary to provide a cygnal; a body denuded is simply a body. Any small amount of cygnification provided by a mere body would be the equivalent of a single letter word in English, such as "I" or "A"; while there is possibly some small amount of cygnification, at best it is severely circumscribed and unsophisticated. Without technologies, the possibilities of meaning are simply not delimited. If the body is separated from technology, neither can cygnify *in absentia* of the other. Technology provides the framework which allows a meaning to be formed in conjunction with a body.

Yet those meanings must be separated, individuated, from all other possible cygnifications. In language, Saussure claims that this separation is critical, as failing to do so will preclude accurate definition. He states, "A linguistic entity is not ultimately defined until it is *delimited*, i.e. separated from whatever there may be on either side of it in a sequence of sounds" (102). The delimitation process for cyborgs is comparable. A given cyborg must somehow be separated from all the other cyborgs around it. Given the sheer amount of technologies and bodies contained by most cy-systs, attempting to delimit one cyborg from another without detailed familiarity with the cy-syst would be impossible. To the untrained eye, bodies and technologies would appear as a random jumble with no sequencing, order, or boundaries between cybernetic entities. In language, Saussure describes a *unit* as an element delimited from the surrounding sounds. Saussure

defines the unit as "*a segment of sound which is, as distinct from what precedes and follows in the spoken sequence, the signal of a certain concept*" (102). Cyborgs must be regarded with the same delimiting factors. A cybernetic unit may be defined as *a specific homeostatic association of technologies and body(ies) which, when interfacting, cygnal a particular cyborg, distinctive from those in the surrounding cy-syst*. However, the selection of where these divisions fall, resulting in a distinctive cyborg separate from all others around it, is a different process than dividing linguistic units.

When in use, a linguistic unit (especially a spoken one as Saussure favors) primarily occupies a temporal dimension. It is linear, always moving forward, never backwards. Even the written word is usually intended to be read in a single dimension, beginning to end, although certain poetic forms may play with the use of space and sequence. Yet even with these noted exceptions, for Saussure, language usage almost invariably follows a straight path.

The cyborg, conversely, is not limited to a single dimension when in use. Though it is certainly temporal, it is also a spatial entity. It inhabits both space and time, and influences and is influenced by both. In order to differentiate one cyborg from another, then, it is not enough just to consider temporal factors; spatial ones must be factored in as well. In a temporal sequence, the interfactions of bodies with technologies through time provide the framework for the formation of a particular cyborg. This interfaction occupies a corporeal space and alters the physical world. Returning to the example of secretary and CEO, the cyborg *secretary* occupies particular spaces (near a superior, at a desk, etc.). Removal from these spaces may make proper delimitation more difficult, and

may indicate a shift in the interpretation of the cygn, as the technologies with which it is interfacting may be altered as well.

Since the cyborg is temporal as well as spatial, interfactions unfold in a linear manner across time. *Secretary* interfacting with a computer occupies a temporal space, and the body interfacts with the technology for a limited period of time. While the length of time may vary from interfaction to interfaction or from secretary to secretary, the interfaction itself is always a temporal event. *Secretary*, then, is informed by both time and space, and without either is rendered unintelligible within a cy-syst.

Within a cy-syst, then, a cyborg is delimited by the technologies with which specific body(ies) may effectively interfact, although they may share a given technology with other cyborgs, as more than one cyborg may effectively interfact with a given technology, much like one word may share a letter with another word. For example, both *secretary* and *CEO* share the letters "c" and "e". However, the relations between these letters follow different sequences, and the remaining components of the word are formed with different letters; the cybernetic counterparts of these words are delimited in a similar manner. Both the cygn *secretary* and *CEO*, for example, have the common technology *computer* as part of their constitution. However, *computer* is joined to other technologies which are indicative of the appropriate cygn. In fact, contained within the technology *computer* are other technologies, *programs*, which alter the ways in which *computer* may interfact with bodies and other technologies. These *programs* and the power they allow their cyborgs to wield in modern society are crucial to the formation of these particular cygns and the interpretation of the cyborgs they create. These cyborgs are, thus, delimited not only by the specific technologies and bodies which form them, but also by the

particular manner in which these technologies interfact with bodies, technologies, and other cyborgs.

Additionally, *secretary* and *CEO* are both part of other cyborgs, larger ones which carry their own unique cygnification; for example, both of these cyborgs would fit comfortably in the larger cyborg *corporation*. In fact, Haraway argues in the Foreword to *The Cyborg Handbook* (1995) that the entire earth, Gaia, is a cyborg, composed of all the organic life and technologies which inhabit her surface (xi-xii). Cyborgs, then, may be composed of varying amounts and types of bodies and technologies, from single bodies with single technologies up to the entirety of a planet (universe?). The cygnifier indicates the quantities and types of bodies and technologies required for the cygnal and, thus, compose the cygn. Essentially, the delimitation process is a reductive process, an elimination of bodies and technologies down to those relevant to a particular cygn.

Establishing the identity of a particular cygn may be further exemplified through one of Saussure's most famous examples, that of a train. Saussure says that it is neither the physical composition of the train nor the specific date which the train leaves which permits identification of the train; instead, it is through the reappearance of identifiable traits such as route and departure time which permit delineation of a given train:

> We assign identity, for instance, to two trains ('the 8:45 from Geneva to Paris') one of which leaves twenty-four hours after the other. We treat it as the 'same' train, even though probably the locomotive, the carriages, the staff etc. are not the same. Or if a street is demolished and then rebuilt, we say it is the same street, although there may be physically little or nothing left of the old one. How is that a street may be reconstructed entirely and

> still be the same? Because it is not a purely material structure. It has other characteristics which are independent of its bricks and mortar; for example, its situation in relation to other streets. Similarly, the train is identified by its departure time, its route, and any other features which distinguish it from other trains. Whenever the same conditions are fulfilled, the same entities reappear. (107)

Saussure's example indicates that even though the composition of a given entity, such as a train or a word, is important in the identification process, as long as the entity possesses certain distinguishable characteristics that are unique in their configuration to that entity, then that entity will be defined regardless of idiosyncrasies within its composition.

The cygn *secretary*, then, may appear with a variety of physical configurations. Computers of varying levels of sophistication, programs, filing cabinets, various phones, etc., may or may not form the composition of any specific *secretary*. Like the train, it is not merely the physical components that allow the identification of *secretary*, but the relationships that the cygn has to other cygns such as *CEO* and *corporation* that allow final delimitation of this cygn. Without these relationships, establishing clear delimitation would become, at best, a questionable proposition.

A given sign's variable composition is once again demonstrated by an example from Saussure and a return to the chessboard. He examines the variable potential of the pieces comprising the game, using the potential transience of a particular knight to demonstrate the potential for substitutive signification:

> Consider a knight in chess. Is the piece by itself an element of the game? Certainly not. For as a material object, separated from its square on the

> board and the other conditions of play, it is of no significance for the player. It becomes a real, concrete element only when it takes on or becomes identified with its value in the game. Suppose that during a game this piece gets destroyed or lost. Can it be replaced? Of course it can. Not only by some other knight, but even by an object of quite a different shape, which can be counted as a knight, provided it is assigned the same value as the missing piece. (108-9)

Thus, if the cygn *secretary* is removed from the cy-syst within which it is interpreted as *secretary* and considered in isolation, it will be rendered meaningless; there is no interpretive structure that will allow meaning to be distilled from the interfaction of body and technology. There will simply be a combination of organic body and machinic technologies which lack identifiable meaning, just like without the rules for chess, the knight may serve equally well as a miniature sculpture or a keychain as it would a gamepiece; the interpretive rules are necessary if meaning is to be derived. The value of the piece is established by the rules of the game.

Without rules, meaning becomes impossible to decipher; meaning would compete with meaning with no method of determining which is correct. In a linguistic system, Saussure notes that there has long been consensus that signs are required to differentiate concepts from the ether of thought. He comments, “Philosophers and linguists have always agreed that were it not for signs, we should be incapable of differentiating any two ideas in a clear and constant way. In itself, thought is like a swirling cloud, where not shape is intrinsically determinate. No ideas are established in advance, and nothing is distinct, before the introduction of linguistic structure” (110). Considering the

implications of this statement for cy-systs, Gaia originates as a massive hybrid of undifferentiated organic and machinic components. Without a governing cy-syst, there are no interfactions, no cyborgs, and no clear distinction or structure controlling the relationships between humans and technologies, or between cyborgs - if they could even form!

A cyborg, realistically, cannot coalesce without a cy-syst to delimit the value of a particular combination of body(ies) and technology(ies). There is no pre-existing amalgamation of organic and machinic components that dictate that the resulting cyborg will be recognized as *secretary*; while the interactions may take place, the interfactions would not, resulting in cyber-gibberish. Only through the intervention of a cy-syst's structure may a cyborg form. Without this intervention, bodies and technologies could conceivably float in an amorphous mass, never coming together or interfacting.

A social component, then, is necessary for cygnification to occur. Social convention, and social convention alone, dictates that particular divisions of technologies and bodies are recognizable as segmented from all other technologies and bodies, differentiated according to that particular social order which brings it into unique existence. Saussure's famous metaphor compares language to a sheet of paper, in which sound and thought are inseparable, just as the two sides of the paper may not be cut independently of each other. Saussure demonstrates, "Thought is one side of the sheet and sound the reverse side. Just as it is impossible to take a pair of scissors and cut one side of paper without at the same time cutting the other, so it is impossible in a language to isolate sound from thought or thought from sound . . . *The contact between them gives rise to a form, not a substance*" (111). In the same manner, separating technologies from

a body while maintaining the meaning imbued upon that body by those technologies is likewise impossible. Once the technologies are removed, the delimitations that they impart upon the body also depart. The body returns to an undifferentiated state, an unmarked *tabula rasa* unable to convey anything more than the most basic of meanings. Any signification in this state (for clearly, cygnification is impossible) more closely resembles the grunts and crude gestures of early cave men than that provided by the subtle denotations and connotations of a language.

Social order provides these denotations and connotations, arbitrarily assigning values to interfactions with certain technologies' relative values which, in turn, are used to imbue meaning on the cyborg created by said interfactions. Understanding the principle of *value* is critical at this point, first in the larger sense of the term, and more specifically as it relates to semiotics. Saussure claims that values require both similar and dissimilar items; the dissimilar items serve an exchange function, while the similar items serve a comparative function:

> Values always involve: (1) something *dissimilar* which can be exchanged for the item whose value is under consideration, and (2) *similar* things which can be *compared* with the item whose value is under consideration. These two feature are necessary for the existence of any value. To determine the value of a five-franc coin, for instance, what must be known is: (1) that the coin can be exchanged for a certain quantity of something different, e.g. bread, and (2) that its value can be compared to another value in the same system, e.g. that of a one-franc coin, or of a coin belonging to another system (e.g. a dollar). Similarly, a word can be

> substituted for something dissimilar: an idea. At the same time, it can be compared to something of a like nature: another word. Its value is therefore not determined merely by that concept or meaning for which it is a token. It must also be assessed against comparable values, by contrast with other words. (113-14)

As with words or money, cyborgs possess an exchange value. The idiosyncratic combination of a particular set of technologies combined with a defined body may be exchanged for the concept of a unique, culturally demarcated cyborg.

Yet a cyborg does not only possess merely an exchange value but also a comparative one. For example, *secretary* may be compared to *CEO* or, more subtly, even *administrative assistant*, which implies a slightly different set of interfactions. However, in the past, *secretary* overlapped with the interfactions now implied by *administrative assistant*. Since the advent of *administrative assistant*, *secretary* has been altered, both by this contrast as well as a changing culture; now, *administrative assistant* cygnifies a weight of responsibility previously lacked by *secretary*. The contrasts between these cygns create a set of definitive reciprocal relationships, in which the close interstices between each cyborg delimit one from the other. Other cyborgs could be included in this set for further contrast and delimitation – *receptionist*, *personal assistant*, *clerical worker*, etc., all of which vary slightly in their composition and interfactions. Saussure claims that words require proximity to other words to create value. He states, "No word has a value that can be identified independently of what else there is in its vicinity" (114). In the same manner, no cyborg may possess a value separate from the contiguous cyborgs

within its cy-syst. The contrasts between cyborgs within a given cy-syst establish the values of the individual cyborgs.

This inability to mistake one signifier for another forms the foundation of the contrastive recognition, permitting a listener to identify the signal. Saussure observes that differences alone permit recognition of a signal:

> Linguistic signals . . . are constituted solely by differences which distinguish one such sound pattern from another.
>
> This fundamental principle applies to every material element used by a language, even the basic speech sounds. Each language constructs its words out of some fixed number of phonetic units, each one clearly distinct from the others. What characterises those units is not, as might be thought, the specific positive properties of each; but simply the fact that they cannot be mistaken for one another. Speech sounds are first and foremost entities which are contrastive, relative and negative. (117)

Cygnifying technologies function in this same negative, contrastive manner. Take, for example, the difference between a skirt, which cygnifies femininity, and a kilt, which cygnifies masculinity. What combination of particular traits or, more accurately, absences of particular traits, permits differentiation of these two similar technologies?

Saussure uses four principles found in writing as examples to demonstrate value establishment. His first principle is that there is only an arbitrary connection between the physical appearance of a letter and the sound expected to be produced by that letter; “t,” for example, bears no relationship between its form and its sound (117). As previously demonstrated, technologies also have no intrinsic connection with the concepts which

they cygnify in conjunction with a body. A kilt may just as easily cygnify femininity as masculinity, as may a dress, a bra, or lace panties. These are culturally established cygnifications; nothing about the technologies themselves demand a particular cygnified.

Additionally, there is no precise formula dictating the form of any part of the composition of a sign or a cygn. Saussure's second principle states that what is required to identify the value of a letter is not precision but differentiation. According to Saussure, "The values of the letters are purely negative and differential. So the same individual may write *t* in . . . variant forms. . . . The one essential thing is that his *t* should be distinct from his *l*, his *d*, etc." (118). What is critical for identification, then, is that the form be distinct from all others, rather than meeting precise requirements. A kilt, for example, is traditionally manufactured from 100% wool. If instead it was manufactured from a blend of wool and polyester, it would still clearly be recognizable as a kilt; the deviation in material is not clearly identifiable with any other form of clothing other than a kilt. However, if the manufacturer selected silk or velvet for the kilt's material instead of wool, it would no longer be recognizable as a kilt; a man wearing it would not be read as *masculine* or *Scotsman* as he might be if the garb was made with a more traditional material, but perhaps instead he may be interpreted as *in drag*, feminine, or even *parodic*.

In order to determine these values, there must be limitations upon the system. Saussure states that these values are premised within the confines of the system. He argues, "Values in writing are solely based on contrasts within a fixed system, having a determinate number of letters . . . Since the written sign is arbitrary, its form is of little importance; or rather, it is of importance only within certain limits imposed by the system" (118). One of the differences between an alphabetic system as exemplified by

Saussure and a cy-syst that may at first appear problematic to creating an equivalency between these two types of systems is that while a culture only recognizes a select amount of letters upon which it bestows audible properties, cy-systs, especially modern ones, are in a constant state of expansion; this growth trend results in new technologies which in turn produce original "pronunciations" for existing cyborgs, or even creating completely unique ones. However, the relative fixity of an alphabetic system is just that – relative. The formation and inflection of letters alter over time; their transformations simply transpire at a significantly slower pace than that of most technologies and bodies within a cy-syst. As such, labeling such systems as "fixed" is a misnomer; stating that is only possible to measure values within a system synchronically rather than diachronically would be more accurate, for only within a synchronic system can a system's governing rules be clearly established and the quantities and types of elements populating the system delimited.

The second half of Saussure's claim, that because of the arbitrary nature of the sign, form is important only within the context of the system, at first seems to contradict the earlier example of a gendered reading of a kilt. In fact, the opposite is true; it directly supports such a reading. The form (the material of which the kilt is composed, in this case) is relevant only in that the society observing it decides that the material is important. There is no reason other than cultural bias that says that a man wearing a silk kilt may not be read as *masculine*; such an interpretation is a limitation created by society, and is neither inherent within the material itself nor the nature of the kilt.

Saussure's next claim regarding inscription is more tenuous, especially if brought into the realm of cybernetic cygnification. He asserts that the modes and components of

inscription are not factors in the interpretive act. Saussure argues, "The actual mode of inscription is irrelevant, because it does not affect the system. . . . Whether I write in black or white, in incised characters or in relief, with a pen or a chisel – none of that is of any importance for the meaning" (118). This claim is, at best, an uncertain proposition for linguistics, and in the case of cyborg semiology should be considered profoundly untrue. The manner in which a technology is brought to market, or the fashion a body is created, should bear on its interpretation; whether or not it actually does so is open to debate. Obviously, a Marxist perspective would argue that if the diamond in a wedding ring was a blood diamond from Africa, or if child labor in an Asian sweatshop manufactured the tennis shoes a famous basketball player wears, then this means of creating the technology should factor into its interpretation. However, such interpretive action is rarely taken by the average Western consumer; consumers simply interfact with too many technologies on a daily basis to be able to know the manufacturing (or, to use the term which Saussure uses for writing and which I feel is completely applicable when discussing cyborg semiotics, *inscription*) history of each technology. The inscription is the method of creating the sign/cygn, including its sociocultural background, methodology, and its components.

Despite consumers' traditional lack of knowledge about cybernetic inscription, once the inscription method is known, it may either be ignored by the reader or it may result in a drastically differing interpretation of the cygn. For example, *Harry Potter and the Order of the Phoenix* provides an excellent example of the significance of inscription methodologies and materials. In this text, Delores Umbridge, Albus Dumbledore's eventual dictatorial replacement at Hogwarts School of Witchcraft and Wizardry,

punishes Harry for attempting to warn faculty and fellow students of the danger posed by the resurrected Lord Voldemort by placing him in detention and forcing him to write "I must not tell lies" until, as she phrases it, the message sinks in. Harry settles in to begin his task, but quickly noticed a problem:

> "You haven't given me any ink," he said.
>
> "Oh, you won't need ink," said Professor Umbridge with the merriest suggestion of a laugh in her voice.
>
> Harry placed the point of the quill on the paper and wrote: *I must not tell lies.*
>
> He let out a gasp of pain. The words had appeared on the parchment in what appeared to be shining red ink. At the same time, the words had appeared on the back of Harry's right hand, cut into his skin as though traced there by a scalpel – yet even as he stared at the shining cut, the skin healed over again, leaving the place where it had been slightly redder than before but quite smooth. (Rowling 266-67)

As this twisted punishment continues night after night, the grooves dig into the back of Harry's hand, eventually leaving trails of blood as the cost of inscribing Umbridge's words on the paper. The quill draws Harry's blood into its shaft, exacting a toll from his pain and suffering to signify his adherence to Ubridge's law. Eventually, after several evenings of torture via inscription, Umbridge decides her words inscribed through his pen have adequately conveyed her real message to him: "'Let's see if you've gotten the message yet, shall we?' said Umbridge's soft voice half an hour later. . . . 'Yes, it hurts, doesn't it?' she said softly. . . . 'Well, I think I've made my point, Mr. Potter. You may

go'" (275). The message (that is, what Umbridge is signifying through Harry's inscription) is not only embodied in the signs on the page, but also via the method of inscription. This difference is not only obvious to herself and Harry, but to his friends as well. Ron Weasley, Harry's best friend, notices something is wrong with Harry's hand and confronts him about it, demanding he take action against Umbridge:

> Harry, who had just scratched his nose with his free right hand, tried to hid it, but had as much success as Ron with his Cleansweep.
>
> "It's just a cut – it's nothing – it's –"
>
> But Ron had grabbed Harry's forearm and pulled the back of Harry's hand up level with his eyes. There was a pause, during which he stared at the words carved into the skin, then he released Harry, looking sick.
>
> "I thought you said she was giving you lines?"
>
> Harry hesitated, but after all, Ron had been honest with him, so he told Ron the truth about the hours he had been spending in Ubridge's office.
>
> "The old hag!" Ron said in a revolted whisper. . . . "She's sick! Go to McGonagall, say something!"
>
> "No," said Harry at once. "I'm not giving her the satisfaction of knowing she's got to me." (272)

Ron instantly reacts with abhorrence to Umbridge's enforced inscription. Note that at no point were the signifiers chosen by Harry; they were Umbridge's selections. Also, Umbridge, a person in a position of power over Harry, selected the method of creating those signifiers. She forces him to reproduce her interpretation of him as a person (his *significance,* to use Saussurian terminology) upon his body; in this case, she coerces him

to mark (signify) himself as a liar. Such forced inscription can only be regarded as a violent act, one that requires only minimal action on the part of the person enforcing the inscription, while the person upon whose body the inscription is being transcribed suffers the deforming pain of the alteration of their personhood as a result of the inscription. Also, notice that the longer the punishment went on, the more damaged Harry's body became, and the deeper and more indelibly the signification became inscribed upon his hand.

When Harry's friends notice the inscription methodology, they raise a cry for action. Had he merely been writing lines, they may have grumbled at Umbridge's bias against Harry, but little more would have happened. Instead, because of the inscription methodology, they rail for the intercession of a higher authority to challenge Umbridge's deviance from standard inscription practices; her choice of the black quill to cause violence upon the inscriber cannot be tolerated. However, until the violence was brought to light where all could see it, nothing would change. The inscription methodology does not matter unless those who see the inscription understand the cost of the inscription's creation.

Such inscription practices are not confined to fiction. In *Discipline and Punish: The Birth of the Prison* (1975) Foucault describes in detail the importance of audience participation in the torture of criminals. He states, "Not only must people know, they must see with their own eyes. Because they must be made to be afraid; but also because they must be the witnesses, the guarantors, of the punishment, and because they must to a certain extent take part in it" (58). If the act is unwitnessed, then it cannot be interpreted. One particular torture session that he expounds upon involves a maid who slew her

mistress with a cleaver. For her punishment, she was executed using the same implement with which she killed her employer, using the same strokes in the same locations and in the same sequence upon her own the body (45). The interfactions of bodies and technologies reflect those between her and her mistress; this mirroring of the inscribing cygnification has meaning in of itself, as it is interpreted as true justice (eye for an eye). If the executioner merely cut her body in random locations or with a different implement, the same meaning would not be ascribed to the torture; the inscription implements and methodologies in this case are crucial for a proper interpretive act.

Fighting inscription methodologies upon a cyborg and the resultant cygn requires recognition of the damage of certain inscription tactics. Laura Mulvey recognizes this problem, and speaks against such inscription tactics in "Visual Pleasure and Narrative Cinema" (1975). Mulvey positions her article in a damaging context, claiming that it is intended to destroy traditional viewing practices. She claims, "It is said that analysing pleasure, or beauty, destroys it. That is the intention of this article. The satisfaction and reinforcement of the ego that represent the high point of film history hitherto must be attacked" (835). Mulvey fights against the manner in which women signify in film; specifically, she states, "Woman then stands in patriarchal culture as a signifier for the male other, bound by a symbolic order in which man can live out his fantasies and obsessions through linguistic commands by imposing them on the silent image of woman still ties to her place as bearer, not maker, or meaning" (834). Mulvey's work challenges the theatrical convention of the passive woman signifying on the screen. I wish to extend this to the manner in which women (and, I believe, other oppressed

groups) signify through technology externally inscribed upon them by a patriarchal society. By revealing the hidden blood, a call for action may, hopefully, be raised.

The importance of an inscription methodology for written language is clearly shown using the example from *Harry Potter and the Order of the Phoenix*, while cybernetic inscription is explored via Foucault's maid. When the method of creating the inscription damages the person creating it, and such an inscription is being enforced by a party which possesses power over the inscriber, a call to action should be raised. Translating this significance from written language to cybernetic semiotics reveals the danger of underestimating the impact of inscription methodologies. A couple of examples should serve to demonstrate the analogous function of cybernetic inscription.

Perhaps no group has more power over another in determining inscription methodologies than parents have over their children. In *Gendered Bodies: Feminist Perspectives* (2010), Judith Lorber and Lisa Jean Moore examine a critical set of interfactions which parents visit upon their children in order to dictate culturally appropriate gender behaviors:

> A common way that parents socially produce gendered children is through the toys they buy. These toys encourage children to play in gender-appropriate ways – girls with dolls, boys with "action figures." Not only are toys marketed and bought in gender-specific parts of stores; parents and caregivers encourage their use in gendered ways – action figures should fight, not be hugged; dolls should be hugged, not fight. Our expectations of children's gender-appropriate play is so profound that it is impossible to tell if the way children prefer to play is natural or learned.

> We may not ever see gender-inappropriate behavior when it is in front of our eyes, as when girls bash their Barbie dolls against the wall. (61)

Of note here is that children are almost powerless to control their own technological identity. Their options for creating their own technological cygnificance are limited to the technologies which their parents are willing (and able) to provide. Like Umbridge determining that the quill was the tool that Harry must use to create a false signification for his identity, parents select the technologies that children will use to inscribe their technological identities. The meaning that Umbridge forces Harry to inscribe upon the paper is a false one; Harry is not a liar. By selecting toys which carry specific gendered cygnifications for the cyborg created by a child's interfactions which may not be the cygnifications which the child wishes to create, parents (en)force the creation of a cybernetic cygnifier which may violate the child's attempts to create her personal cybernetic cygnification. Much like Harry trying to protest his innocence of telling lies (his attempt to rectify an inaccurate self-signification), parents may ignore a child's attempt to re-appropriate a gendered toy through utilizing it in the presumed manner of a differing gender. Ignoring this supposed gender-inappropriate behavior with the technology of toys is the equivalent of parents refusing to listen to child claiming that she is hungry; the child is attempting to cygnify to the parent, but the parent turns a deaf ear to the cygnification, even when the child's cygnification is blatant. Note that the child with the violent Barbie in Lorber and Moore's example is not attempting to cygnify that she *is male*, merely that she wants to cygnify in ways that have arbitrarily been assigned by a given culture as *masculine*.

Another option for parents concerned about an overly masculine female-embodied child would be to try to alter the child's interfactions with the Barbie. They could correct her verbally ("Don't play with your toys that way, honey; it's not okay"), gender-shame her ("That's not the way nice girls treat their toys; don't you want to be a nice girl?"), remove the offending technology by taking the toy away from the child (thus preventing the child from even attempting a potentially "incorrect" cygnification), or punishing the child with time-outs, lost privileges, or even corporal punishment. The child is thus forced to inscribe particular cybernetic semiotic meanings; when the child deviates from these patterns, she is either punished or ignored (a form of punishment in its own right). The child must conform to "correct" cybernetic semiotic patterns. Lorber and Moore claim that these patterns become physical constructs, embodied within the child. Lorber and Moore lament, "The patterns of gendered behavior not only become part of a child's identity as a boy or a girl; they become embodied. The embodiment, or the physical manifestation and enactment of cultural and social norms, especially those that make bodies and body practices feminine and masculine, is a global phenomenon" (62). As with Harry Potter signifying upon paper, which becomes an act of violence upon his own body, the inscription of a cybernetic identity contrary to an authority's accepted cygnifying norms results in the child being forced into the parents' preferred cygnifying patterns. The child may outwardly cygnify normative gender-specific patterns (the equivalent of the blood on the paper), but if all that society views is the enforced reproduction of gender normative cygns and accepts such patterns without questioning them, then the violence visited upon the child (as on Harry's hand) may never be seen (especially if those who suffer it attempt to hide it), even though such blatant enforced

gender norming behavior should in of itself be enough to raise a call to action (such as simply seeing bloody writing should be enough; seeing the rent hand should be unnecessary). However, the violence lurks in the emotional scars infused into those who dared challenge gender normativity through their interfactions. Gloria Anzaldua notes that within Hispanic cultures, gender roles are clearly defined, with softer emotions rejected as weakness among men. According to Anzaldua, "Tenderness, a sign of vulnerability, is so feared that it is showered on women with verbal abuse and blows. Men, even more than women, are fettered to gender roles. Women at least have the guts to break out of bondage. Only gay men have had the courage to expose themselves to the woman inside them and to challenge the current masculinity" (106). While she is speaking of Hispanic culture in particular, this could be applied to many cultures; American culture in particular has been known for its gender normative expectations.

To contextualize this issue in another way, if a consumer observes mass-produced goods manufactured in a region known for a lack of fair labor laws, then questioning the ethical practices behind the creation of these goods (their inscription) makes sense; this is the equivalent of seeing the blood on the page and realizing that the standard signification may need to be altered. The next step, actually seeing the horror of sweatshop conditions (child labor, inhumane working conditions, dismal pay, etc.), corresponds to spotting Harry's bloody hand; there can be no disillusionment regarding the origins of the technological inscription. The cost of the inscription's origins must be accounted for in the cygnification itself, and the cygnified transcends a traditional interpretation. As with Harry's friends, once the damage caused by the inscription's methods are known, there should be a clamor to a higher authority for a change in inscription methodology; in this

case, such appeals may be raised to governments, labor boards, unions, etc., for changes in labor conditions.

However, current inscription methodologies are not the only ones crucial to understanding cyborg cygnification; debates over the evolution of technological inscription have raged for centuries. In *Simians, Cyborgs, and Women: The Reinvention of Nature* (1991), Donna Haraway examines 20th century discussions about the nature of hu(man) society. The consensus among anthropologists of the time was that the masculine traits of aggression and dominance were crucial in the formation of successful primate (including human) social groups. However, it must be noted (as Haraway does) that the majority of anthropologists at the time were, in fact, men; these men determined the importance of various historical technological innovations. Women's voices were largely ignored. Haraway observes that man-the-hunter was the most prominent theory regarding the primary force of human development, and that any other contributors were secondary to this masculine force:

> This hypothesis suggested that the crucial evolutionary adaptations making possible a human way of life in the hominid line in its likely ecological setting were those associated with a new food-getting strategy, a subsistence innovation carrying the implications of a human future based in social co-operation, learned technical skill, nuclear families, and eventually fully symbolic language. . . . And of course, the man-the-hunter hypothesis was pre-eminently about male ways of life as the motors of the human past and future. Hunting was a male innovation and speciality, the

> story insisted. . . . Hunting was the principle of change; the rest was a base line or a support system. (*Simians* 86)

Hunting, and the technologies associated with hunting, assumes the principle role in sociocultural formation in this model. Since only the male body (supposedly) was permitted to interfact with hunting technologies, men were naturally presumed to assume the dominant roles in the social hierarchy.

However, Haraway notes that Nancy Tanner and Adrienne Zihlman's research points to a more feminine influence on early technology, especially as early hominids migrated to the savannah. Within chimpanzee tribes, Tanner and Zihlman observe that the females tend to both create and utilize tools more often than males, while males are more prone to hunt. Consequently, Haraway notes that within early human populations, females contributed numerous technologies critical for the survival of the group:

> Gathering was the early critical invention of hominids. Food-sharing with ordinary social groups of females and offspring (including male sharing with these groups) resulted. Digging sticks, containers for food, and above all, carrying devices for babies were extremely likely early technological innovations related to the new diet and sharing habits. (*Simians* 40)

However, these technologies, which were likely both created and utilized by female members of early hominid groups, were largely ignored within anthropological discourses because they did not contribute to the man-as-hunter evolutionary model, rendering them largely irrelevant or, at best, secondary contributors to human evolution.

Because of their method of inscription (created by women for women), these technologies cygnify in a manner different from those created by and/or oriented toward

men. Early anthropological interpretation of technologies which were created and then utilized by women placed them in a subordinate role to those created and utilized by men; if a technology did not directly serve the man-as-hunter hypothesis, it was devalued and subordinated to masculine oriented technologies. However, research such as that of Tanner and Zihlman opens up more diverse interpretation of technological inscription. Female inscribed technologies are not devalued, but instead are granted equivalent interpretive status with those considered more masculine. Haraway notes that this type of subversive discourse provides openings for alternative narratives for human development. She states, "Tanner and Zihlman, in their interpretation of the tool-using adaptation, avoid telling a tale of obsolescence of the human body caught in a hunting past. The open future rests on a new past" (*Simians* 41). Through a revaluation of technologies that are traditionally gender inscribed, privileging the contributions of one gender in preference of the other is diminished. Efforts towards validating the contributions of women in science have seen progress. Magret Grebowicz and Helen Merrick observed in *Beyond the Cyborg: Adventures with Donna Haraway* (2013) that feminist theory has made increasingly deep inroads into the male dominated scientific community, praising the fact that women have had an increasing influence upon the narratives of human development:

> feminist theories and critiques have contributed positively to the methods and results in many areas of science; they have yielded new observations and aided in the construction of new and better natural histories, histories we have epistemic, scientific reasons to believe are more accurate than the histories we now know to have been androcentric all along. (54)

Through the efforts of women to change androcentric stories of human development, changes in valuation of inscription methodologies and tools may occur.

Our understanding of cygnification is crucial for the valuation of technologies, the cyborgs which they contribute to, and their resultant cygnification. As previously noted, Haraway claims that language creates reality rather than simply describing that which already exists (*Simians* 78). As such, it is crucial to the contextualization of power structures, as well as the generation of resistance to these power structures, that a sophisticated understanding of the signifying power of language is incorporated into oppositional efforts.

Moreover, such resistance must utilize an understanding of cygnification, not just signification, and the technological narratives inherent in the cy-systs which those opposed to traditional power structures are combating. As new technologies are invented, the creators should consider the ramifications of their potential cygnification, as well as possible alterations to standard cygnifications that may originate in their inscription methods. Even existing technologies may obtain a more positive (or, if done poorly, an increasingly negative) cygnification by altering their current inscription methods. For example, if a company known to utilize sweatshop labor in the creation of its products suddenly switches to unionized labor with fair pay and improved working conditions, its shift in cybernetic inscription could easily lead to a new cygnification for the product and, in turn, the cyborgs of which they are a part.

Consideration of diversity in cygnification raises one of Saussure's most important theoretical contributions: difference. Saussure claims that difference alone creates language:

> *In language itself, there are only differences*. Even more important than that is the fact that, although in general a difference presupposes positive terms between which the difference holds, in a language there are only differences, *and no positive terms*. Whether we take the signification or the signal, the language includes neither ideas nor sounds existing prior to the linguistic system, but only conceptual and phonetic differences arising out of that system. In a sign, what matters more than any idea or sound associated with it is what other signs surround it. The proof of this lies in the fact that the value of a sign may change without affecting either meaning or sound, simply because some neighbouring sign has undergone a change. (118)

These differences permit comprehension and distinction of both sound patterns and concepts; however, what are considered valid differences, as well as appropriate ranges of difference, are culturally constructed. They are also determined by the surrounding sound patterns and concepts. If, for example, there is no existing sound pattern which closely emulates the one being used, then the patterns most closely resembling it will be interpreted *as* that pattern. If, however, there is another (or even several) pattern(s) which closely resemble the existing pattern, then that same pattern may be interpreted as one of the other variants. Neither the original pattern nor the pattern being utilized changed, yet the interpretation of the utilized pattern may be altered because of the presence or absence of surrounding patterns.

If we consider this interpretive problem within cy-systs, obvious difficulties arise. When sound patterns are undifferentiated, interpretive errors may occur. Likewise,

interpretive acts may fail when the traditional cultural rules of cygnal construction are not followed. In *Technologies of the Gendered Body: Reading Cyborg Women* (1995), Anne Balsamo considers the conundrum of the cygnification of female body builders and the struggles they face in constructing their cygnification:

> To be both female and strong implicitly violates traditional codes of feminine identity. Thus women who use bodybuilding technology to sculpt their bodies are doubly transgressive; first, because femininity and nature are so closely aligned, any attempt to *reconstruct* the body is transgressive against the "natural" identity of the female body. Second, when female athletes use technology to achieve physical muscularity – a male body prerogative – they transgress the "natural" order of gender identity. (43)

In Balsamo's example, we see two violations of traditional cygnification. The first is that the female body is interfacting with technologies which violate cultural rules of gender and technology. If we consider this example in linguistic terms, it would equate to a word with a phoneme formed by "qk"; the rules of English spelling do not allow for such a construction. As such, when English speakers encounter this particular combination of letters, they reject it as invalid; it doesn't follow the culturally established rules of sound pattern construction. However, this does not mean that this pattern is unable to be made; as can clearly be seen here, it can be constructed, although pronunciation of it may be difficult, since it would be unfamiliar and unpracticed by the tongue. Rejection of this pattern is based upon the arbitrary rules of the English language, and not on any intrinsic incompatibility between *q* and *k*. Likewise, the female body and the technology of

bodybuilding may interfact with ease; normative cultural forces resist such interfactions, though, because they violate traditional cybernetic "spelling."

Equally important to Balsamo's example is the rejection of this particular interfaction because it results in a construct which makes cyborgs with a female body supposedly indistinguishable from, or at the very least comparable to, those based upon a male body. Criticisms of a female bodybuilder included her supposed transformation from a woman into a man. The variety of supposed negative side-effects of the steroids the bodybuilder was taking in the newspaper article Balsamo examined ranged from rippling muscles, to a powder keg temper, to no longer being a "soft creature" (45). While not endorsing steroids for anyone's bodybuilding use, several of the critiques of this particular bodybuilder (including self-criticism after she left bodybuilding) highlighted the loss of her body's traditional feminine traits instead of the debilitating effects that steroids had upon her body. Traits such as rippling muscles or not being a "soft creature" as a result of interfacting with bodybuilding technologies would be prized in a cyborg constructed with a male body. The cygnification of this cyborg, then, becomes muddied due to the cygnal's overlap with those constructed with masculine bodies. The ability to clearly differentiate between these two cyborgs becomes more difficult; the question that must be asked is if there is any reason which necessitates differentiation.

For example, if the word *kat* entered the English language, delimiting it from the existing *cat* could be problematic. However, such struggles in delimitation would not remove the validity of the word; it would simply carve out a niche which encroaches upon the sound area once occupied exclusively by *cat*. *Cat* would then have a much smaller distinctive

sound pattern that may require fine-tuning or even shifting in order to accommodate its new linguistic neighbor.

Comparably, a female body interfacting with technologies once considered exclusively masculine requires a blurring of distinguishable parameters between a cyborg with a male body and one with a female body. The cybernetic equivalent of a sound pattern I will term a *cound pattern*, which would be the technological patterns in conjunction with a body which form a recognizable cygn. A cound pattern which contains a female body encroaches upon an area previously exclusive to male bodies, thus reducing masculine opportunities for distinctive cygnification. This shift on the part of female bodies expanding their cound patterns does not reduce the potential space for male bodies to participate in the creation of cygnifiers; however, it does mean that male bodies are no longer the *only* ones that may create the *bodybuilder* cygnifier. If, for example, both the *c* and the *k* were considered valid options in the formation of k/cat, then the *c* does not lose the opportunity to participate in this signifier; it merely shares the opportunity to occupy this space within the signifier with *k*. While it loses distinctiveness from *k* in this circumstance, it does not diminish in functionality; as such, is there any legitimate reason that *c* and *k* must be individuated in this circumstance?

Likewise, the participation of female bodies in the formation of the cygnal *bodybuilder* neither precludes male bodies from doing the same, nor diminishes them in any manner when they do so. *Bodybuilder* may be formed by bodies which are male, female, short, Asian, or any number of other permutations; all that is truly required of a body is that it possesses the ability to interfact with the distinctive technologies in the requisite manner to form the characteristic cound patterns of the cygn.

Unfortunately, just because the cygn is formed by a non-traditional body does not mean that the cygn which it forms will be accepted as valid by other participants in the cy-syst; however, in order to reject the cygn, the members of the cy-syst must recognize that the body's interfactions conform to recognizable cound patterns, even though they may not validate these interfactions as legitimate within the rules of the cy-syst's structure. This lack of validation of alternate constructions of cound patterns, however, simply disguises the multiplicity of alternate cyborg constructions by attempting to homogenize the diversity of potentially meaningful constructions. What is truly being concealed is the arbitrary nature of cygnification, since if a particular cygnifier can be formed using multiple cound patterns which resemble each other closely enough that the cygnified is clearly identifiable if constructed by non-traditional bodies or in diverse configurations, then the precedence of a particular cound pattern, be it based on a male, Caucasian, or upper-class body, is completely invalidated.

The irrationality of unified cignification may be demonstrated through a simple reversal of the cygn's constituent elements. The basis of the earlier argument is that a female body is somehow unable to form the cygn *bodybuilder*. Imagine, then, a minor alteration to the equipment employed by a male bodybuilder rather than an alteration to the body of the individual utilizing the equipment. One of the most common differences in the technologies of bodybuilding is free weights versus weight machines. Some bodybuilders embrace one technology over the other, while some utilize both in equal measure. However, the preference of one technology over the other does not alter the recognition that a body interfacting with either technology will be interpreted as the cygn *bodybuilder*. Regardless of the type of weights utilized, the interfactions with the body

will still result in a cygn read as *bodybuilder*; there is simply not enough difference in this constituent element to change the cygnification. Even the identification of a cygn as *female bodybuilder* makes little sense; one would not, for example, identify a male bodybuilder interfacting with a particular technological apparatus as *free weight bodybuilder*.

Cygns like *bodybuilder* relate to other cygns in a manner similar to that which signs relate to each other. Saussure describes two types of relationships between signs: syntagmatic and associative. While the associative relationships of cygns within a cy-syst function in a manner comparable to signs within a language, the method by which cygns relate to each other in a syntagmatic relationship is different enough that they will be referred to as *cyntagmatic*. Saussure notes that in language, syntagmatic relationships are formed by words in a sequence. Saussure clarifies, "Words as used in discourse, strung together one after another, enter into relations based on the linear character of languages. Linearity precludes the possibility of uttering two words simultaneously. They must be arranged consecutively in spoken sequence" (121). While cygns are not in a neat, linear sequence like words on a page, some of the principles of linearity still apply. Just as two signs may not occupy the same space on a page, two cygns may not occupy the same physical space. They may interfact with each other or even connect physically, yet they remain separate cygns.

However, one cygn may subsume another without erasing it. *Bodybuilder*, for example, may comprise a portion of *gym*, or *mother* may (in fact, some argue that it must) comprise an element of *family*. Their participation in these larger cygns does not negate these smaller cygn's cygnification; rather, their cygnification is necessary for the

larger cygn to properly cygnify. Also, while smaller cygns may occupy a portion of the space of the larger cygn, they do not inhabit the fullness of that space. Much like compound words, their biological and technological distinctiveness are added to that of the more complex cyborg, and they are assimilated into its cygn. As in a compound word, the smaller cygns which participate in the formation of the more complex cygn are still identifiable, but their individual cygnifier does not contribute to its own cygnification, but rather to that of the larger cygn in which it participates. Alfred Rosa and Paul Eschholz note the variable manners in which compound words form signals. They differentiate, "Some compound words are two separate words (*half brother*); some are one word (*stepmother*); and some are two or more hyphenated words (*half-moon, father-in-law*)" (223). The individual signs that form the compound words lose the fullness of their individual signification when participating in the compound words, though they regain unique signification upon separation. However, depending upon the intricacy of the connection between the words forming the compound word, achieving such separation may be met with varying degrees of difficulty. For example, in Rosa and Eschholz's first example, *half* and *brother* both maintain much of their individuality; distinguishing one component of the sign from the other is a relatively simple task. However, in the second example, *stepmother,* the two portions of the sign have become so intertwined that attempting to separate them would be nearly impossible. Signs such as *pineapple*, in which two formerly distinct words have now merged to the point that separating them results in the complete loss of the compound signification (as *pineapple* neither signifies *pine* nor *apple*), are connected beyond possible disentanglement.

Cygns may experience this same sense of compound entanglement. *Mother*, for example, used to be a requirement to form the cygn *family* (and, when read in a patriarchal manner, still is); without it, *family* could not be considered to be properly cygnified. Conversely, *mother* could not be separated from *family* (and its heteronormative components, especially *father*) without losing its normative cygnification; that is, separated from the larger cygnifier that gives *mother* its standard cygnification, it is viewed as incomplete, tainted, or corrupt. De Beauvoir comments on the predicament that single mothers have faced in achieving a socially acceptable cygnification, while a single male is regarded in a conventional manner:

> A woman alone, in America even more than in France, is a socially incomplete being, even if she earns her living; she needs a ring on her finger to achieve the total dignity of a person and her full rights. Motherhood in particular is respected only in the married woman; the unwed mother remains an object of scandal, and a child is a severe handicap for her. For all these reasons, many Old and New World adolescent girls, when interviewed about their future projects, respond today just as they did in former times: "I want to get married." No young man, however, considers marriage as his fundamental project. (444)

As de Beauvoir demonstrates, attaining the cygnification of *mother* that, in turn, participates in the formation of the cygn *family*, is mandated within a patriarchal society for a female body; outside of *family*, *mother* is an undesirable cygnification. For the proper cygnification of *mother*, a male body and appropriate masculine technologies must be present to cygnify *father*. Conversely, the attainment of the cygn *father* by a male

body is optional (though usually desirable), and certainly not a cultural imperative. As such, participation in *family* is also discretionary for a male body, even if *father* is cygnified.

Sequence becomes an important factor in interpretation; *husband* before *child*, for example. In language, the most common syntagma is the sentence (Saussure 122). Sentences are structured sequences of words either positioned spatially and read temporally in the case of written language, or organized into a sequence and then listened to temporally in the case of speech; in both cases, the organization of constituent elements are governed by culturally dictated rules. For example, in English the standard formation of a sentence is Subject-Verb-Object. There is nothing about this particular order that makes it a better method of creating a sentence than alternate formations; the cultural conventions of English dictate S-V-O order, which has been engraved into a rule over time. Created in Yoda-speak, this sentence is, yet despite its differing word order, understand it you do. Makes perfect sense, it does. The previous two sentences used Verb-Subject-Object order, yet meaning was still easily created. There may be some minor differences in word usage (for example, the inclusion of *does* in the second sentence would be unnecessary in S-V-O order), but overall the alterations are minor; meaning is still conveyed.

Like sentences, cyntagmas require both temporal and spatial proximity. However, this does not have to be *close* proximity; all that is required to form a cyntagma is that the cyborgs which comprise it may interfact with each other. Especially with modern technology, this interfaction may take place from a great distance and may unfold over an

extended period time. Levy recounts a digital incident involving nude pictures of an eighth-grade girl which illustrates the complexity of digital interfactions:

> In the winter of 2004, an eighth-grade girl at Horace Mann, one of the top private schools in New York City, made a digital recording of herself masturbating and simulating fellatio on a Swiffer mop. She sent the clip to a classmate she liked, and in a show of gallantry that could only come from a teenage boy, he promptly broadcast the clip to all of his friends. Soon after, someone with the screen name "nyprivateschool" posted the entire thing on Friendster, a Web site where people of all ages can put up their own profiles, link to their friends, meet their friends' friends, and form expanded online communities. After the digital video went up on Friendster, people started calling the school "Ho Mann" and referring to the incident as Swiffergate. As for the eighth-grader, like Paris Hilton before her, the dissemination of her amateur porn swiftly resulted in a major uptick in her level of popularity and celebrity. (141)

In this case, the interfaction between the girl and those who viewed her video required little in the way of either close physical or temporal proximity. Networked systems and technologies (such as the cell phone video) shrink space and time, and what was intended as a private interfaction may end up in a lengthy, unanticipated syntagmatic sequence contiguous to undesired cyborgs and participating in their interfactions in a manner which was neither intended nor desired.

Cyntagmatic relations are active and ongoing. They are based on interfactions that link one cyborg to another, connecting and reconnecting in a temporal sequence across

physical spaces. These interfactions constantly shift and change according to the sociocultural rules that govern them, until the old rules crumble and new ones replace them. Saussure describes syntagmatic relationships as occurring between co-existing elements in a sequence. He defines, "Syntagmatic relationships hold *in praesentia*. They hold between two or more terms co-present in a sequence" (122). As with linguistic syntagmas, cyntagmatic relationships are controlled by time and sequence. Associative relations, however, are controlled by neither; rather than relying upon time and sequence, they are based upon presumed commonalities. Saussure comments that, unlike syntagmatic relations, associative relationships do not co-exist within a sequence, but connected through commonalities. Saussure describes, "Associative relations, on the contrary, hold *in absentia*. They hold between terms constituting a mnemonic group" (122). Associative relationships in cy-systs closely mirror those found in linguistic relations, and require only a brief explanation here.

The two types of associative relationships which Saussure mentions (though there are certainly others which could be extrapolated) are those based on a common element found within a signifier and those in which a link may be made between various signifieds. Saussure observes that while some signs have links based on form and meaning, only one is necessary for an associative link (124). With cygns we find the same types of association: those based on form and those based on meaning.

Associative relationships based on form may occur when a common cybernetic element appears within the configuration of multiple complex cyborgs. For example, the cyborg which cygnifies *secretary* may appear at an insurance company, a bank, or an automotive dealership, all of which are professional business establishments. However,

secretary may also be found in a school, a church, or in a military installation. While the professional business establishments share common meanings, these meanings diverge when considering *church*, *school*, or *military base*. Simply sharing a common component doesn't manufacture comparable cygnifications; however, this is enough to create associative relationships between these organizations, much like the signs *walking*, *singing*, and *running* all share the *–ing* suffix, creating an associative relationship based on form without sharing a common signification.

Conversely, common cygnification may create an associative relationship with little to no common elements. For example, a lingerie shop, an auto parts store, and a bookstore all are considered retail businesses. However, from a technological perspective, they share almost no common technologies and share few, if any, commonalities among their cybernetic components. Despite the seeming disparity among technological composition between these various organizations, we create an associative relationship among these types of organizations as *retail businesses*. That is, they share a certain common cygnification despite exceptionally limited (if any) shared technologies; a small used bookstore may not use a cash register, but instead use mobile technologies for credit card transactions and a cashbox for cash transactions, while the lingerie store may operate using a standard cash register for transactions. None of the other technologies required for either business are necessarily shared. Perhaps the closest shared technology is *money* which, though certainly a well-known technology, is common to almost every cygn in some form or another; *family*, *military*, and *church* also share this component.

Within syntagmas and, by extension, cyntagmas, Saussure observes that it is important to realize the interdependence of the parts upon the whole for meaning, just as the whole is dependent upon the sum of the parts for its meanings. He notes that there is always a larger unit which may be accounted for, and which possesses a reciprocal relationship with the smaller units:

> The first thing that strikes us in this organisation are the *syntagmatic interdependences*. Almost all linguistic units depend either on what precedes or follows in the spoken sequence, or else on the successive parts of which they are themselves composed . . . The whole depends on the parts, and the parts depend on the whole. That is why the syntagmatic relation between part and whole is just as important as the syntagmatic relation between one part and another.
>
> This is a general principle, which call be seen to operate in all the types of syntagma previously listed. There are always larger units, composed of smaller units, with a relation of interdependence holding between both. (126)

In other words, in order to derive meaning from a given unit in a syntagma, one draws equally upon the components of the unit itself as upon the units around it. For example, the following linguistic syntagma provides the reader with certain specific information: "The mother beats her child mercilessly." In this syntagma, the morpheme *mo-* in the sign *mother* allows for differentiation from the comparable word beginning with the morpheme *fa-*. The interdependence and sequence of these particular morphemes permits

delineation and interpretation of the signifier by creating the opposition of the female-body to the male-body as signified by *mother* juxtaposed to *father*.

However, the sequence of the units within the syntagma is equally crucial for interpretive purposes. For example, altering the sequence of two units within this syntagma modifies its signification: "The child beats her mother mercilessly." With this sequential shift, the entire signification of the syntagma is altered. No longer is the harsh matron assaulting her defenseless offspring; instead, the roguish progeny rises up and assails her elderly parent. The sequencing of the parts forming this syntagma dictate its eventual signification.

Within a cyntagma, sequencing of cygns and their interfactions is just as important for cygnification as it is for signs within a syntagma. If *waitress*, for example, was responsible for one evening for handling the bank deposits, closing the restaurant, and working in the back office, while *manager* counted the till and took out the trash, the common sequencing in the cyntagma would be changed. Despite this temporary inversion, the cygns themselves do not lose their standard cygnifications; however, the composition of the cyntagma itself would differ from traditional sequencing. Neither the bodies involved in the interfactions have changed, nor have the technologies; the only alteration is to the sequencing of the cygns within the cyntagma, which results in an unusual cygnification of the cyntagma, but one which is neither impossible nor necessarily changes the cygnification of the individual cygns. However, if this became a permanent change, then interpretation of these cygns would undergo a shift.

Saussure further delineates that within linguistics, the rules governing the construction of syntagmas is termed "grammar." He defines this more closely, clarifying that grammar is focused only on synchronic, meaningful relationships:

> Static linguistics, or the description of a linguistic state, may be termed *grammar* in that very precise sense, by no means uncommon, found in expressions like 'the grammar of chess', 'the grammar of the stock market', etc. These are all cases of complex systems, involving coexisting values.
>
> Grammar studies the language as a system of means of expression. 'Grammatical' implies 'synchronic' and 'meaningful'. [*sic*] (133)

Saussure goes on to note that grammar studies are often only focused on the relationships between units, and that this restriction is inaccurate because many relationships are expressed within a single unit (134).

While not necessarily disagreeing with Saussure that relationships may be found within an individual unit, for purposes of this argument I will focus on what he describes as grammar's more common usage: dictating relationships between individual units, especially those within syntagmatic sequences; however, this descriptor is still narrow and doesn't encompass the many utilizations of the term currently found in grammatical studies. For example, Constance Weaver, the former Director of the Commission on Reading of the National Council of Teachers in English, usefully describes four major senses of "grammar":

- Grammar as a description of syntactic structure
- Grammar as prescriptions for how to use structures and words

- Grammar as rhetorically effective use of syntactic structures
- Grammar as the functional command of sentence structure that enables us to comprehend and produce language (2)

For Weaver, the last entry on this list underscores the other three, although all of these senses are worth exploring in terms of their implications for cyborg grammar, as they hold true for cybernetic cygnification just as well as they do for linguistic signification. There are numerous theories about how grammar functions and how best to teach it (traditional, generative, etc.); however, for purposes of this paper I will confine myself to a much smaller scale approach. Future research should explore in depth the implications of, for example, generative grammar for cyborg grammar.

Descriptive grammar, Weaver's first sense of grammar, labels the manner in which words interact to form meaning. There is no sense of didacticism in this approach to grammar, simply a desire to explain that which exists. Power belongs to the words and phrases themselves in whatever arrangement they exist; they are not judged, parsed, or devalued in any way. Descriptive grammar does not seek improvement or rigid dictation of sequence; it only wishes to reveal the nature of linguistic structures within their actual usage.

Conversely, *prescriptive grammar* (Weaver's second sense) prioritizes certain structures over others. Grammar, in this sense, values a rigid, idealized organization based in a utopian ideal; these types of grammar are christened Grammar 2 and Grammar 3 by Patrick Hartwell in his influential essay entitled *Grammar, Grammars, and the Teaching of Grammar* (1995) (Grammar 2 is the analysis and codification of grammar, while Grammar 3 is the social conventions of grammar which result in the recognition of

"bad" grammar). It upholds existing structures and decries innovations and alterations to these structures, disparaging them as bastardizations of the "pure" language. However, attempts to fix (used here in three senses: to correct, to create rigidity, and to deny reproductive capacity) linguistic structures are nearly impossible and counterproductive to linguistic health. Peter Trudgill comments that linguistic fixity is nonsense, stating that languages constantly evolve; those that do not are dead. He observes, "All languages change all the times. It is not very well understood why this is the case, but it is a universal characteristic of human languages. The only languages which do not change are those, like Latin, which nobody speaks" (1). As such, any attempt to petrify a language will be unmanageable unless the language is already dead, at which point its decaying corpus may be analyzed with scholarly leisure; efforts to do so before linguistic demise may well result in a mannequin with the semblance of life, but no soul.

These attempts to fossilize language may actually conspire against writers, especially creative ones. Lesley Milroy comments on the recent restrictions on diversity that writers in English have recently faced; choices formerly considered creative are now regarded as errors:

> the 'correct' versions were prescribed as such relatively recently in the history of the language, as part of the flurry of scholarly activity associated with the codification of the English language in the eighteenth century. Since the goal of codification is to define a particular form as standard, this process entailed intolerance of the range of choices which speakers and writers had hitherto taken for granted. In earlier centuries all these 'errors' appeared in highly sophisticated writing. (95)

Those actively using language in the most creative and innovative manners found their expressive choices harshly circumscribed by the rigidity imposed by linguistic codification. Milroy goes on to describe prescriptive grammar as a rulebook which dictates convention, whereas descriptive grammar merely labels that which already exists. Milroy defines, "[Prescriptive grammar] is not a systematic description of a language, but a sort of linguistic etiquette, essentially an arbitrary set of *dos* and *don'ts*," as compared to descriptive grammar, which "does not set out to legislate on correctness but describes how words are patterned to form major constituents of sentences. The distinctive rules of English which underlie these patterns are acquired by children and learnt by speakers of other languages but are generally taken for granted by prescriptive grammars" (96). Prescriptive grammars judge the value of the language used by an individual based on adherence to an arbitrary set of culturally dictated patterns.

It is important to note that the struggle for grammar may also be the locus for power struggles between socially differentiated groups; that is, grammar contains values of a given sociocultural group. Rebecca Brittenham and Hildegard Hoeller comment that grammar becomes a stratifying boundary in culture:

> every culture has its grammar, the meaningful set of structures through which it functions. . . . And, although those conventions are primarily used to foster shared communication of ideas, they can sometimes be used as the ideological tools of that culture, determining success and status, controlling who belongs and who does not. Grammar is in this sense both a larger cultural "rulebook of meaning" and a set of rules that police that culture. (92)

Prescriptive grammar, in this sense, serves as the basis for the rulebook of meaning, dictating what meanings may be uttered and which are rejected as either taboo or insufficiently expressive of a given group's values. This useful comparison between these two senses of grammar (prescriptive and descriptive) may also be applied to cy-systs (as we shall see shortly), as may the other senses of grammar Weaver describes - the rhetorically effective use of syntactic structures and the functional command of sentence structure that enables us to comprehend and produce language.

Weaver's descriptor of grammar defined as "the functional command of sentence structure that enables us to comprehend and produce language," compares equitably to Hartwell's Grammar 1. Hartwell defines this type of grammar as the patterns, both simple and complex, which native speakers instinctively draw upon to form meaning with language; in simple terms, he calls it "the grammar in our heads" (209, 211). This grammar, which native speakers draw upon every day, is instinctive and functions without conscious knowledge of rules; it is simply a response to repetitious engagement with the language, and is little influenced by the teaching of Grammar 2 (Hartwell 210).

Weaver's final sense, the rhetorically effective use of syntactic structures, is commonly referred to as *stylistic grammar*. Hartwell defines stylistic grammar as "grammatical terms used in the interest of teaching prose style" (225). This sense of grammar is not dedicated to following specific rules or codifications, but rather attempts to convey meaning effectively to a given audience. Grammar dedicated to controlling the types of structures individuals utilize is bypassed in favor of efficacy, creativity, and individuality. This grammar is not faithful to fixity; instead, it invests in the creation of unique meaning, referencing grammar 2 and grammar 3, but not obligated to them.

How does this study of prescriptive versus descriptive grammar (grammar 2 and grammar 3 versus grammar 1) impact of the study of cyborg semiotics? If cybernetic spelling is considered as the configuration of the component parts of individual cyborgs via their interfactions, then cyborg grammar relates to the interfactions between cyborgs, the rules which govern their relationships, and manners in which they create meanings together. Studying cybernetic grammar may help us come to a clearer understanding of how we comprehend sequences of cybernetic units, what sequential configurations are prohibited, which are available but disparaged within a given culture, and the manners in which interfactions between cybernetic units may or may not take place within a cy-syst.

Judith Butler provides an excellent example of how cybernetic grammar functions, especially in contrast to cybernetic spelling. In her seminal text, *Gender Trouble* (1990), Butler examines the practices of drag. In relation to the formation of gender, Butler claims that gender is not intrinsic to the body, but is created through performance:

> acts, gestures, and desire produce the effect of an internal core or substance, but produce this *on the surface* of the body, through the play of signifying absences that suggest, but never reveal, the organizing principle of identity as a cause. Such acts, gestures, enactments, generally construed, are *performative* in the sense that the essence or identity that they otherwise purport to express are *fabrications* manufactured and sustained through corporeal signs and other discursive means. That the gendered body is performative suggests that it has no ontological status apart from the various acts which constitute its reality. This also suggests

> that if that reality is fabricated as an interior essence, that the very interiority is an effect and function of a decidedly public and social discourse, the public regulation of fantasy through the surface politics of the body, the gender border control that differentiates inner from outer, and so institutes the "integrity" of the subject. (173)

To build upon Butler's point, part of the surface controlled by public and social discourse includes not just the acts, gestures, and enactments which she references, but the technologies with which these acts, gestures, and enactments interfact. These technologies and the cyborgs created via these interfactions are equally part of the public discourse and, thus, are regulated by the rules of that discourse. These regulations dictate which cygns are considered "masculine" or "feminine"; these labels, according to the interpretive paradigms of the cy-systs within which these meanings are formed, reveal the inner truth about the cyborg upon which this marker has been bestowed. These interfactions are, as Butler defines them, *performative*; that is, they create cygns through a fabricated, arbitrary set of rules that reveal no other meaning than that which is created within and by the ontology of a particular cy-syst. That these interfactions are performative means that they may be used purposefully by individual cyborgs or larger cybernetic units to convey specific meanings by creating cygns, both within the constraints of the cy-syst or in deliberate opposition to traditional interpretive valuations. These cygns may be judged masculine or feminine based either on their cybernetic spelling (what technologies form a given cygn and in what manner) or cybernetic grammar (in what manner does a given cygn interfact with other cygns); in fact, it may be more accurately stated that the spelling of the cygn dictates what manner of cygn is

formed, which in turn determines which gendered grammatical rules of the cy-syst govern the resultant cygn.

A parallel example might be taken from a language such as Spanish, in which nouns are typically either masculine or feminine based on the ending of the word; words that end in *-o* are considered masculine, while those ending in *-a* are regarded as feminine. For example, the word *sombrero* (hat) is masculine; the spelling of the word dictates this gendering. However, this designation is arbitrary; nothing about the item *sombrero* requires labeling it as a masculine element. It could just as easily be designated as feminine with equal interpretive success, though certainly some alteration in subsequent semantics would occur. Conversely, *tormenta* (storm or tempest) is feminine due to the suffix *-a*. Only the arbitrary *-a* provides a feminine signification.

The spelling of masculine and feminine nouns places these words within specific linguistic grammatical structures. If a noun is masculine, for example, then the article preceding it must be *el* if the noun is singular, or *los* if the noun is plural; on the other hand, if the noun is feminine, then the article which comes before it must be *la* for singular nouns or *las* for plural forms. Arbitrary grammatical rules of masculine and feminine spelling arrangements govern these complementary forms of articles and nouns; these grammar rules only apply because of spelling rules. That is, the gendered rules that administer the interactions between words (grammar in its prescriptive sense, or Hartwell's grammar 2 and 3) only function because of the rules that control the components of the individual words (spelling).

Drag, then, becomes an interesting combination of issues of both cybernetic spelling and grammar. Butler comments on the difficulty of drag grammar, noting that

drag is often rejected even by feminist theory due to perceived relationships between "imitation" and "original":

> The notion of an original or primary gender identity is often parodied within the cultural practices of drag, cross-dressing, and the sexual stylization of butch/femme identities. Within feminist theory, such parodic identities have often been understood to be either degrading to women, in the case of drag and cross-dressing, or an uncritical appropriation of sex-role stereotyping from within the practice of heterosexuality, especially in the case of butch/femme lesbian identities. But the relation between the "imitation" and the "original" is, I think, more complicated than that critique general allows . . . The performance of drag plays upon the distinction between the anatomy of the performer and the gender that is being performed. (174-75)

Butler continues to differentiate between the performer's anatomy, the gender of the *performer*, and the gender of the *performance*. Finally, she notes that drag exposes the created nature of gender. She argues, "As much as drag creates a unified picture of "woman". . . it also reveals the distinctness of those aspects of gendered experience which are falsely naturalized as a unity through the regulatory fiction of heterosexual coherence. *In imitating gender, drag implicitly reveals the imitative structure of gender itself – as well as its contingency*" (175). Drag, then, is a matter of cybernetic spelling, at least on the surface and most obvious level; a body interfacts with a variety of technologies to create a cygn. However, the anatomy of the performer is in direct opposition to the sociocultural rules that govern the spelling of the cygn being formed.

Again, the body is considered as a vowel and the technologies as the consonants around it, this transformation would be the equivalent of taking the Spanish word *sombrero* and changing it to *sombrera*. The standard signification is still identifiable within the spelling strictures of the language, but the vowel shift clearly demarcates the change from masculine to feminine identification.

The male anatomy of the performer's body stands in apparent opposition to the completed cygn, as it is constructed through the utilization of technologies traditionally associated with cygns that culturally require a body with a female anatomy: eyeshadow, dresses, high heels, pantyhose, etc. This cybernetic "vowel shift" maintains the feminine cygnification despite the male body interfacting with the technologies. However, despite this clearly identifiable cygnification, the cybernetic grammar regarding drag is often confusing. For example, if the Spanish neologism *sombrera* is used, what article should be used before it? Does the traditional *el* get utilized, or should the feminine *le* be associated with the alternate spelling? In the same light, the position of drag performers in relation to more traditional cygns may be muddled. The uncertainty of the drag performer's gendered cybernetic spelling may make decisions about interfactions with other cyborgs within the cy-syst unclear since their spelling of the cygn permits both traditional and non-traditional interfactions. Hartwell's grammar 2 and grammar 3 would seem to dictate that drag is an aberration according to normative cybernetic grammar structures in conservative Western thought, not to be accepted within the formal grammatical structures of the existing cy-syst.

However, both grammar 1 and grammar 5 make strong cases for not only accepting drag, but also embracing it. Grammar 1, again, is the innate recognition and use

of pre-existing grammatical patterns within the linguistic system by native users. Within the cy-syst, this would simply be descriptive grammar of the cygns utilized by members of that cy-syst. Drag clearly exists within Western culture, it is identifiable, and, obviously, it cygnifies. Attempting to deny the existence of this form of cygnification is as useless as denying any other existing word within a language. If, for example, *sombrera* became a commonly used word in the Spanish language, denying its existence or belittling its usage would not prevent it from being used; bad grammar, in this case, becomes almost any linguistic interaction with it, since its spelling does not allow any of the existing grammar rules to apply. Drag suffers this same consequence, as the spelling makes traditional rules of interfaction inapplicable. Drag requires "bad grammar," since there is no grammar within conservative Western cy-systs which applies to drag performance. However, Milroy makes the point that so-called bad grammar is a misnomer, and is merely a case of privileging certain types of utterances over others:

> 'Bad grammar' is a cover term to describe a number of different kinds of English expressions. Some are widely used by educated speakers and writers but are outlawed by traditional prescriptions which are difficult to sustain; some appear to attract covert social prejudice by virtue of their association with low-status groups; and some follow the very characteristic but still rule-governed patterns of informal speech. All are perfectly grammatical, providing evidence of a complex body of rules which constitute mental grammars, the unconscious knowledge which speakers have of their own language. In comparison, the prescriptions

> which are recommended as ‘good grammar’ are revealed as at best marginal and frequently as unrealistic and trivial. (101)

Almost all of these prohibitions against “bad grammar” about which Milroy speaks may be found in relation to drag. For example, many supposedly conservative members of the Western cy-syst have been discovered to secretly indulge in drag, and social prejudice demeans those who indulge in drag, as more traditional members of the cy-syst regard practitioners as a disreputable element of society. Yet there are certainly grammatical rules that direct drag performativity; those who operate within this cy-syst do so fluently and expertly, creating specific cygns according to the rules that govern it.

While the argument in favor of drag based on grammar 1 is certainly compelling, perhaps an even more powerful case in support of it may be made originating in grammar 5. Hartwell describes this stylistic sense from two perspectives. While the first deals with a broad rhetorical approach, the second focuses on conscious management of language in order to draw attention to its constructed nature:

> [Grammar 5 is] broadly metalinguistic rather than linguistic, involves active manipulation of language with conscious attention to surface form. This second level may be developed tacitly, as a natural adjunct to developing rhetorical competencies. . . . It may be developed formally, by manipulating language for stylistic effect, and such manipulation may involve . . . a vocabulary of style. But it is primarily developed by any kind of language activity that enhances the awareness of language as language. . . . Such a model places language, at all levels . . . as literal

> stuff, verbal clay, to be molded and probed, shaped and reshaped, and, above all, enjoyed. (225-26)

From this perspective, drag assumes a stylistic approach. Drag focuses upon the surface appearance of the feminine cygnification rather than assuming connectivity to the anatomical features of the performer; in fact, this surface form is manipulated in opposition to the cultural interpretation of the physical characteristics of the performer. Hartwell points out that in grammar 5, there is a sense of raising awareness of language *as* language; that is, that language is a construct that merits attention for its constructed nature. Language can be altered, molded, or shaped according to the needs and whims of the person manipulating it in order to convey a specific message to an audience in a rhetorical manner. In a similar fashion, drag draws attention to the constructed nature of gender. Gender becomes something malleable, permeable, which the performer can adjust or modify as s/he sees fit; according to Butler's definition of gender performativity, there is nothing about gender requiring specific anatomical construction. Rather, as in grammar 5, it is a construction that embraces its own fabricated nature.

This playful aspect of drag becomes a critical component of recognizing its constructed nature. In fact, Susan Sontag's "Notes on 'Camp'" (1964) references drag's spirited nature. According to Sontag, "Style is everything. . . . what counts, finally, is the style in which ideas are held. . . . The whole point of camp is to dethrone the serious. Camp is playful, anti-serious. More precisely, Camp involves a new, more complex relation to 'the serious.' One can be serious about the frivolous, frivolous about the serious" (115-16). As with grammar 5, the emphasis in drag is not upon conforming to a specific form(ul(a))lization, but instead embraces a unique stylization dedicated to a

particular audience who can understand and embrace the play taking place within this grammar. Equally important is the sense of sheer enjoyment that takes place within grammar 5 as expressed by drag. In grammar 5, merely conveying information is insufficient; instead, there is a joy expressed in a mutual understanding by audience and performer that standard cultural conventions of grammar are being broken, reveling in the unique cygnification taking place.

This sense of play within grammar 5 leads naturally to a discussion of Derrida and his sense of language. While Saussure is considered the founder of structuralism, Derrida's concepts may be regarded as integral to the rise of post-structuralism. For the field of cyborg semiotics to succeed, it must demonstrate that its theories are applicable not only to the structuralist thought, but also to its theoretical progeny. Chapter four will demonstrate the relevance of cyborg semiotics to Derrida's work.

CHAPTER FOUR: THE DECONSTRUCTION OF CYBORG SEMIOTICS

Derrida's deconstructive approach to Saussure's structuralist theories redefined his theoretical predecessor's (relatively) stable notions of communication. Although some room for slippage of meaning was present within structuralism, deconstructive thought opened the gates for significantly more movement in the relationship between signified and signifier. One of the most critical developments within deconstructionism is Derrida's notion of the supplement. For cyborg semiotics, the supplement provides an avenue of approach to understanding the formative forces of the cygn; it reveals the fragility of the human element and the power of the machinic in shaping meaning. In *Technicity* (2006), Bradley and Armand note the difficulty of separating the organic and the machinic. They claim, "According to the deconstructive logic of the supplement (of recursion and metonymy), any attempt to oppose something technical to something non-technical . . . is automatically rendered problematic" (location 163). Such distinctions, according to the supplement, are not only irrelevant, but also inaccurate.

Derrida believed that words function as things. In her introduction to Derrida's *Of Grammatology*, Gayatri Spivak notes how profoundly influenced Derrida's concepts were by Freudian thought. She comments, "Derrida is fascinated by Freud's notion that dreams may treat 'words' as 'things'" (xlv). Cyborg semiotics deconstructs this notion, inverting it; rather than treating "words" as "things," it treats "things" as "words." However, in order to achieve this inversion, a second inversion must be first understood; the relation of humanity to technology must be redefined. Derrida himself, in fact,

challenged the field of cybernetics to achieve this task as he defined the nature of the supplement in the first section of *Of Grammatology*:

> whether it has essential limits or not, the entire field covered by the cybernetic *program* will be the field of writing. If the theory of cybernetics is by itself to oust all metaphysical concepts – including the concepts of soul, of life, of value, of choice, of memory – which until recently served to separate the machine from man, it must conserve the notion of writing, trace, *grammè* – or the *grapheme* – would thus name the element. (9)

It is precisely this project which cyborg semiotics endeavors to undertake; without sacrificing writing, trace, or even the *grapheme*, cyborg semiotics *names*. Cyborg semiotics provides both cygnified and cygnifier, yet they are so intricately intertwined that separating one from the other is not only impossible, but any real attempt to do so would unravel the cygn.

When the supplement is deliberated, its nature must be closely considered. The supplement is, supposedly, superfluous to that which is essential. Derrida's example of this dichotomy is writing and speech, with writing traditionally serving in the supplementary role to speech; Derrida draws on Jean-Jacques Rosseau's neo-platonic sublimation of writing to speech to demonstrate this cultural split. Derrida, however, challenges the notion of speech's ascendency over writing, arguing that the supplement was either never so simple as one thing's ascendance over another, or that a new concept of supplementation needs to be formed (*Of Grammatology* 7). He then proceeds to define

his new logic of the supplement. Derrida argues that while the supplement is supposedly superfluous, it ends up replacing what was formerly considered essential:

> the concept of the supplement – which here determines that of the representative image – harbors within itself two significations whose cohabitation is as strange as it is necessary. The supplement adds itself, it is a surplus, a plentitude enriching another plentitude, the *fullest measure* of presence. It cumulates and accumulates presence. . . . But the supplement supplements. It adds only to replace. . . . The sign is always the supplement of the thing itself. This second signification of the supplement cannot be separated from the first. . . . But their common function is shown in this: whether it adds or substitutes itself, the supplement is *exterior*, outside of the positivity to which it is super-added, alien to that which, in order to be replaced by it, must be other than it. (*Of Grammatology* 144-45)

Again, Derrida is referring here to writing, though he provides other examples, drawing upon Rousseau's own masturbatory example. Masturbation serves as the supplement to actual intercourse with the object of his affection, indicating a deficiency in the sexual act itself - for example, either a lack of access to the object of affection or an incomplete experience due to physical limitations. However, Derrida indicates that supplementation may enhance experience. He suggests, "the supplement is an adjunct, a subaltern instance which *takes-(the)-place* [*tient-lieu*]. As substitute, it is not simply added to the positivity of a presence, it produces no relief, its place is assigned in the structure by the mark of emptiness. Somewhere, something can be filled up of *itself*, only by allowing itself to be

filled through sign and proxy" (145). The supplement, then, is not simply a thing in-of-itself, nor is it merely an addition to that which it serves a complementary purpose; instead, it adds to its complementary object, but in adding to it, the *supplement* also *supplants* it; it becomes the *supplemant*. The supplemant enhances and replaces its object, until one cannot be clearly differentiated from the other.

Within cyborg semiotics, the most critical supplemant is technology itself. Humanity is organism, comprised of flesh, blood, bone, organs, etc. However, humanity has evolved past simple flesh-bag status through its interfactions with technology. Technology supplemants humanity's abilities, raising them far beyond the capabilities of the human body alone. Humans can breath in space, move in excess of the speed of sound, and kill tens of thousands with the touch of a button. Breathing, movement, and killing are all functions the body may perform on its own; however, all these capabilities may be performed in both qualitatively and quantitatively "superior" manners through technological supplemantation. In "The Natural Cyborgs: The Stakes of Bergson's Philosophy of Evolution" (2010), Paola Marrati discusses Henri Bergson's argument regarding supplementation of the body by technology, which he regards as interchangeable:

> In Bergson's account nothing essential differentiates organs and machines; what distinguishes them is just the "stuff" of which they are made. Organs are "organic tools," while machines are "inorganic tools"; that is to say, they are different chemical formations, but they serve analogous purposes and have analogous functions.

> As a result, and again using Derridian terminology, not only does technology supplement biology, for Bergson, but biology in its turn supplements organisms and machines, "artificial" devices and "natural" organic functions: only different cognitive strategies and material formations for the purpose of coping with and modifying the environment. (11-12)

The machinic supplemant is undifferentiated from the organic components of a cyborg in this paradigm; distinguishing between the two is a senseless exercise.

The first creature labeled as a *cyborg* came out of NASA's attempts to better acclimate organisms for the rigors of outer space. Of course, rather than experimenting upon a human with the potential disastrous repercussions should the interfaction fail, the experiment was conducted upon a laboratory mouse. Pictured to the right, this image of one of the original cybernetic mice appears on the front cover of *The Cyborg Handbook* accompanied by the case number NASw-512, the project number for the cyborg project created by Kline and Clynes. The final project report given by Robert W. Driscoll, a member of the cyborg project, attempts to define the critical nature of their project. He opens with the claim that the study of the cyborg is, in fact, the study of humanity. By understanding the interfactions of technology and humanity, the efficacy of the cyborg condition may be improved:

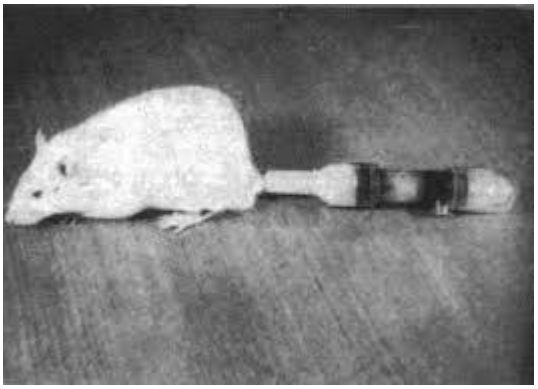

Figure 3. Osmotic Pump Mouse, Cyborgs and Space, Clynes and Kline

> The cyborg study is the study of man. It concerns itself with the determination of man's capabilities and limitations under the unpredictable and often hostile conditions of space flight, and the theoretical possibility of incorporating artificial organs, drugs, and/or hypothermia as integral parts of the life support systems in space craft design of the future, and of reducing metabolic demands and the attendant life support requirements. By this approach it is hoped that the efficiency and longevity of the life process on board space flights may be increased. (76)

Driscoll's argument is that the study of man is really the study of man's abilities, limitations, and how to overcome them. Technological supplemantation is required in order to achieve this stated mission goal.

However, not everyone agrees with Driscoll's analysis. In his abstract of Driscoll's report, L.E. Fazen challenges Driscoll's seemingly overly simplistic approach to the problems posed by the cyborg project; specifically, he criticizes Driscoll's apparent shortsightedness in using "cyborg" to indicate a stable human condition:

> While acknowledging the human's localized functionality, the report poses any limitation as a conspicuous deficiency, a lack: "The need for this work arises because man is basically a biological organism designed to operate within the parameters defined by the earth environment. Despite [*sic*] remarkable degree of over design, there are many areas in which man's capabilities fall short of requirements posed by such missions" (p. 80). In this paradox, 'mission' requirements exceed the boundaries of the human,

> who must functionally be replaced by cyborg efficiency. Notably, the report never fully acknowledges the drastic implications coded within the term 'cyborg,' and only reiterates the myth of a stable human identity.

Again, the human body is positioned as lacking, requiring supplementation (and, by extension, supplemantation). However, Fazen's derision of Driscoll for naively supposing a stable human identity is misplaced; Driscoll embraces the possibilities of humanity transformation, the very antithesis of stability. In his conclusion, Driscoll hopes that humanity continues to create new means of interfacting with technology. He anticipates, "Methods for augmenting and extending his limitations, which will be compatible with the state of the art and the applicability of man in a space mission will be derived from **CYBORG** in an effort to obtain the maximum integration of man into a man-machine complex" (81). Driscoll is not purporting that there is a universal identity for humanity, but an evolving one, supplemanted by technological ingenuity (of course, the argument can be made that metamorphic evolution is, in fact, the most stable aspect of humanity).

Supplemantation, then, is embedded in the origin story of both cyborg signification and, by extension, cygnification. The body is supplemanted by technology, even though the body creates the very technology which is supplemanting it. The body seeks out its own irrelevance, embracing its self-trivialization through its glorification of that which renders it insignificant. The body vanishes within the garden of technology which conceals its morphology, hiding it from close examination or analysis.

Yet technology is not only created by the body, but the body has also been reciprocally created by technology. Taylor comments on the degree of impact technology has had upon the body, morphing it over time for easier interfacting. He states, "Not only

did we make these necessary objects, but, within a framework of some 2 or 3 million years, the objects have physically and mentally shaped us. Without them or their incursion into our lives, our heads would be a different size, our body type would be different, we wouldn't be living in houses. There would be no houses" (location 148). The body, then, is not merely relying upon its interfactions with technologies in order to accomplish its objectives, but has actually remade itself in order to better accommodate its interfactions with the artific(e)ial objects it creates.

Even signification recognizes that the body and the technology which supplemants it are essentially inseparable. Clark provides an example of how signification has been impacted by the depth of interfactions with the body. Young Fins have used signification to identify modern forms of cygnification; specifically, they categorize the cell phone and the hand as a single unit:

> Finnish youngsters have dubbed the cell phone 'kanny,' which means extension of the hand. The mobile is thus both something you use (as you use your hand to write) and something that is part of you. It is like a prosthetic limb over which you wield full and flexible control, and on which you eventually come to automatically rely in formulating and carrying out your daily goals and projects. Just as you take for granted your ability to use your vocal cords to speak to someone in the room beside you, you may take for granted your ability to use your thumbs-plus-mobile to send text to your distant lover. The phone really did seem to be part of the man, and the Finnish slang captures the mood. (9)

This sort of supplemantation, so eloquently expressed through the Finnish colloquialism, uses signification to express the possibilities of cygnification in a very direct manner; the difference between the hand and the cell phone is negated for purposes of signification.

While the Finnish slang directly signifies supplemantation, cygnification does not require such contrived devices to convey meaning. For example, the keyboard that I am currently using to type this dissertation implies through the specificity of its design the presence and use of fingers. That is, keyboards account for human fingers in their particular and unique configuration. Ergonomic keyboards are designed to more readily accommodate supplemantation and, by extension, ease of interfactions. This does not mean that there are no other keyboard configurations which do not utilize fingers; Steven Hawking, for example, uses a keyboard which he accesses with his cheek. This means of interfaction, however, cygnifies differently than a standard keyboard; the configuration of the supplemantation cygnifies on his body and his own unique cyborg composition.

For purposes of gender identity, a common supplemantal technology is the dildo. The dildo is a technological penis, constructed to be utilized by those who do not have one, may not have full use of their own, want the pleasure of provided by one without the need of human contact, desire to add a dimension to their sexual life, want to invert the traditional male/female penetration interfaction, or seek to combine the use of a physical penis either simultaneously or contiguously with a technological one. Use of the dildo as both apparatus as well as cygnifier has been contentious; for example, in “Sexual Practice and Changing Lesbian Identities” (1992), Biddy Martin discusses Susie Bright’s conflict over the use of the dildo within the framework of a lesbian relationship, noting that while

earlier in her career she differentiated between the penis and the dildo, more recently she expressed remorse for making this distinction between machinic and organic penetrators:

> During her several years of working against lesbians' fears that penetration and the use of dildos might be imitative or even symptomatic of heterosexual desire, Susie Bright suggested over and over that 'penetration is a heterosexual as kissing', but she also went further to suggest that lesbians take credit for what they have offered all the heterosexuals who now benefit from the multiple pleasures that lesbians discovered in that mobile phallus, the dildo. Bright recently explained that she regretted having stressed the distinctions between penises and dildos, and now encourages lesbians/women to develop our phallic fantasies, including fantasies that get materialized in butches' habit of 'packing dildos' when they leave the privacy of their homes. (105)

Though the dildo is supplemantary, its supplemantary nature does not diminish or negate either its physical or cygnifying characteristics. It cannot be dismissed, for example, as "merely" a supplemant; instead, the active choice to use a technological supplemant means that the cygnifying properties of the dildo are better defined than those of a biological component, as supplemanting the body is a decision on the part of the cyborg utilizing it rather than a biological accident. While this does not mean that all supplemants work counter to socially constructed biological normative identities (in fact, the vast majority of supplemantation conforms to such normative practices), supplemantation provides opportunities for oppositional cygnification through the extension of the body into physically discursive areas not otherwise accessible to the

unsupplemanted body. This is not because the body is incapable of participating in the discourse, but because the culturally defined parameters of participating in the discourse have been constructed to exclude specific bodies. Supplemantation allows the possibility of these excluded bodies to interfact with other cyborgs either in the manner prescribed by the discourse community or, potentially, to alter the discursive nature of a cy-syst altogether.

This facet of supplemantation's nature leads to the examination of another crucial Derridian concept, that of *play*. Derrida frames the notion of play against the framework of structure. All structures have a center, whose function is to limit the amount of play within the structure. The center demands adherence to its restrictions, reigning in anything that strays to far from its strictures:

> structure – or rather the structurality of structure – although it has always been at work, has always been neutralized or reduced, and this by a process of giving it a center or of referring it to a point of presence, a fixed origin. The function of this center was not only to orient, balance, and organize the structure – one cannot in fact conceive of an unorganized structure – but above all to make sure that the organizing principle of the structure would limit what we might call the *play* of the structure. By organizing the coherence of the system, the center of a structure permits the play of its elements inside the total form . . . . the center also closes off the play which it opens up and makes possible. As center, it is the point at which the substitution of contents, elements, or terms is no longer possible. At the center, the permutation or the transformation of elements

> (which may of course be structures enclosed within a structure) is forbidden. (“Structure” 278-79)

Within many cultures, precedence is placed on biological structures while technological supplemants, or at least supplemants which supersede particular biological structures, are either feared and/or viewed as sacrilegious For example, in the Bible, Genesis chapter 11, the story of the Tower of Babel warns against trying to use technological construction to rise to the level of God, while a comparable story appears in Greek mythology with the legend of Icarus. In modern popular culture, the danger of machines rising against humans is constantly warned against. Note, though, that in all of these cases it is the combination of humans interfacting with technological supplemantation that frightens the audience. John Clute comments how the Terminator, one of the most iconic hybrid organisms in recent times, specifically creates fear because of its supposed superiority to humans. He states, “what terrifies about this cyborg is that it is human, but also more than human” (55). Haraway agrees with Clute, noting that the Terminator is considered a technological face of evil. She claims, “the Terminator is the sign of the beast on the face of post-modern culture, the sign of the sacred image of the Same” (“Foreword” xv). The more-than-human traits of the Terminator provide the fear factor; if something is more-than-human (or, more precisely, the embodied human) then it can no longer *be* fully human. At what point, precisely, does the human cease and the supplemant take over?

However, if the dildo is considered, for example, does the organic or machinic composition really matter for interpretive purposes, or is it the cygnifying characteristics which provide meaning? In fact, the dildo may be regarded in much the same way as the Tower of Babel or the Terminator; it defies the limited confines of the body and provides

both capabilities and cygnification beyond that which the body utilizing it in-of-itself is either able or willing to provide. The more apparently biologically predetermined such functionality and cygnifying such traits are, the more those clinging to biological predeterminism will object to its supplemantation. Within some conservative Christian sects, the idea of a woman using a strap-on to pleasure another woman cygnifyies something abhorrent, as the supplemantation appears to go in direct contrast to biological predeterminism; the mythological structures which such sects have created does not permit this kind of technological play. The substitution of a technological component of a cyborg for one which is biological is considered an affront to such a structure, undermining the validity of the resultant cygn. According to such structures, this cygn does not cygnify in the same manner as its biological counterpart, but is a mockery of its supposed originator.

This supposed blasphemy, however, fails to recognize the truth - the penis and the clitoris are formed of the same biological material. In utero, the Y chromosome sends a signal to extend this biological matter out from the body, while the X chromosome leaves it in place. Trying to define the nature and limits of the penis is nearly impossible. They can be huge, short, fat, skinny, different colors, circumcised, sheathed, or even on a body that has a vagina and breasts. Does the presence of one set of sex organs invalidate the other? Can it not still cygnify in the same manner? Attempting to define the penis, much less use it as a descriptor of gender, ends up a fruitless task.

In this sense, then, the penis (and, subsequently, the phallus) does not exist. It can neither be clearly differentiated from the clitoris, nor it is it a useful descriptor of gendered identity. The dildo, then, does not threaten the masculine identity formed by the

penis or the phallus, because the penis is not a penis. In this sense, the dildo is a simulacrum in the sense of Baudrillard's classic definition: the simulacrum does not disguise reality, it covers the lack of existence of reality. He argues, "The simulacrum is never what hides the truth – it is truth that hides the fact that there is none. The simulacrum is true" (*Simulacra* 1). The play of cygnification by the dildo disguises the fact that there is no penis; it is simply a cultural creation, defined somewhat loosely against a patriarchal ideal of a penis, one which has never existed nor likely ever will exist. The dildo itself is real or, perhaps more precisely, it is hyperreal. Within the play of cygnification, though, its hyperreality makes it just as good of a cygn as any other, since the biological and machinic may be gleefully substituted for each other, transgressing the standard boundaries of cygnification and rejoicing in the interchangeability of living and never-living matter. Cygnification becomes a choice, not a biological imperative. Bodies with breasts may cygnify in manners previously reserved for those with penises, or even those with both sets of sex organs. The strap-on provides an eternal hardness, a form of hyper-cygnification, steadfastly defying attempts to undermine its cygnificance.

The nature of the simulacrum must be strongly considered within the cygnifying context of gender construction. Baudrillard marks the sequential progression of the image from profound reality to simulacrum:

> it is the reflection of a profound reality
>
> it masks and denatures a profound reality;
>
> it masks the absence of a profound reality;
>
> it has no relation to any reality whatsoever;
>
> it is its own pure simulacrum . . . .

> The transition from signs that dissimulate something to signs that dissimulate that there is nothing marks a decisive turning point. The first reflects a theology of truth and secrecy . . . The second inaugurates the era of simulacra and simulation, in which there is no longer a God to recognize his own, no longer a Last Judgment to separate the false from the true, the real from its artificial resurrection, as everything is already dead and resurrected in advance. (*Simulacra* 6)

In consideration of cygnification of the strap-on, it at first seems to be, in Baudrillard's terms, a reflection of a reality: the male body. However, it may quickly be moved into the category of that which denatures reality, in that it seems almost to mock the male member. In the third progression, the absence of the male member must be marked, for if the strap-on is present, the penis is not. Finally, the acknowledgement must be made that the strap-on has created its own reality, one separate from the reality of the penis; the strap-on has fully supplemanted its nominal original, no longer requiring such a looming presence to justify its cygnification as it interfacts with a body (or, for that matter, multiple bodies as part of a larger cybernetic structure).

This type of defiant cygnification should also be considered within the context of a concept described by Derrida as *sous rature*. Sous rature, according to Spivak's "Translator's Preface" of *Of Grammatology*, means that the word is "under erasure," which is to write the word crossed out, which indicates its inaccuracy. She defines, "This means to write a word, cross it out, and then print both word and deletion. (Since the word is inaccurate, it is crossed out. Since it is necessary, it remains legible.)" (xiv). The cygnification of what we signify as "male" must also be put under erasure. What

combination of biological and machinic components form this cygnified? Is there even enough consistency among particular recombined anatomical and created components which may be truly said to form this particular cygnifier?

There are numerous photographs of drag queens, for example, who have their makeup half completed. The drag queen to the left, for example, displays vastly different appearances according to the types of technologies with which s/he has interfacted. On the right, a beard trimmer has been used (a so-called masculine technology), but other than that, the face is relatively untouched. Masculine faces predominantly remain un(re)touched by technology, as such modification is considered unnecessary for the purity of the masculine cygn. The other side, however, screams of (hyper)femininity. Oversized rings and earrings clamor for attention, while carefully stylized flowing locks tumble in organized chaos down the side of the face. An elegant shade of lipstick clearly defines the lips' contours, while blush and eye shadow highlight bone structure and provide coloration. This simulacrum of femininity defies any attempt to withhold its cygnification, daring any challenger to reproach its message. Not "I am woman," but rather "I can cygnify as woman." Butler comments that gender is not biological, but rather constructed through repeating acts culturally regarded as gendered:

Figure 4: Drag Queen Dual-cygnifying, Leland Bobbe.

> gender is an identity tenuously constituted in time, instituted in an exterior space through a *stylized repetition of acts*. The effect of gender is produced through the stylization of the body and, hence, must be understood as the mundane way in which bodily gestures, movements, and styles of various kinds constitute the illusion of an abiding gendered self. (179)

While Butler argues that gender is produced through stylized repetition of acts, I would argue that in order to truly cygnify, it is not the stylized repetition of acts that constitute gender (or any other) identity, but rather the stylized repetition of interfactions. Chris Hables Gray argues that the strictures upon citizenship are gradually being lifted. He claims, "The definition of citizenship is freeing itself from gender-, race-, and class-based criteria and becoming an issue of competent participation in what some philosophers call a discourse community but what most of us would just label a meaningful conversation" (22). I would argue that until there is unbiased cygnification across these boundaries, then Gray's proclamation of equality is premature; that is, until a given body may cygnify in a self-determined manner without fear of reprisal, equitable citizenship will remain elusive. In *Citizen Cyborg* (2004), John Hughes convincingly points out that even the ability to cygnify in a particular manner does not create equitable citizenship, as taking advantage of the ability is often denied to those who desire access:

> Even where transsexuals have the right to change genders, they are often underemployed, victims of violence, and find it difficult to afford their sex-reassignment treatments. Technology makes possible the control of our sexuality, gender, and reproduction, but it is an ongoing political fight

> to ensure that society allows us to exercise those rights, and makes available the resources necessary to exercise them. (21-22)

While technology permits the capacity to cygnify in a desired manner, gaining access to the technology which would allow proper cygnification is all too frequently harshly circumscribed or even punished through both official and social restrictions and/or disciplinary measures.

The argument could be made that the penis serves a biologically cygnifying function which cannot be duplicated through machinic supplementation. However, to make this argument is a form of discourse control, restricting access to discourse according to biological predestination; it is a plea for a return to a strictly organic Holy City, one with a pulse and respiration, which exists only in mythology and religious hyperbole. Unable to return to this sacred mirage, anything diverging from its shimmering outlines is damned by those who attempt to bring about its (re)ascendance as an aberration.

CHAPTER FIVE: THE DISCOURSE ON CY-SYSTS

Observing that bodies and technologies form a semiotic system, while interesting, is trivial information on-a-par with knowing how to spell the seven dwarves' names backwards unless some useful application may be drawn from this argument. Foucault provides perhaps the most relevant example of application in his treatise entitled "The Discourse on Language" (1972). In this essay, Foucault eloquently explains how language is subject to forces that control and delimit not only the language itself, but also those who participate in the language's usage. If, as I have argued, cy-systs form a semiotic structure, then they are subject to the same types of control mechanisms that other signifying systems are prone to. These disciplinary methods impact the entire system, from participants in the system (speakers), to those who attempt to interpret the system (observers/listeners), to the rules which govern the system's functionality, to the morphology of the system and its subsequent delimitations. Understanding the nature of these restrictions may lead to a clearer understanding of how particular cy-systs function, where their vulnerabilities lie, and how they may be effectively opposed when they become oppressive to those who must function within their constraints. If a cy-syst forms discourse, then the manner in which it functions as a discursive system may be understood and reformed.

Foucault's argument makes a basic assumption regarding discourse: that its production is controlled. In particular, he notes that there are certain things which are prohibited from being said. He states, "In a society such as our own we all know the rules of *exclusion*. The most obvious and familiar of these concerns what is *prohibited*. We know perfectly well that we are not free to say just anything, that we cannot simply speak

of anything, when we like or where we like; not just anyone, finally, may speak of just anything" (216). In speaking of cyborg semiotics, the question then becomes understanding the nature of *what* types of cygnification are denied to *whom*,

One clear differentiation Foucault draws in relation to exclusionary principles is madness versus sanity. Foucault argues that if a person's language does not conform to the common discourse of their time, then society considers that individual mad, and their speech is discounted as meaningless; however, in direct contrast to this supposition, the madman's language is also supposedly capable of revealing deeper truths than those attributed to the common person, disseminating hidden knowledge and serving an oracular function (217). Either way, there is a dismissive attitude towards the signification of madmen, and proof of their insanity is disclosed through their inability to signify in terms that the common culture can readily interpret. I would argue that an inability to cygnify in terms the common culture can interpret has also been interpreted as insanity; that is, the inability (or refusal to) form easily recognizable cygns has been interpreted as a mental deficiency.

One of the most common cygnifications interpreted as madness has been homosexuality. Still today, homosexual behavior is considered by some to be a cygn of mental deficiency requiring correction. There are camps where parents send their children who display cygns of homosexuality for conversion therapy, a cruel form "treatment" designed to force them into more acceptable forms of heterosexual cygnification. The methods used to convert homosexuals may include aversion therapy, punishment for displaying cygns interpreted as homosexual, and shaming (Haldeman 260).

Because homosexual behavior does not conform to the common cygnifying discourse, any cygnification which may possibly be interpreted as homosexual is dismissed as hollow and lacking truth. Since such cygnification is interpreted as aberrant and nonsensical, it obviously must be corrected, much like a child who attempts to speak but utters only queer babblings. Patriarchal society claims that it has a responsibility to those who are unable to speak properly to correct their deficiencies, bringing their signification into that of the common fold. Those who cannot, or will not, speak properly are either mentally incompetent or willfully nonconformist (possibly even criminal). Either of these positions require societal intervention to protect the language from influences which could disrupt their organizing structures. In much the same manner, proponents of aversion therapy consider homosexuality to be a deviation from common cygnification that society must rectify. In "Gay Rights, Patient Rights: The Implications of Sexual Orientation Conversion Therapy" (2002), Douglas C. Haldeman notes that those who enforce conversion therapy operates on the premise that homosexuality is a learned behavior; as such, it can be "corrected" through societal intervention, bringing the offender back into the common cultural fold (260).

And yet, as Foucault mentioned, those who are considered insane because of their cygnification may also be considered spiritually gifted or oracular. Anzuldua comments on the belief in some cultures that those considered anomalous are also gifted. She observes, "there is a magic aspect in abnormality and so-called deformity. Maimed, mad, and sexually different people were believed to possess supernatural powers by primal cultures' magico-religious thinking. For them, abnormality was the price a person had to pay for her or his inborn extraordinary gift" (41). The supposedly aberrant cygnification

of homosexuals results in an interpretation of madness, but also means that power may be accorded to the individual cygnifying.

Yet this interpretation of madness is simply a rejection of cygns outside of conventional cygnification. Anzuldua argues that those who do not follow heteronormative sexual behaviors are not confused, but rather are struggling against a culture which dictates adherence to a specific cygnification. As Anzuldua says, "Contrary to some psychiatric tenets, half and halfs are not suffering from a confusion of sexual identity, or even from a confusion of gender. What we are suffering from is an absolute despot duality that says we are able to be only one or the other. It claims that human nature is limited and cannot evolve into something better" (41). Cygnification in these terms is limited to a singular cygnifier; each cygn may only possess one possible cygnification, limiting the cygn to only cygnifying the monolithic truth that patriarchal normativity permits.

If homosexual cygnification is not a cygn of madness, then it is often interpreted at the very least as an untruth, some type of rebellion against society's normative cygnifications. De Beauvior observes how this prejudice was engrained early on into psychotherapists' approach to attempting to cure homosexuality. She complains, "Psychoanalysts' great error, through moralizing conformity, is that they never envisage it as anything but an inauthentic attitude" (419). The implication of this error is that homosexual cygnification is never genuine, but instead is simply a cyborg who fails at cygnifying in a manner appropriate for their organic components. This supposed deviance from normativity may have been considered either a willful opposition or merely a misinterpretation of cygns on the part of the homosexual; either way, this so-called

delusion regarding the cygnifying function of gender was construed as requiring corrective intervention.

Foucault comments that the will to truth, which is to believe that one knows the essence of what something really is and to enforce this truth on all who fall under its sway, always counts on institutional and structural supports. However, even beyond institutional support, the way in which knowledge is controlled exerts an even greater force throughout a culture:

> But this will to truth, like other systems of exclusion, relies on institutional support: it is both reinforced and accompanied by whole strata of practices such as pedagogy – naturally – the book-system, publishing, libraries, such as the learned societies in the past, and laboratories today. But it is probably even more profoundly accompanied by the manner in which knowledge is employed in a society, the way in which it is exploited, divided and, in some ways, attributed. (219)

Within a cy-stst, this will to truth is also enforced by institutionalized practices which determine how a body is able to interfact with other bodies and technologies. For example, a critical issue transgender people currently face is the right to use the public restroom of the gender with which they associate themselves. The will to truth within traditional Western culture states that the organic components of the body determine the truth of gender, and so the cyborg's ability to interfact with the restroom which transgender people attribute themselves to is constrained.

The will to truth punishes those who are not interfacting in a socially normative manner economically as well. Whereas a heterosexual couple may reap the benefits of tax

deductions, homosexual couples or polyamorous families are denied the same privileges; since they do not cygnify in a manner that is recognized in the common parlance as *family*, the benefits accorded this cygnifier are denied; interfacting with cybernetic entities such as the government in the manner that more traditional cybernetic units that cygnify as *family* is circumscribed. Yet, trying to identify what constitutes the family is not an easy task. As Gray eloquently points out, "The family is a moving target and an evolving, ever-changing institution" (144). He continues, exploring how surrogates, adoptions, and same-gendered relationships make such attempts to delimit such a unit according to standard cygnification nearly impossible; unfortunately, such definitions are left to the government. Gray complains, "The government has the power to define a legitimate family by what it legislates and funds" (149). The ability to interfact in a manner which individuals consider appropriate for themselves is constrained by the government because of the potential disruption of traditional cygnification.

Another means of control, one which Foucault claims is controlled by "internal rules" (those concerned with taxonomy and organization), is commentary. Commentary refers to texts which, through repetition and observation, explain the primary text. It labels the text, imposing upon it a sort of timelessness which becomes fixed through reiteration. Commentary dictates and delimits the possibilities of interpretation; these secondary texts describe the possibilities of the primary text, guiding those who seek to comprehend the primary text along the appropriate culturally dictated construction.

An interesting example of cybernetic commentary is the way in which websites for children's toys guide users along specific gendered roles in their interfactions with the toys. Toys themselves would be the primary text, as they directly interfact with the body.

The website serves in the role of commentary; it provides specific direction regarding the appropriate interfactions with the toy, including dictating which bodies should interfact with the toys and in what manner those interfactions should take place.

In "Rethinking the New Literatures of Childhood: Cultural Models of Gender in Popular Websites" (2008), Jennifer Stone and Erica Veth performed a close analysis of websites which focused on creating extended experiences with toys, and they discovered exactly how these websites served in the role of commentary, shaping interpretations of the user's experience with the toys. They focused on four toy brand websites: Barbie, American Girl, G.I. Joe, and Transformers. The Barbie website portrays girls as well-acquainted with typically feminine technologies and, of course, bedecked in traditional pink accoutrements. Girls are encouraged to engage in traditional "girly" activities, such as shopping, cake baking, cleaning, and taking care of babies (28). On the other hand, the American Girl site encourages a more wholesome, culturally diverse play, with all of the girls pictured holding a doll that resembled themselves. However, there was still an emphasis on activities which would be considered domestic (29-30).

The Transformers and G.I. Joe websites, on the other hand, focus on competition and technical knowledge. There are clear-cut differentiations between good and evil, with the user interfacting in a prescribed manner with the characters. Players can also engage in taunting activities against their opponents in a display of masculine bravado (30-31). Male authority and skills are reinforced through repetition of the cygns traditionally associated with the masculine role.

These interfactions mimic the role of written commentary. Foucault defines the role of commentary as allowing new dialogue about what exists, but new dialogue which

forbids diverse interpretations. Commentary limits what interpretations are possible of the original text:

> [Commentary] permits us to create new discourses ad infinitum: the top-heaviness of the original text, its permanence, its status as discourse ever capable of being brought up to date, the multiple or hidden meanings with which it is credited, the reticence and wealth it is believed to contain, all this creates an open possibility for discussion. On the other hand, whatever the techniques employed, commentary's only role is to say *finally*, what has silently been articulated *deep down*. It must – and the paradox is ever changing yet inescapable – say, for the first time, what has already been said, and repeat timelessly what was, nevertheless, never said. (221)

The websites allow the creation of discourses above and beyond those created by the original text. While there is no essential obligation for the G.I. Joe action figures to be involved in technical work, the website, serving in the role of commentary, creates a new discourse which builds this role into the interfactions with the toys; it obliges the child to understand the toys in a particular manner, one which the nature of the toy itself does not require.

Commentary does not only create new discourses, but it also eliminates certain possibilities of discourse, pruning the potential for branches to grow in a variety of directions that would be contrary to one controlled by the commentary. One way that the websites eliminate possibilities of discourse is in their portrayal of the opposite gender, or, more precisely, their lack of representation of the opposite gender. On the Barbie and American Girl websites, male characters serve exclusively in supporting roles, with

nominal representation throughout the site. While Ken, Barbie's longtime paramour, makes minimal appearances in a supporting role, the Barbie website does use the physical attributes and career prospects of various versions of Ken in a game to gauge whether or not an individual would serve as a suitable husband. A man's worthiness is reduced in this game to predetermined categories of consensus handsomeness and employability as the sole factors of his value as a partner. American Girl, on the other hand, also reduces men to solely supporting, often traditionally stereotypical, roles, such as the bratty brother or hardworking father. In neither case are male characters featured either prominently or in roles other than those of stale, generic stock characters (31).

While male representations are limited on the Barbie and American Girls sites, their minimal presence is better than the utter lack of feminine representation on the Transformers and G.I. Joe websites; there is *no* female presence on these sites, either in voice, word, or image (32). This complete lack of representation discounts the possibility of feminine influence; in fact, the looming absence of all things female speaks volumes, as participants are taught through the commentary that women have no place in adventure, competition, or technology.

The statements that these websites make about the roles of men in women's lives as mere supplementary players and the absence of women in men's worlds makes a defining statement about interactions and interfactions with the opposite gender. There are no options for men to be anything more than bit players in their interactions with women, and women are denied the privilege of even existing in male realms. While the toys themselves may permit gender diversified interfactions, the commentary on these sites refuses cross-gender interfactions beyond specified traditional parameters.

In addition to commentary, the author also plays a critical role in the interpretation of a given text; however, as Foucault argues, the author is not necessarily the individual who penned a text. Rather, the author is the principle which brings a group of texts together in a coherent unity. As Foucault stipulates about the author, "Not, of course, the author in the sense of the individual who delivered the speech or wrote the text in question, but the author as the unifying principle in a particular group of writings or statements, lying at the origins of their significance, as the seat of their coherence" (221). Foucault continues, noting that this principle waxes and wanes in importance across disciplines and time, according to certain cultural priorities. For example, in the sciences pre-seventeenth century, the value of a given proposition was tied closely to the person who conceptualized the idea. Over time, the significance of the author principle has faded, with the evident truth of the concept itself gaining traction over the ethos of the author. Conversely, the merit of a literary work has become more closely bound to its author, as the demand for accurate attribution has become a priority over simply judging the merit of the text independent of the author.

Within the realm of cybernetic discourse, the role of the author (or perhaps more accurately, the author function) is to continue to provide coherence and continuity of the interpretive act. Within the realm of cybernetic discourse, the manufacturer assumes the role of the author function, and the product in conjunction with a body is partially judged upon the presumed identity of this technological author. For example, a handbag made by Gucci permits an interpretation of a cygn in a different light than a bag made of comparable (or even superior!) materials and craftsmanship created by the local anonymous yet talented handbag designer. Returning to the previous example, the

conception of female character by the Transformers would be met with certain expectations; this character would not pass through the same interpretive lens as one originated by Barbie or American Girl. She would not draw on the same type of cultural and socio-cultural heritage as American Girl, nor would she appear in the "pink aisle" and be associated with shopping and spouse hunting as she would be if Barbie had originated her. Her interpretive paradigm would be through the tech-savvy world of bio-mechanical robots; she would either be outside of the main plotline, supplementary to the driving story, or an outsider to the plot, a "tough" woman who, through exceptional skills foreign to her gender, forced her way into this masculine world where the men begrudgingly accept her. Either way, the author function limits the cygnifying prospects of such a character; she could not be a primary character focused on her cultural heritage baking cakes without a herculean effort to redesign the cygnification of the corporate author.

In this cybernetic context, control can take a variety of forms, all of which restrict interpretation of the primary text: the toys (or, more accurately, the cygn formed by an individual interfacting with the toys). While Stone and Veth focused on websites, other means of commentary may include advertisements, television shows, and movies. All of these fall under the category of the author principle, as they are joined by a faceless corporate author. Foucault describes the way in which the author principle, using a multiplicity of texts attributed to an *I*, controls discourse. Foucault compares, "Commentary limited the hazards of discourse through the action of an *identity* taking the form of *repetition* and *sameness*. The author principle limits this same chance element through the action of an *identity* whose form is that of *individuality* and the *I*" (Foucault

222). Whereas commentary removes possible interpretations through repetitive (re)interpretations, the author principle ties all potential interpretations into a singular origin story which removes the prospect of divergent cygnification.

Foucault defines the concept of 'disciplines' as a further limiting factor in the formation of discourses. Whereas commentary reiterates truths about a primary text, disciplines are ways of knowing and formulating new truths about texts in a specified subject area. Such truths must be created using methodologies accepted by the discipline; those created outside such methodologies may be rejected, despite the obvious truthfulness of the proposition. As Foucault claims, disciplines fix the means of knowing truth, preventing interpretation outside of certain methodologies. Foucault defines, "Disciplines constitute a system of control in the production of discourse, fixing its limits through the action of an identity taking the form of a permanent reactivation of the rules" (224). Within cybernetic discourse, such constant reactivation of the rules denies any unorthodoxy (even when faced with a reality which directly contradicts the "truth" revealed by the rules) and enforces a particular response to specific cygns. Disciplines embrace only those realities which conform to their prescribed methodologies of knowing while rejecting those which, though perhaps more accurate, veer off their well-trod paths.

Cybernetic discourse is subject to disciplinary control in the same manner that signification is. An interesting example of this disciplinary issue arose within the world of toys after the recent release of *Star Wars: The Force Awakens*. When creating multi-toy packaging, Rey, the lead character of the movie (and the first female lead character in the series) was inexplicably left out of the set, as well as excluded from the Star Wars

version of the Monopoly game. According to Hasboro, the company who manufactures the Star Wars toys (and who is also the manufacturer of both Transformers and G.I. Joe), the official explanation for Rey's mysterious absence from these sets was that the company desired secrecy regarding Rey's importance to the plot; however, according to a widely circulated article entitled "Where's Rey?" by Michael Boehm, the reasons for her exclusion have more to do with the discipline of the toy industry than any desire for mystery.

Boehm cites Elizabeth Sweet, professor of sociology at the University of California Davis and researcher on the gender divide in toy manufacturing and marketing, who comments that the industry has reached a fifty-year peak in the division between toys designed and marketed for boys and girls. Boehm then cites an industry insider who was part of the meetings to determine the consistency of the packaging; Rey was specifically excluded because of the belief that her inclusion would repel young boys from purchasing the set:

> At first, discussions were positive, but as the meetings wore on, one or more individuals raised concerns about the presence of female characters in Star Wars products. Eventually, the product vendors were specifically directed to exclude the Rey character from all Star Wars-related merchandise. . . ."We know what sells," the industry insider was told. "No boy wants to be given a product with a female character in it." (Boehm)

The blatant disregard toy manufacturers showed for Rey was so great that Darth Vader was included in the new Monopoly game in lieu of Rey, even though he did not appear in

the film; she was also left out of the "Battle Action Millennium Falcon" playset, even though she was the Millennium Falcon's pilot.

Unfortunately, the Star Wars franchise is not alone in such gender nullification in toy marketing; the Guardians of the Galaxy playset omitted Gamora, the female lead, while the Avengers playset eliminated Black Widow, the only female Avenger as well the only absent team member, because, according to Boehm's insider source, her tight black outfit makes her too risqué for the so-called family values audience toy companies target. Widespread violence is apparently acceptable within the discourse of toy manufacturing, but a black outfit (which, by the way, conceals her body completely) threatens family values.

The gender bifurcated toy industry operates in the manner of a discipline, making truths according to preset methodologies which defy logic or even reality. The final statement of the previous quotation regarding manufacturer's attitudes towards gender and toys reveals two very basic operating procedures of the toy manufacturing discipline, neither of which are grounded in reality, but rather in perpetuating certain gendered cygnifications. The first is that boys would not want to purchase an action figure of a kick-ass female character, and the unspoken counterpoint to this statement is that girls would not purchase Star Wars merchandise. If the company considered that female fans might purchase Star Wars toys in equal quantities with their male counterparts, then they would launch marketing campaigns aimed at a female audience. Unfortunately, neither of these propositions were considered valid within the constraints of their discipline. Within the toy manufacturing discipline, the methodologies for creating truth include an irreparable division between the desires and interests of boys and girls. This supposed

truth holds in spite of the outcry raised over the repeated exclusion of female characters and recent examples of failed traditional marketing along gender lines; for example, according to Boehm, despite flagging sales in traditionally popular gender-targeted toy brands, companies will not abandon their marginalization of female characters. Boehm observes, "'Princess toy sales are in freefall. Disney can't give away princess toys anymore,' according to the insider. And yet, the insider said, the directive is there: *Maintain the sharp boy/girl product division. Marginalize girl characters in items not specifically marketed as girl oriented.*" The discipline will continue reactivating this rule to create truth within its discourse.

As opposed to disciplinary control, Foucault addresses other measures which may be deployed to minimize access to discourse. The first type of discourse segregation that he defines is ritual, which requires specific formulas be followed in order to validate the ethos of the speaker:

> Ritual defines the qualifications required of the speaker (of who in dialogue, interrogation or recitation, should occupy which position and formulate which type of utterance); it lays down gestures to be made, behavior, circumstances and the whole range of signs that must accompany discourse; finally, it lays down the supposed, or imposed significance of the words used, their effect upon those to whom they are addressed, the limitations of their constraining validity. (225)

Ritual isolates individuals with the proper qualifications to signify in the prescribed manner, while pruning away those considered ineligible for such signification.

Within cybernetic discourse, cygnification may also be controlled by ritual, defining who may and may not speak according to prescribed parameters. bell hooks provides a classic example of ritual cygnification and the challenges it poses to those who are ineligible to participate. In the late 1800's, the fight was underway for suffrage for both women and African-Americans. African-American men claimed that if African-American women joined with white women as suffragettes, then the battle for voting rights for African-American men would suffer. However, supporting this fight would do nothing to give African-American women the right to vote. In frustration, hooks notes the catch-22 that black women faced in supporting either women's suffrage or black male suffrage. She recalls, "Black women were placed in a double bind; to support women's suffrage would imply that they were allying themselves with white women activists who had publicly revealed their racism, but to support only black male suffrage was to endorse a patriarchal social order that would grant them no political voice" (3). There was no clear way forward for African-American women to gain the right to vote; either group with whom they chose to affiliate themselves would leave them disenfranchised.

Considered within the formula of ritual cygnification, African-American women found themselves in a bind. They were denied the ability to cygnify as a white woman, which deprived them of access to the privilege entailed by such cygnification. By virtue of their skin color, they could not interfact with the same technologies as their Caucasian counterparts and create a comparable cygn within the dominant culture; hooks notes that at the same time that white women were able to start separating themselves from cygnifying motherhood and sex object, African-American women were supposed to be devoted to mothering and were being viewed more overtly as sex objects (6).

Yet if they threw their support behind the issue of voting rights for African-American men, their situation did not improve. hooks notes that black men fully expected women to assume a deferential posture to black men and acquiesce to a submissive role. She complains, "Black male activists publicly acknowledged that they expected black women involved in the movement to conform to a sexist role pattern. They demanded that black women assume a subservient position. Black women were told that they should take care of household needs and breed warriors for the revolution" (5). While African-American men were writing policy papers (interfacting with writing technologies), African-American women were expected to make phone calls and fetch coffee; the cygns that they formed were subservient to those dictated by men (5). African-American women could neither cygnify in a manner recognizable as "woman" nor "Black." They could not fulfill the appropriate qualifications to fully cygnify as either one of these categories and, as such, any cygnification was denied appropriate validity. Instead, they were left in a limbo of ineffective cygnification, paralyzed in any attempt to be recognized as an independent cygn by either mainstream society or within patriarchal African-American culture.

Ritual prescribes the appropriate gestures which must be fulfilled in order to participate in discourse. On the other hand, fellowships of discourse, according to Foucault, limit the speaking roles within discourse to a closed community, circulating it within a limited group according to specific rules and, despite confined circulation, those who speak are never threatened with the removal of power (225). hooks provides an example of fellowships of discourse: the discourse of violence shared by both African-

American and white men, a discourse within which white men acknowledged black men with respect:

> Another bonding element was the black male's acknowledgement that he, like the white male, accepted violence as the primary way to assert power. White men reacted to black male violence with the excitement and glee men have traditionally expressed when going to war. Although they attacked black militants, they respected them for their show of force. Since the 60s black power movement, white men have more readily accepted black men on police forces and in more leadership positions in the armed forces. . . . Despite overt racism in the sports arena, it is there that black men were first able to gain a degree of positive recognition of their masculine prowess. Racism has always been a divisive force separating black men and white men, and sexism has been a force that unites the two groups." (99)

The cygnification of violence is the foundation of this particular fellowship of discourse; violence joins those who participate in it and opens doors for those who wish to cygnify violence in socially acceptable manners. In this case, despite rampant racism, African-American men were invited to participate in interfactions with technologies in larger cygns which cygnified violence in mainstream culture: police forces, military, and sports.

The propensity for violence allowed entrance into this fellowship of discourse, yet it remained closed to women. Title IX has still not balanced inequality of representation in sports, especially those which require violence. As a rugby coach, I have been at many

events where the boys are participating while parents sit on the sidelines with their daughters. When I encourage the girls to try rugby, the parents usually reject the notion with no other clarification than, "She's a girl!" This explanation, in their eyes, is considered sufficient for a girl's exclusion from the rough sport. Additionally, only recently have women in the military been permitted to participate in all roles; active combat roles especially were solely open to men. This fellowship of discourse requires masculine organic parts for entry to its violent mysteries; the ability to "speak" via cygnification is denied to women within this fellowship of discourse.

Whereas fellowships of discourse have a closed membership which requires admittance to access its secrets, another form of discourse control, doctrine, is invested in dissemination of its principles as widely as possible. However, according to Foucault, doctrine requires strict allegiance to that which is spoken by the speaking subject:

> The speaking subject is involved through, and as a result of, the spoken, as is demonstrated by the rules of exclusion and the rejection mechanism brought into play when a speaker formulates one, or many, inassimilable utterances; questions of heresy and unorthodoxy in no way arise out of fanatical exaggeration of doctrinal mechanisms; they are a fundamental part of them. But conversely, doctrine involves the utterances of speakers in the sense that doctrine is, permanently, the sign, the manifestation and the instrument of a prior adherence – adherence to a class, to a social or racial status, to a nationality or an interest, to a struggle, a revolt, resistance or acceptance. Doctrine links individuals to certain types of utterance while consequently barring them from all others. (226)

Doctrine forces particular utterances upon speakers according to specific allegiances; the possibility of any other signification is nothing less than a threat to the integrity of the group.

hooks examines the manner in which doctrine guides and controls inter-racial relationships. According to hooks, both racist whites and African-American men have used the threat of degradation to discourage African-American women from inter(f)actions with white men. This fear creates a phobia of white men that prevents black women from creating or maintaining normative relationships with white males, causing them to live in constant terror of being raped in much the same way that racist whites have spread the myth of black rape among white women (67-8).

Another way in which doctrinal adherence, according to hooks, has been used to dictate the power of African-American men over African-American women has been the historical (supposed) necessity of a patriarchal structure within the African-American community. hooks argues against the idea that the cruelest thing done to black men was reducing them to the status of black women:

> Sexist historians and sociologists have provided the American public with a perspective on slavery in which the most cruel and de-humanizing impact of slavery on the lives of black people was that black men were stripped of their masculinity, which they then argue resulted in the dissolution and overall disruption of any black familial structure. Scholars have argued further that by not allowing black men to assume their traditional patriarchal status, white men effectively emasculated them, reducing them to an effeminate state. Implicit in this assertion is the

> assumption that the worst that can happen to a man is that he be made to assume the social status of woman. To suggest that black men were de-humanized solely as a result of not being able to be patriarchs implies that the subjugation of black women is essential to the black male's development of a positive self-concept, an idea that only served to support a sexist social order. (20-21)

Both of these doctrinal positions (the denial of the possibility of healthy interracial relationships and the subjugation of African-American women as necessary for the healthy self-perception of African-American men) are dedicated to what appears on the surface to be a racial agenda, yet are actually devoted to maintaining patriarchal structures within the African-American culture. As Foucault claims about doctrine, these positions diffuse, spreading as widely as possible among the African-American community and demanding reciprocal allegiance to the doctrine from their adherents. Adherence to these doctrines removes all possibilities of cygnification outside of their parameters. For example, in the case of the first position, the potential for a relationship between a white man and an African-American woman to cygnify as "family" is eliminated. Placing a female African-American body in cybernetic structure with a white male body who cohabitate within the technologies of a shared home, bank accounts, etc., and then in turn produce the additional organic components of children, would result in a misreading of family according to this doctrinal restriction. The second doctrine jettisons the possibility of the cygnification of "equality" between male cygns and female cygns; the feminine must be inferior and at the mercy of the masculine. According to this doctrine, a male body should not be reduced to "women's work" (and, by extension,

interfacting with the technologies of women's work, thus cygnifying as *feminine*), since doing so would remove threaten its ability to cygnify as *masculine*; as mentioned earlier in the discussion of bodybuilding, masculine identity would consider itself to be threatened by the proximity of women cygnifying in a comparable manner (hooks 21-22).

All of Foucault's arguments come down to a basic point: discourse is a segmented process of writing, reading, and exchange. He describes, "discourse is really only an activity, of writing in the first case, of reading in the second and exchange in the third. This exchange, this writing, this reading never involve anything but signs. Discourse thus nullifies itself, in reality, in placing itself at the disposal of the signifier" (228). Discourse using cygnification is also an activity, but obviously not quite in the same manner as that formulated by language; writing, for example, is not a factor. However, the creation of the cygn (a physical image) using the body interfacting with technologies is comparable to the process of using a pencil, typewriter, or computer to generate a physical signifier. Foucault's point that reading is the second step of creating discourse simply means that for a sign to have valid meaning it must be interpreted; reading is nothing more that the act of assigning signification to the signifier. Within a cy-syst, cygns are also interpreted by those who encounter them; cygnifiers are assigned cygnification by those witnessing them. Finally, as within linguistic discourse, there is an exchange of cygns within cybernetic discourse, a reciprocal transference of cynification. Each exchange opens possibilities for further exchange of cygns, but also limits appropriate responses. However, as Foucault points out, discourse is completely at the mercy of the signifier's capability to signify; should the signifier fail, discourse itself collapses. Cybernetic

discourse is no different; should the cygn fail (there is an inability to acquire the proper components to form a particular cygn, for example) discourse will crumble.

Discourse, whether linguistic or cybernetic, is always delimited, formed, and restricted by a wide variety of controlling structures. Understanding that the same factors that fight to control linguistic discourse will also attempt to subvert cybernetic discourse permits the possibility of forming more effective oppositional methodologies. Once these structures are subverted, the restrictions on free discourse may be either undermined or possibly even removed, permitting freer, clearer, and more accurate discourse; for example, the revelation of resistance on the part of toy manufacturers to create female action figures may lead to websites which embrace cross-gender interfactions. However, assuming that cybernetic cygnification is somehow a special case, an exception to the standard rules of discourse, will mean that the structures which restrict it will remain effective, cloaked in secrecy and ignorance.

CONCLUSION: CYBORGS PAST AND FUTURE

The implications of cyborg semiotics are nearly limitless in their potential applications. Cyborg semiotics is, in many ways, a form of cultural studies; however, it is not simply a subfield of cultural studies, as the field of cultural studies is traditionally based in the humanities, while cyborg theory is unabashedly tied to the sciences. It is a Frankenstein's monster, a creature born of human(ities) and science, of emotion and logic, and of the organic and the machinic. It defies easy classification, and instead defines itself in *relationship to* other disciplines rather than *as a part* of them. In this way, it lives up to Stuart Hall's description of the broader scope of the cultural studies project in "Cultural Studies and Its Theoretical Legacies" (1992), in that it ties together a great number of structures under a single banner. Hall claims, "Cultural studies has multiple discourses; it has a number of different histories. It is a whole set of formations; it has its own different conjunctures and moments in the past. It included many different kinds of work. . . . It always was a set of unstable formations" (278). While he is speaking of cultural studies, these same parameters may be claimed as the outline of cyborg semiotics. The history of this discipline may be located in the sciences, the arts, history, literature, and countless other fields; cyborg semiotics brings these fields into direct conversation with one another, looking for cygnification neither in the person nor the technology (or people and technologies), but in the unique combinations which allow them to form meaning as a cygnifying whole.

Since cyborg semiotics is a hybrid discipline, it crosses previously impermeable boundaries with relative ease, carving paths where formerly there was only a forest of

unique trees. These paths may become roads, subways, or maglev trains which provide easy and swift movement between fields previously insulated by isolationism and protectivism. We are no longer secluded, individual humans; we can share in our common cybernetic condition.

There are several potential areas where cyborg semiotics may be applied; for now, I will restrict these examinations to literary theory, although other fields may find equal, if not greater, value from its potential revelations. First, I want to dispel the prospective argument that this theory only has applications for recent literary works. At the core of cyborg semiotics is the notion that humans have always been cybernetic; therefore, earlier works are just as susceptible to analysis through this theory as contemporary texts. Cyborg semiotics permits the analysis of cygnification within the context of the cygns of the era, regardless of the supposed advancement of the technology.

Historian Terry Jones provides an excellent example of this type of critical analysis in his monograph entitled *Chaucer's Knight: The Portrait of a Medieval Mercenary*. In his thoughtfully constructed argument, Jones contrasts Chaucer's signification of the knight to the way in which the knight cygnifies. According to Jones, the knight is traditionally construed as a paragon of chivalric virtue, upholding the principles of medieval honor and knightly valor (2). A surface reading of the language (the signification) which Chaucer uses to describe the knight would seem to support this interpretation; however, a closer reading of the language, specifically the adjectives, which Chaucer uses in his description of the knight prove the ambiguity of language (Derridian play), and, thus, ambiguity of interpretation. For example, Jones points out that while the word *chivalrie*, which Chaucer claims the knight loved, could have been

used to mean the chivalric code of ethics, it could have just as easily have been interpreted to mean nothing more than cavalry warfare. Another descriptor of the knight, that he was a "worthy man," could have been interpreted by Chaucer's contemporaries as meaning someone who was a good and noble person, but could have also been taken to mean someone who was of high social status (32). In fact, every descriptor of the knight's character that Chaucer applies could not only have positive implications, but also could just as easily have negative or neutral ones. In other words, trying to locate the knight's identity strictly through these linguistic signs is impossible; the language Chaucer uses is simply too indeterminate.

However, a cybernetic analysis is much more revealing than a cursory examination of Chaucer's signs. Because this is a literary text, Chaucer is obviously using signifiers (which are, of course, subject to play) to convey meaning, but a close examination of the precise spelling of this particular "knight's" cygn reveals details which point to a particular cygnification contrary to the popular scholarly interpretation of the knight based on signification. That is, in order to correctly understand the knight, his cygnification must be interpreted from Chaucer's signification of how he is spelled. How he chooses to interfact within his cy-syst, as well as which cy-systs he chooses to participate in, must also factor into an understanding of both his immediate cygnification as well as the larger discourse in which he engages.

The sign "knight" could have been applied to a wide variety of men serving in military organizations during medieval times. A modern audience commonly considers this signal as signifying someone who is a landholder, closely follows chivalric virtues, and was granted the title by an appropriate member of the nobility, yet Chaucer's

audience would have been aware of the wide variety of men who could have fulfilled the signification of this sign. In addition to the powerful knights of the time, there was also the "poor knight," often a small landholder who was impoverished due to fulfilling his military obligations; all knights were required to equip themselves properly and serve their liege lord in military operations. Another possibility for fulfilling this sign was the younger son of a noble family who, possessing nothing from his family but a title, sought what money he could through adventuring (25-6).

The signifier *knight* also implied that the one bearing it should have some allegiance to a liege lord, the chivalric code, and come from a family entitled to bear the title. Yet as Jones points out, this was not necessarily the case during Chaucer's era. One of the most notorious English mercenaries, Sir John Hawkwood, was never officially knighted as far as any records are concerned; despite this lack of official recognition, he bore the title of "Sir" and knighted those who served beneath him. He did not own lands, and he owed allegiance to no lord but those who paid for his services. He sometimes fought for the Pope against the Visconti of Milan, but usually waged war against the Pope on the Visconti's behalf. His followers were notoriously violent, plundering and raping as they went (16). None of these traits approximate the signification that the sign *knight* should bear.

This wide play available within *knight* means that Chaucer had to rely on some other means of providing his audience with a path to interpretation rather than relying exclusively upon the sign *knight*. As such, he carefully constructs the knight's cygnification in such a manner that his interpretive audience would understand what he means by *knight*; that is, while he could signify *knight* and then proceed to list the

negative traits associated with what is meant by the sign within this context, he instead uses the signifier and then proceeds to detail the cygnification of the knight in terms his audience would be able to contextualize.

Jones notes that Chaucer ensured that the audience knew that the knight had quality horses, but this is a characteristic equally important for a noble knight and a mercenary. It is interesting to note that in the Ellesmere illustration of the knight, which Jones conjectures could have been commissioned by Chaucer's son, Thomas, there is a brand on the horse. Branding, according to Jones, was a common practice of the times to prevent mercenary knights from selling their high quality mounts provided by their state of employment for cheaper mounts and pocketing the difference, a regular occurrence during this era (29). Jones argues convincingly that it is "not an unreasonable guess that the unknown artist of the Ellesmere Manuscript intended this 'M' branded on the Knight's horse to stand for 'Milano', and for the reader to identity the Knight as a one-time member of that most infamous organization of Englishmen abroad – the White Company . . ." (30). The horse is part of the cygnification of *knight*; the manner in which the technology of the brand comes together with the horse provides clues as to the interpretation of this particular creature in conjunction with this particular man; he is not a gentil member of the nobility, but a vicious mercenary.

Chaucer's description of the knight's garb also contradicts traditional knightly apparel. There is no glorious armor or sparkling accoutrements of chivalry. Instead, he wears a short coat of mail and, oddly enough, the gyphon (a sleeveless shirt worn over the rest of his armor) is made out of fustian. Fustian is not silk or any other fine cloth, but a thick material traditionally comprised of wool, cotton, or flax, and it is usually used for

blankets. It certainly was not a standard material for chivalric sigils, and would have left the knight unable to display his heraldic arms. Additionally, this type of garment would normally have been worn under the outer armor. In fact, according to the requirements of noble's apparel of the time, this garb does not meet the minimum legal strictures of proper armament for a knight of the realm (126-31). Yet unlike the nobility, mercenary knights held no such legal obligation to arm themselves in a particular manner; in fact, due to shortages of armor, they often piecemealed out what armor they did have among members of the unit: a helmet to one, a heart-piece to another, etc. (132). Jones claims that such attire was common to a more professional soldier by this period, which led to many believing that the glory of the battlefield was slipping away. According to Jones, "The shabby appearance of Chaucer's Knight was, by the mid-fourteenth century, the very trademark of the new breed of professional soldier. More than one writer complained that, as the mercenary had become the predominant element in the army, so the glamour of the battlefield had almost disappeared" (133). In other words, as the spelling of the participants in battle changed, so too did the cygns which comprised the battle. This shift in cygnification altered the discourse of battle itself to something many regarded as inferior to that which went before it; the level of discourse was considered to be diminished because of the alteration in cygnification.

Not only can this type of cybernetic discourse analysis be applied to works across time, but it may also be used to investigate other theoretical discourses. In the analysis I have performed throughout this text, I have chosen to take a feminist approach, but, quite frankly, I am teetering on the very top of the behemoth iceberg that lurks below the surface of possible exploration of this area alone. I could have just as easily used

Postcolonial, Marxist, or African-American theory. For example, what would the Signifyin(g) that Henry Louis Gates discusses in *The Signifyin(g) Monkey: A Theory of African-American Literary Criticism* (1988) look like within a cy-syst? For example, Gates makes the point that within African American literature there is a tradition of repetition and revision, with each generation hearkening back to those that came before while still putting their own unique touch on the final product. In terms of cyborg semiotics, how would this principle work? For example, repurposing a ball cap, which is traditionally worn with the brim facing forward, and wearing it off to the side or backwards, thus still acknowledging the original interfaction while making it unique, provides an alternate cygnification while still utilizing the original material (no pun intended). The same argument could be made about wearing pants in a low slung manner; while the cyborg is comprised of the same components, the manner in which the body and the technologies interfact creates an alternate cygnification.

In the case of Postcolonialism, cyborg semiotics could be used to further explore the plight of the subaltern. Said argues, for example, that the East is exoticized by the West, and that the East is often regarded as unknowable. How would this transfer to the cybernetic realm? Is the cygnification of the cygns within Eastern cy-systs really unknowable, or are they simple regarded as inferior to those in the West and, therefore, dismissed as irrelevant? The subaltern would also be an interesting subject of exploration. In what ways does the subaltern cygnify? How is the duality of the subaltern's cygnification, utilizing both the technologies of the indigenous and the colonizing cultures, problematic? Is there opportunity within this conflicted cygnification to create understanding and growth for both cultures, or even to aid the decolonization process?

These questions are just the beginning of the nearly infinite directions in which cyborg semiotics may eventually assert its presence. There is a distinct need to come to a clearer understanding of cyborg semiotics, as we are navigating an increasingly complex and intertwined global cy-syst. Breakdowns of interpretation between cy-systs which have been separate but are now interfacting regularly can result in disastrous misinterpretations between nation-states or international corporate entities. The sooner we realize that we how we read cygns impacts the manner in which we interpret the world around us and, thus, our responses to the cygns, the sooner we can work on creating clearer and more ethical methods of cybernetic spelling and grammar, rules of interfaction, and, ultimately, a more equitable global cybernetic discourse.

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APPENDICES

APPENDIX A: GLOSSARY OF TERMS FOR CYBORG SEMIOTICS

Cound Pattern – A unique configuration of bodies and technologies which form a cygnifier.

Cy-cyst – A system of cygns which is governed by cultural rules of interpretation. These cygns must be both created and interpreted according to these rules in order to form a cy-syst. The system of cygnification must be studied separately from the function of the technology. In Saussurian terms, this would be *la langue*.

Cyber-gibberish – Technologies and bodies interfacting in a manner which produces no meaningful cygnification within a particular cy-syst. What is cyber-gibberesh within one cy-syst, however, may cygnify within another.

Cyber-grammar – The study of the rules which dictate the interfactions between cyborgs

Cyber-spelling – The study of the rules which control the composition of individual cyborgs

Cyborg – A distinct unit comprised of a minimum of one organic and one machinic component interfacting with each other in a homeostatic relationship. While the homeostasis may be temporary, it still permits the identification of the cyborg as a cygnifier. While all cyborgs cygnify, some cygnifications are more precise than others; cyborgs may evolve before the cygnification changes to compensate for their evolution.

Cygn – The combination of a cygnifier and a cygnified; the cygn requires both in order to function within a cy-syst.

Cygnal – See *Cygnifier*

Cygnifier – A cyborg which serves in a cygnifying capacity. Comprised of at least one organic and one machinic component in a homeostatic relationship, the cygnifier alludes to a concept.

Cygnified – The socially constructed concept to which a particular cygnifier refers.

Cyntagmatic – The sequence of cygns in relation to each other. This relationship is both spatial and temporal, as both factors impact the resultant cygnification.

Interfaction – A combination of interface and interact, interfaction refers to the intimate connection between either the organic and machinic components of a cyborg or the connections between two different cyborgs.

Supplemant – That which both supplements and supplants another. Technology, for example, serves in this role for humanity, as it adds to human capability, but may also replace it. Technologies may also supplemant each other, as may cyborgs (and cygns).