

The Cyber-Performative in *Second Life*

by

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B.A., University of Victoria, 2007

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## Abstract

I argue that current descriptions of the ways that language and computer code effect change (are “performative”) oversimplify the effects that utterances made in and through virtual spaces have on the real world. Building on J.L. Austin’s speech-act theory and Jacques Derrida’s deconstruction of Austin’s notion of performative language, I develop the theory of cyber-performativity. Though Katherine Hayles argues that “code” is more strongly performative than the utterances Austin focused on, Hayles’ analysis is founded on her problematic distinction between the logical computational worldview and the slippery natural-languages worldview. Cyber-performative theory builds on Hayles’ argument by showing that computational processes are as uncertain as natural languages: like human languages, “code” might always signify more and other than is intended. I argue that the social, economic, and political status of language changes as utterances made in virtual worlds such as *Second Life* simultaneously effect change in both real and virtual spaces.

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## **Introduction**

Many philosophers and theorists have argued that human culture and subjectivity are continuously reshaped by new forms of technology. As anthropologist Tom Boellstorff says, “Throughout human history, technologies—from the wheel to the book and beyond—have shaped forms of selfhood and community” (32). As evidence of this argument, digital technologies have created a culture of immediate answers and overwhelming information, a culture inhabited by subjects who comfortably occupy multiple subject positions. Computer-mediated communication continues to change the way people exchange information in our increasingly networked world—from military strategy and scientific data to personal details and intimate emotions. Exchanges of digital information are transmitted between what I refer to here as “virtual spaces.” These spaces can be as simple as the contents of a website, email account, or social-networking site, or as intricate as virtual worlds such as *World of Warcraft* and *Second Life*. Virtual spaces are unbounded by many of the physical and social forces that shape life outside of the computer network (in what is often referred to as the “physical world,” the “real world,” “meat space,” or “monkey space”). For example, the age, sex, race, gender, class, and sexuality of the sender or receiver can easily be effaced in emailed communication; and everyone can fly in *Second Life*. The apparent anonymity offered by virtual spaces has also encouraged many people to express themselves in ways not acceptable in their off-line lives; these expressions are as often angry and hateful as they are inclusive and tolerant.

New technologies continue to transplant real life into virtual spaces. Many elements of the real world are available on-line, including entertainment, interpersonal

communication, intimacy, violence, commerce, marketing, community, and art. Virtual spaces amass increasing social, economic, and political influence as life moves on-line. Many critics and media theorists argue that the line between “real” and “virtual” is breaking down as people jump on- and off-line more often and more rapidly.<sup>1</sup> However, little critical attention has been paid to the forces that drive these exchanges between real and virtual, or to the ways in which the influence of the virtual is communicated. Few theorists have examined the linguistic mechanisms by which simple acts of language—such as clicking mouse buttons or pressing keys on a keyboard—can immediately create dramatic changes in the physical world. I argue that the status and meaning of “language” is altered when utterances made in virtual spaces begin to exert powerful force on the real world. I use the word “language” in a general sense to describe human languages (such as English and sign-language) and the numerous systems of signification within which sensory inputs are rendered meaningful. Similarly, although the word “code” has many different and even conflicted meanings, I use “code” here to identify the wide range of languages, algorithms, and instructions that not only animate computing machines, but also allow for the storage and transmission of data. The language and code used in virtual spaces performatively effect change in complex ways.

Despite the intense scholarly focus on computer-mediated communication, few critics have engaged with the shifting social, economic, and political status of the languages that create change in and through virtual spaces. Though the changes effected

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<sup>1</sup> Of course, the terms “real” and “virtual” are problematic and uncertain. The “real” has long been the focus of intense philosophical enquiry, from Plato’s cave to Jacques Lacan’s three orders. Brian Massumi explores the virtuality of the “real” and the reality of the “virtual” in his excellent book *Parables For The Virtual*. While the uncertainty of “real” and “virtual” certainly underlies this paper, I will not focus on the difficulty of interpreting these terms. For the purposes of this paper, I understand “real” to denote the physical world and “virtual” to signify anything mediated by computational processes or literary techniques.

by new forms of communication have been closely analyzed, the forces that make these changes possible have largely been ignored. Within the (digital) humanities and social sciences, a wide range of studies have focused on either the linguistic or social, economic, and political effects of cyberspace. However, little attention has been given to *how* these dramatic changes are effected. For example, in his book *Language and the Internet*, linguist David Crystal argues that on-line communication is producing a language of “netspeak” that combines common computer terms (such as “download,” “program,” “dot com,” and abbreviations such as “lol”) with traditional forms of human communication (19-25). “Netspeak,” Crystal argues, “is more than an aggregate of spoken and written features.” Though he claims that he will show that netspeak “does things that neither of these other mediums [speech and writing] do, and must accordingly be seen as a new species of communication” (51), Crystal does little more than catalogue the ways in which simple new forms of expression are developing in on-line channels such as instant messaging, email, virtual worlds, blogs, and chat groups. For example, Crystal provides extensive lists of the emoticons (40) and abbreviations (91-92) often used in instant messaging and emails. Other commentators, such as economist Edward Castronova, have noted that trade in virtual spaces has direct economic effects on the real world. In his book *Synthetic Worlds: The Business and Culture of Online Games*, Castronova tentatively argues that on-line “games may become so important to some people, at some times, that events inside games have effects outside of them” (4). But Castronova is mainly interested in the economic and political effects of trade in virtual worlds, not the signs that perform on-line transactions. Media theorists have likewise neglected the capacity digitally mediated language has to effect change in both real and

virtual spaces. In *The Language of New Media*, media philosopher Lev Manovich situates new forms of media (including web-pages, computer games, and digital cinema) in relation to older forms, most often through the vocabulary of film studies. The word “language” in Manovich’s title signals his emphasis on the aesthetic and poetic elements of new media, not the role of linguistics in new virtual spaces (12). Though the work of Crystal, Castronova, and Manovich—and many others engaged with the wide field of new media studies—have made important contributions to linguistics, economics, sociology, and political science, few critics have investigated the influence of digital technologies on the performative force of language.

In the posthumously published series of lectures that make up *How To Do Things With Words*, J. L. Austin argues that some speech effects change in the real world, as it is spoken. In Austin’s terms, some utterances do things with words—instead of being “constative,” they are “performative.” Despite the rapid breakdown of the concepts he investigates, Austin’s speech-act theory inaugurated a field of study that many of the twentieth century’s most important theorists have engaged with. Among others, Michel Foucault, Roland Barthes, Paul de Man, Stanley Fish, John Searle, Judith Butler, Hillis Miller, and Jacques Derrida have all investigated the performative interplay between word and world. In his essays “Signature Event Context” and “Limited inc a b c...” (which were both republished in the book *Limited Inc*), Derrida deconstructs Austin’s theory, producing a more complex notion of performativity. Based largely on his (non)concept of “iterability,” and his focus on “marks,” instead of the “utterances” Austin is interested in, Derrida’s theory of performativity disrupts and inverts the relationship between utterance and context that Austin describes. Whereas for Austin the

effectiveness of a performative utterance is determined by the context in which the utterance is made, for Derrida, the iterable mark delimits (though never entirely) the boundaries of what is then considered the mark's context. Derrida's theory of the iterable performative mark has been embraced by several theorists, most notably Judith Butler in her analysis of the performativity of gender and sex (*Gender Trouble*), and in her investigation of the possible re-signification of hate speech (*Excitable Speech*). In the question period that followed her presentation of the forthcoming paper "Narrating Consciousness: Language, Media and Embodiment," as part of the Pacific Centre for Technology and Culture's (PACTAC) Technology and Society Lecture Series, Katherine Hayles advised the students in the audience that, "as citizens who are going to have your career in the twenty-first century... if you know nothing about computer code you will be severely limited, and knowing something about computer code, I think, is becoming as essential to being an empowered actor within our culture as being fully literate in a linguistic sense." Hayles argued that a familiarity with code is an "important issue in the humanities in particular" ("Narrating Consciousness"). As part of her general analysis of the signifying force of code, Hayles convincingly argues that code has the ability to effect a wide variety of real-world changes, from communicating messages to launching missiles. Hayles argues that code is therefore performative in a more powerful way than the ordinary language Austin examined. But Hayles' notion of performativity is based on an oversimplified speech-act theory. Computational codes produce complex performances—simultaneously effecting changes across numerous real and virtual spaces. Hayles' reductive reading of Austin and Derrida's theories of performativity, and her similarly reductive analysis of the signifying force of computational code, causes

Hayles to construct two rigid hierarchies within her otherwise multi-causal theory, to overlook the multiple performances her own texts make, and to ignore the complex performative effects at work in many virtual spaces. I argue that analysis of the generative force of code demands a complex theory of performativity, not the simple Austinian model that Hayles applies. In contrast to conventional assumptions, including Hayles', computational processes are not limited by inflexible, mechanical logic. Like human languages, code functions beyond itself, signaling more and other than is expected or intended.

Emerging out of Derrida's deconstruction of Austin's speech-act theory and Hayles' observation that code is performative, the theory of cyber-performative analysis developed here investigates the performative force of three general types of marks: machinic, computational, and interface marks. The differentiation between these three types of marks is not inherent to the cyber-performative act: machinic, computational, and interface are heuristic categories, strategic divisions in the complex interplay of forces effected by the cyber-performative act. These three levels describe the range of different performances that occur simultaneously when computational processes are used to store or manipulate information. Cyber-performative acts infiltrate both computer-mediated-information (such as email and digital photography) and texts that seem to be removed from the immediate influence of computation, such as movies, books, or buildings. Virtual spaces such as *Second Life* have recently amassed immense social, economic, and political force through the propagation and manipulation of cyber-performative marks. Cyber-performative theory describes the complex interplay of marks made simultaneously through machinic, computational, and interface channels.

Information transmitted through computational processes is performative in a more complex way than Hayles suggests. Hayles claims that computer code is more powerfully performative than “natural” human languages because code signifies directly and is not threatened by the slippages that disrupt communication in human languages. However, I argue, code does not function directly. Computer codes are powerfully performative because they simultaneously undertake multiple performances, effecting multiple changes across multiple contexts, not because they occlude errors and ambiguity, as Hayles suggests. Many theories of performativity, such as Hayles’, fail to address this complexity. The theory of cyber-performative analysis developed here recognizes that computational processes are made up of many simultaneous and interrelated performances. These performances routinely effect powerful changes beyond the computer, into the real world. I argue that the complex interplay of cyber-performative marks produced in and through virtual spaces such as machinima movies and virtual worlds such as *Second Life* expose the short-comings of Hayles’ oversimplified analysis of the performativity of code. By retaining both the bounded logic of traditional ordinary language philosophy and the disruptive uncertainty of Derrida’s performativity, cyber-performative theory investigates the force that marks made in virtual spaces have to simultaneously transform both the virtual worlds they are made in and the real world they are made from. Cyber-performative theory is necessarily rooted in the theories of performativity proposed by Austin, Derrida, and Hayles.

## **Chapter One – Austin’s Performative**

The term “performative” is often used recklessly as a synonym for “performance” or “performing.” Though an element of performance is certainly important to the concept of performativity, Austin’s speech-act theory developed out of his analysis of the unconscious or unintentional things people *do* when they are speaking. “Performativity” does not identify a “performance” so much as it signals the “doing things” that is alluded to in the title of Austin’s *How To Do Things With Words*. In this chapter I argue that carefully tracing the development of Austin’s speech-act theory reveals the important assumptions and contradictions that lead to the breakdown of his theory. These assumptions are often ignored or oversimplified by critics who use the term “performative.” Two of Austin’s assumptions are especially pertinent to the development of cyber-performative theory: first, Austin assumes that the “felicity” of the performative utterance is determined by the conventions and context, or total speech situation, in which the utterance is made; second, Austin assumes that ordinary, serious language can be separated from fictional, parasitic language. Hayles reproduces both of these assumptions in her oversimplified analysis of the performativity of code.

In “Lecture I” of *How To Do Things With Words*, Austin explains that his analysis of speech acts is motivated by what he feels is the commonly held misconception among philosophers that speech consists only of constative statements. “It was for too long the assumption of philosophers,” says Austin, “that the business of a ‘statement’ can only be to ‘describe’ some state of affairs, or to ‘state some fact’, which it must do either truly or falsely” (1). For Austin, utterances are not always (and perhaps not ever) only statements that are either right or wrong: words can effect change. Austin’s goal, in the twelve

lectures that make up *How To Do Things With Words*, is to oppose “the assumption that to say something, at least in all cases worth considering, i.e. all cases considered, is always and simply to state something” (12). But this is not an easy task. Despite his important observation that some utterances seem to do things with words, Austin fails to establish a coherent or consistent theory of “speech acts.” Hillis Miller calls *How To Do Things With Words* a “ruefully comic report” on an “intellectual catastrophe” (Miller 12). The text is a “catastrophe” because Austin’s theories repeatedly break down; it is “ruefully comic” because Austin observes the catastrophe, often commenting ironically on the logical binds that he works himself into. For example, Austin observes, “One thing we might go on to do, of course, is to take it all back: another would be to bog, by logical stages, down” (13). Despite repeatedly bogging down into intellectual impasse, many of the terms Austin proposes and many of the observations he makes have prompted extensive critical enquiry. The process by which Austin bogs down reveals the roots of the theories of performativity with which Derrida and Hayles are engaged, and the terms Austin proposes throughout his “catastrophe” can still be used to describe the complex range of effects that are produced by utterances made in and from virtual spaces.

“Lecture I” of *How To Do Things With Words* begins with an analysis of the difference between “performative” and “constative” utterances. Performative utterances have two defining characteristics: “A. they do not ‘describe’ or report or constate anything at all, are not true or false; and B. the uttering of the sentence is... the doing of an action” (5). Performative utterances are words that do things while they are being spoken. Austin provides four examples, which he often refers back to throughout the remainder of his lectures:

(E. *a*) “I do (sc. take this woman to be my lawful wedded wife)”—as uttered in the course of the marriage ceremony.

(E. *b*) “I name this ship the *Queen Elizabeth*”—as uttered when smashing the bottle against the stern.

(E. *c*) “I give and bequeath my watch to my brother”—as occurring in a will.

(E. *d*) “I bet you sixpence it will rain tomorrow.” (5)

In each of these four examples, the utterances do not describe an event that has happened or will happen; instead, the utterances are themselves the performance of the event. As Austin says, “In these examples it seems clear that to utter the sentence (in, of course, the appropriate circumstances) is not to *describe* my doing of what I should be said in so uttering to be doing or to state that I am doing it: it is to do it” (6). The term *performative* is derived from “‘perform’, the usual verb with the noun ‘action’: it indicates that the issuing of the utterance is the performing of an action—it is not normally thought of as just saying something” (Austin 7). Conversely, constatives are utterances that state something or describe (correctly or incorrectly) something that has happened or will happen. Austin explains the difference between performatives and constatives most clearly when he compares the utterance “I apologize” to the utterance “I am running.” Whereas the apology performed in “I apologize” is effected in saying “I apologize,” saying “I am running” does not change whether “I” am running or not. “I apologize” is a simple performative because it does something with words. “I am running” is a constative because it reports a situation and is either true or false—“I” am either running or not (Austin 46-47). But not all performative utterances are successfully performative: shouting “I do” at strangers in the street does not usually constitute a marriage. Depending upon the contexts in which they are uttered, some performatives are successful, or what Austin calls “felicitous,” and some are unsuccessful, or “infelicitous.”

In “Lecture II,” Austin outlines six rules performative utterances must adhere to in order to be felicitous; Austin calls these conditions “the doctrine of *the things that can be and go wrong* on the occasion of [performative] utterances, the doctrine of the *Infelicities*” (14). In his book *Performativity*, James Loxley explains that these six rules make the definition of performative far more complex than the definition of constative; whereas constatives are either true or false, there are “a number of different axes along which [performative] validity could be assessed” (Loxley 10). Austin’s rules state, in short, that an accepted context must be in place that involves the uttering (and hearing) of certain words, and that the person making the performative utterance must correctly adhere to the conventions of the context and must mean what he or she says (Loxley 14-15). These six rules are Austin’s first attempt to systematically define what performative utterances are and what differentiates performatives from constatives. Austin first bogs down exploring the implications of these rules. For example, Austin’s fifth rule states that when the procedure that makes an utterance performative requires that people involved in the procedure have certain thoughts or feelings (such as in a promise or a bet), “then a person participating in and so invoking the procedure must in fact have those thoughts or feelings, and the participants must intend so to conduct themselves”; in other words, when someone makes a promise, the performative is only felicitous if the promise is made sincerely (15).

But Austin seems unable to explain how his fifth rule defines the felicity of performative utterances. He says that when a performative utterance is made in violation of rule five, “the act *is* achieved, although to achieve it in such circumstances, as when we are, say, insincere, is an abuse of the procedure. Thus, when I say ‘I promise’ and

have no intention of keeping it, I have promised but....” (16; ellipses in original). Instead of engaging with the difficult problems raised by intention and sincerity, Austin seemingly trails off (though he does return to these problems briefly in “Lecture IV,” Austin still struggles to identify exactly what kind of act is achieved by an insincere promise). Austin later admits that *some* thing will have been done with words when a promise is made insincerely, just not the intended thing: “lots of things will have been done... but we shall *not* have done the purported act” (17). We may have committed perjury or attempted to marry a horse, and we certainly have made some noises and even said some words, but no promises have been made, no marriages performed—no felicitous performatives have been uttered. Though Austin undertakes a close investigation of his doctrine of infelicities throughout lectures “II,” “III,” and “IV,” instead of becoming clearer and more definite, they begin to conflict and collapse into each other. Austin hints at this collapse at the end of “Lecture III”: “It may appear in all this that we have merely been taking back our rules. But this is not the case. Clearly there are these six possibilities of infelicity even if it is sometimes uncertain which is involved in a particular case: and we *might* define them, at least for given cases, if we wished” (38). But as he tries to provide a general guideline for how the doctrine of the infelicities might be used to evaluate the performative status of an utterance, Austin becomes entangled in an endless string of impossible questions related to meaning, intention, and the complexities of speech.

Austin bogs down badly in “Lecture IV.” His close investigation of the doctrine of infelicities forces him to consider a host of difficult scenarios, such as the influence that the speaker’s feelings, thoughts, and intentions might have on the felicity of an

utterance (40). Though he admits it seems to be a “trivial result of our investigations,” considering the mental state of the speaker leads Austin to suggest that “certain conditions have to be satisfied if the [performative] utterance is to be happy.” One of these conditions is that “for a certain performative utterance to be happy, certain statements have *to be true*” (45). This is far from a “trivial” result because it suggests that performatives and constatives are not entirely separate—the felicity of the performative utterance depends upon the truth of some constative statements. Though Austin’s goal from the start of “Lecture I” was to differentiate performative utterances from constative statements, the constative turns out to be a determinant condition of the felicitous performative. The distinction between performative and constative begins to collapse when Austin considers what he calls “the total speech-act” or “the total speech situation” (52). The total speech situation encompasses the context the utterance is made in and all of the unspoken utterances that surround or support it. For example, analysis of the statement “All Jack’s children are bald” must consider not just the truth or grammatical form of the statement, but also the legitimacy of a host of related utterances, such as “Jack has children” (48). After a meandering discussion of the multiple ways in which utterances “entail,” “imply,” and “presuppose” other utterances and statements (47-52), Austin realizes that his categories are breaking down and that he has begun “assimilating the supposed constative statement to the performative” (52). When considered within the total speech situation, many utterances that seem to be self-contained constatives or performatives actually contain or at least depend on other, perhaps unspoken, utterances. For example, “connected with the utterance (constative) ‘John is running’ is the statement ‘I am stating that John is running’: and this may depend for its truth on the happiness of

‘John is running’, just as the truth of ‘I am apologizing’ depends on the happiness of ‘I apologize’” (55). Though much of Austin’s work in lectures “IV” and “V” bogs down in logical dead-ends, the troubles he gets into are an important indication of the potentially crushing complexities of what is often referred to as simply “performativity” (as if the theory had been worked out and defined). Hayles in particular employs Austinian terms freely; this is especially problematic given that her focus is on computer-mediated communication and the thoughts, feelings, and intentions of her “speakers” are even more uncertain than in Austin’s analyses.

Austin’s next step is to ask “whether there is some *grammatical* (or lexicographical) criterion for distinguishing the performative utterance” (55). Most of Austin’s examples of performative utterances have been given “with verbs in the first person singular present indicative active” (56), such as, “I bet you sixpence it will rain tomorrow,” which performs the act of making a bet. But this strict grammatical form ignores numerous seemingly performative utterances made using other verb tenses. Past tense, second or third person, singular or plural, and passive utterances might be performative. For example, common utterances such as “You are hereby authorized to pay...” and “Passengers are warned to cross the track by the bridge only,” perform the acts of authorizing and warning in other tenses (57). Mood also cannot be used to distinguish performatives; as Austin says, “I may order you to turn right by saying, not ‘I order you to turn right’, but simply ‘Turn Right’... and instead of ‘I advise... you to turn right’ I may say ‘I should turn to the right if I were you’” (58). Austin wonders briefly if vocabulary, not grammar, might serve as a test of the performative—words such as “promise” and “hereby” are used repeatedly in his early examples of performatives. But

he soon realizes that compiling a list of performative-related words will not describe the phenomenon because other words might always be used to make the same utterance: “in place of ‘I promise to...’ we may have ‘I shall’.” Further, words such as “promise” are not always used in performative utterances: “in such locutions as ‘you promised’... the word [promise] occurs in a non-performative use” (59). Performatives and constatives again seem to be blurring together, “as very commonly the *same* sentence is used on different occasions of utterance in *both* ways, performative and constative” (67). Single words such as “guilty” or “out” might be performatives in some contexts (such as in a courtroom or a baseball game) but constative in others (expressing an opinion or describing someone’s location).

Austin continues to bog down in lectures “VI” and “VII.” He cycles through a range of investigations in these lectures, including an analysis of the difference between what he calls “explicit” performatives and their “primary” counterparts (69), and a discussion of the performative effects of “urging,” “inferring,” “conceding,” and “predicting” (85). However, by the end of “Lecture VII” Austin realizes that his project has bogged down in the complexities of speech and that “it is time... to make a fresh start on the problem” by considering “more generally the senses in which to say something may be to do something” (91). Austin’s “fresh start” involves three new terms: “locutionary,” “illocutionary,” and “perlocutionary” (98-101). Locutionary acts are simply any act of speech; as Loxley says, a locutionary act employs “the semantic and referential functions of language. Thus if I say ‘there is a bull in the field’ I invoke the capacity of the sounds uttered both to stand for the idea of a kind of creature in a particular relation to a kind of terrain, and to mark out this particular creature here as one

of the relevant kind” (18). Illocutionary acts are utterances that achieve performative effects—words that simultaneously say and do. To avoid the problems of “felicity” and “infelicity” that undermined his attempt to differentiate between performative and constative, Austin explains that illocutionary speech acts are to be evaluated according to their illocutionary “force” (100). Utterances have more or less illocutionary force, depending on how effectively the utterance does what it says. For example, the “I do” of the wedding ceremony, spoken in the correct context and with the right cast of people in attendance, has more illocutionary force than the same utterance shouted at strangers in the street. While illocutionary speech acts effect changes that are simultaneous with their being spoken, they “will often, or even normally, produce certain consequential effects upon the feelings, thoughts, or actions of the audience, or of the speaker, or of other persons” (Austin 101). These consequential effects are perlocutionary acts. Austin illustrates the differences between locutionary, illocutionary, and perlocutionary acts with several examples, including:

Act (A) or Locution

He said to me, “You can’t do that.”

Act (B) or Illocution

He protested against my doing it [“protesting” being something that is, in this case, done with words].

Act (C. *a*) or Perlocution

He pulled me up, checked me.

Act (C. *b*)

He stopped me, he brought me to my senses, &c.

He annoyed me. (102)

Austin lists several perlocutionary effects because the utterance “You can’t do that” would likely provoke different consequences among different listeners. The difference between illocutionary and perlocutionary effects is perhaps best explained by examining the prefixes “il” and “per.” “Il” means “in,” and illocutionary effects are produced *in* the

uttering of certain words: “*In* saying I would shoot him I was threatening him.” Any threat is effected in its utterance—in this case the locution “I will shoot you.” “Per” means “by,” and perlocutionary effects are produced *by* the uttering of certain words: “*By* saying I would shoot him I alarmed him”; the feeling of alarm is the perlocutionary consequence of the locution “I will shoot you” (Austin 122). But, like the distinction between constatives and performatives, the boundary between illocutionary and perlocutionary effects breaks down under the weight of the numerous unruly examples Austin uses to probe his theory. He realizes that “the general conclusion must be... that these [‘in’ and ‘by’] formulas are at best very slippery tests for deciding whether an expression is an illocution as distinct from a perlocution or neither” (131-132). Language again disrupts Austin’s categories.

Austin bogs down completely in “Lecture XII.” In this final lecture he complicates his theory further, attempting to account for the complexities of “the total speech act in the total speech situation” (148). He tentatively categorizes five different types of illocutionary utterance, according to the effects each type of utterance has in being spoken. Austin outlines the differences between “verdictives,” “exercitives,” “commisives,” “behavatives,” and “expositives” (151), but isn’t convinced that his theory is sound: “The last two classes [behavatives and expositives] are those which I find most troublesome, and it could well be that they are not clear or are cross-classified, or even that some fresh classification altogether is needed. I am not putting any of this forward as in the very least definitive” (152). Austin bogs down for the last time as he begins to construct complex, interrelated definitions of his new terms. Having just outlined a list of seven different types of expositives—complete with five subsections and numerous

uncertainties (indicated in his schema by question marks)—Austin suddenly declares that he is out of time (163). He ends his final lecture by noting that he must leave to his “readers the real fun of applying [his theories] in philosophy” (164). This inconclusive ending is his only way out of “the process of trying to do what turns out to be impossible to do, for Austin at least” (Miller 12).

Despite the ultimate breakdown of his terms, Austin makes several important philosophical insights in his investigation of performative language. Most obviously, the idea that certain utterances effect change in the world and perform actions has prompted many of Austin’s “readers” (including some of the most influential theorists since the mid-twentieth century) to consider the complex relationship between saying and doing. But a second strand that runs through *How To Do Things With Words*, the relationship between an utterance and the context in which it is made, is equally important to the development of the theory of cyber-performativity. The relationship between utterance and context also dominates Derrida’s analysis and deconstruction of Austin’s speech-act theory. Austin repeatedly emphasizes the importance of context and convention to the successful or felicitous performative utterance. Austin’s first examples of the performative indicate the setting in which the utterance is made; for example, “I do (sc. take this woman to be my lawful wedded wife)’—*as uttered in the course of the marriage ceremony*” (5; emphasis added). The importance of context is referred to repeatedly in “Lecture I” and throughout the text, for example:

Speaking generally, it is always necessary that the *circumstances* in which the words are uttered should be in some way, or ways, *appropriate*, and it is very commonly necessary that either the speaker himself or other persons should also perform certain other actions, whether “physical” or “mental” actions or even acts of uttering further words. (8)

Nearly all infelicitous performative utterances are made in the wrong context or fail to observe established conventions. Studying language, it seems, is difficult because words mean and do different things in different contexts. “Suppose,” says Austin, “I see a vessel on the stocks, walk up and smash the bottle hung at the stern, proclaim ‘I name this ship the *Mr. Stalin*’ and for good measure kick away the chocks: but the trouble is, I was not the person chosen to name it.” Despite the performative form of the utterance “I name this ship the *Mr. Stalin*,” the context determines that “the ship was not thereby named” (Austin 23). Illocutionary force and perlocutionary effects are also determined by context and convention.

According to Austin, certain conditions always produce infelicitous performatives (or illocutionary utterances that lack force). The utterance must be spoken “seriously,” and the speaker “must not be joking, for example, nor writing a poem” (9). Austin denies all fictional utterances performative or illocutionary force in the passage from *How To Do Things With Words* most often quoted by other theorists:

a performative utterance will, for example, be *in a peculiar way* hollow or void if said by an actor on the stage, or if introduced in a poem, or spoken in soliloquy. This applies in a similar manner to any and every utterance—a sea-change in special circumstances. Language in such circumstances is in special ways—intelligibly-used not seriously, but in ways *parasitic* upon its normal use—ways which fall under the doctrine of the *etiologies* of language. All this we are *excluding* from consideration. Our performative utterances, felicitous or not, are to be understood as issued in ordinary circumstances. (22)

Though Loxley argues that “Austin is not really working up a fundamental opposition between ordinary and fictional utterances” (14), Derrida uses Austin’s claim that fiction is “parasitic” upon the “normal” use of language to expose several problematic contradictions and assumptions that underlie Austin’s theory.

## **Chapter Two – Derrida’s Performative**

Many analyses of performativity ignore Derrida’s complex theory of performative language. As Hillis Miller argues, Austin’s speech-act theory serves as a foundation for much of Derrida’s work: “Derrida does not just take up the question of speech acts at a certain moment in the trajectory of his work... but instead includes a new concept and practice of performative utterances as a fundamental part of all his work” (63). Miller points out that Derrida’s theory of performative language maintains a productive tension between performative and constative that preserves the possibility of continuous contextual transformation and refuses to exclude the fictional, parasitic, or other. In this chapter I will argue that Derrida’s deconstruction of Austin’s speech-act theory inverts the relationship between utterance and context that Austin assumed, criticizes Austin’s attempt to exclude parasitic fictional utterances from the study of ordinary language, and shows that ordinary language is rooted in conventions that are just as tenuous and illusory as those that label some utterances “parasitic.” These effects of Derrida’s deconstruction are important to cyber-performative theory for two main reasons: first, cyber-performative marks delimit the machinic, computational, and interface contexts in which they perform, instead of the various contexts determining the force of the marks; second, cyber-performative analysis emphasizes the necessity of the parasitic. Hayles ignores both of these possibilities in her claims about the performativity of code. Her oversimplification of Austin’s speech-act theory is compounded by her misreading of Derrida’s concept of performativity and her reductive interpretation of the iterability of the performative mark.

Derrida deconstructs—in the double sense of dismantling and reassembling (*Limited Inc* 21)—Austin’s speech-act theory. Established around the difficult notion of “iterability,” Derrida’s deconstruction produces a new theory of performativity and prepares the ground “for a new politics and a new ethics based on this new form of speech acts” (Miller 76). Derrida’s deconstruction of Austin is based on two interconnected observations: that Austin’s distinction between “ordinary” and “parasitic” language is untenable, and that the relationship between utterance and context Austin describes must be disrupted. Austin, Derrida argues, seems to have “shattered the concept of communication as a purely semiotic, linguistic, or symbolic concept” because “the performative is a ‘communication’ which is not limited strictly to the transference of a semantic content that is already constituted and dominated by an orientation toward truth” (*Limited Inc* 13-14). But Austin’s theory bogged down and he failed to develop a theory of communication not guided by the distinction between true and false—Austin’s constative utterance repeatedly encroaches on the realm of the performative. Austin’s failure, Derrida suggests, is a product of the distinctions Austin makes between parasitic and ordinary speech and between felicitous and infelicitous speech acts. Instead of defining conditions of *felicity*, Austin’s doctrine of infelicities recognize that the “possibility of the negative... is in fact a structural possibility, that failure is an essential risk of the operations under consideration” (*Limited Inc* 15). The doctrine of infelicities shows that there is always the possibility that the person who makes a promise is being insincere or that the person who says “I do” is already married. But, “then, in a move which is almost *immediately simultaneous*,” Austin excludes the risk of failure as “accidental, exterior, one which teaches us nothing about the linguistic phenomenon

being considered” (*Limited Inc* 15). By excluding the risk of failure, Austin conceals “an entire metaphysics, the metaphysics of presence, of objects and/or intentions that possess a purity which can either be preserved or compromised in the act of communication” (Fish 701). Despite his claim that speech-act theory opposes traditional philosophical analyses of language, Austin retains Western philosophy’s traditional metaphysics of presence—the tradition that Derrida opposes so vehemently (Miller 128-129). As Derrida notes, Austin recognizes that infelicity “is an ill to which *all* acts are heir which have the general character of ritual or ceremonial, all *conventional* acts” (Austin 18-19). But Austin fails to consider that *language* is based on conventional acts—all signification is, in a sense, ritual or ceremonial (*Limited Inc* 15). And, says Derrida, “Austin does not ponder the consequences issuing from the fact that a possibility—a possible risk [of infelicity]—is *always* possible, and is in some sense a necessary possibility” (15). Derrida calls this necessary possibility of risk “iterability.”

The necessary iterability of all signification undermines the separation of ordinary and parasitic language. Iterability is “neither a concept nor not a concept, [it] is a new name for what is given many different names in the course of Derrida’s work: *différance*, *hymen*, *supplément*, *pharmakon*, dissemination, writing, margin, parergon, the gift, the secret, and so on” (Miller 77). Unlike the mathematic definition of the word “iterability,” which emphasizes only the possibility of repetition, Derrida’s “iterability” (which maintains the sense of repetition used in mathematics) derives from “iter,” the Sanskrit word for “other” (*Limited Inc* 7). Derrida’s iterability is not a consequence or product of language but a necessary condition for all signification. Instead of adopting Austin’s term “utterance,” Derrida refers to the iterable “mark.” The term “mark” avoids the

connotations of speech that “utterance” holds and allows Derrida to “expand [his] analysis to include all spoken and written signs, as well as all linguistic and nonlinguistic signs (such as gestures or facial expressions)” (Miller 107). The (non)concept of iterability identifies the “possibility for every mark to be repeated and still to function as a meaningful mark in new contexts that are cut off entirely from the original context” (Miller 78). Communication, Derrida argues, is only possible if every mark can be repeated, “even if the moment of its production is irrevocably lost and even if I do not know what its alleged author-scriptor intended to say at the moment he wrote it” (*Limited Inc* 9). A mark that functions only in its original context would not be a mark (or a sign or a word or an utterance), it “would not be a representation of that context but a part of it; it would be a piece of presence” (Fish 702). Iterability demands that all marks must be repeatable, “a sign or a mark that was not repeatable would not be a sign or a mark, and could not be an element in a language or a code” (Loxley 77).

All utterances and marks are therefore conventional acts—iterations of prior iterations in a chain of deferral that must have no original “meaning,” and in which meaning shifts with each iteration; as Derrida argues, “Iteration alters, something new takes place” (*Limited Inc* 40). The iterable mark’s signification is dehiscent, split open and opposed to itself. “As in the realm of botany,” Derrida argues, “from which it draws its metaphorical value, [dehiscence] marks emphatically that the divided opening, in the growth of a plant, is also what, in a *positive* sense, makes production, reproduction, development possible” (*Limited Inc* 59). The mark is shaped by convention but functions productively by refusing to adhere to convention. As Miller explains, the effects of the mark “will be multiple and contradictory, though this does not mean that they will not be

controlled as an oscillation within the bounds of a determinable undecidability”—bounds such as true and false, constative and performative, or ordinary and parasitic (Miller 96). In other words, the possibility of a mark that makes a true reference depends upon the impossibility of that mark ever achieving a true reference; the possibility of an ordinary utterance depends upon the impossibility of that utterance ever entirely escaping the parasitic. The ordinary language that Austin limits his study to must therefore be no more and no less parasitic than the fictional utterances he excludes. As Miller says, Derrida reveals that “there is no such thing as a pure, normal speech act, even though there are ‘effects’ that make such a thing appear to be. The effects are derived from a matrix that also generates the contaminated, impure, parasitic speech act” (Miller 95). Though Austin insists on studying speech “issued in ordinary circumstances,” all marks contain elements of the extra-ordinary—“extra” in the sense that all marks both exceed their context and break from the circumstances of all previous iterations. As well as undermining Austin’s division of parasitic and ordinary speech, the new politics and ethics of the iterable performative mark demand a revised theory of context.

At the beginning of “Signature Event Context,” Derrida argues that questions about the meaning of the amorphous term “communication” can be reduced to more general questions about the nature of “context” (*Limited Inc* 2). He asks rhetorically, “Is there a rigorous and scientific concept of *context*? Or does the notion of context not conceal, behind a certain confusion, philosophical presuppositions of a very determinate nature?” (*Limited Inc* 3). Derrida has two goals in answering these questions: first, to “demonstrate why a context is never absolutely determinable, or rather, why its determination can never be entirely certain or saturated”; and second, to expose “the

theoretical inadequacy of *the current concept of context* (linguistic or nonlinguistic), as it is accepted in numerous domains of research..." (*Limited Inc* 3). The dehiscent break in the iterable mark denies the possibility of an entirely knowable context, just as it collapses the distinction between ordinary and parasitic language. Austin's project breaks down because his "analyses at all times require a value of context, and even of a context exhaustively determined, in theory or teleologically" (*Limited Inc* 14). Austin's doctrine of infelicities emphasizes the importance of context—it contains the assumption of "an exhaustively definable context, of a free consciousness present to the totality of the operation, and of absolutely meaningful speech [*vouloir-dire*] master of itself" (*Limited Inc* 15). For Derrida, instead of context determining the felicity of the performative mark, the mark inscribes and delimits context. There are no transcendent contexts, no contexts that already exist "naturally," or that create themselves out of nothing (*Limited Inc* 79); even the contexts of ordinary institutions, such as laws, grammars, penal codes, and constitutions, are "not 'natural realities' [for] they depend upon the same structural power that allows novelesque fictions or mendacious inventions and the like to take place" (*Limited Inc* 134). The stable, knowable context that Austin's theory is built upon is "always over-determined, always heterogeneous," and always "stretches out to vaguer and more distant fringes that are neither quite part of the context nor able to be put firmly beyond its borders..." (Miller 100). As an over-determined heterogeneity, context is only delimited by the intervention of a performative mark: "each performative utterance to some degree creates its own new conditions and laws. It transforms the context into which it enters" (Miller 96). Derrida's most thorough investigation of the relationship between mark and context is his essay "Declarations of Independence."

Delivered in 1976 at the University of Virginia, as part of the celebrations marking the two-hundred year anniversary of the United States Declaration of Independence, “Declarations of Independence” is a short preamble to Derrida’s seminar on Nietzsche (“Otobiographies: The Teaching of Nietzsche and the Politics of the Proper Name”). In “Declarations,” Derrida undertakes a close reading of the performative characteristics of the United States Declaration of Independence. Though he focuses on the complex performative effects of signatures and signing (as he also does in “Signature Event Context”), “Declarations” also contains several passages related to the interplay between mark and context, a relationship more pertinent to the theory of cyber-performativity than analysis of signatures. Derrida is particularly interested in the passage, “We... the representatives of the United States of America, in General Congress, assembled... do, in the name, and by the authority of the good people of these colonies, solemnly publish and declare, that these united colonies are, and of right ought to be free and independent states....” This passage resembles the simple performative utterance Austin described—it is presented in the first person present indicative active and includes the word “declare.” Like a promise or a bet, a declaration is only effected in the moment of its utterance. In Austin’s terms, the locution “I declare that it is raining outside” is a simple illocution—the declaration is performative because it is performed *in* the words that are spoken (no matter if it is raining or not). The perlocutionary effects, produced *by* the utterance, might include someone fetching an umbrella or deciding to stay inside. Without a doubt, the Declaration of Independence had immense perlocutionary effects; as proud Americans will exclaim, “We have the United States as evidence, the ‘only remaining super-power,’ the model of Western-style democracy, the

world's largest economy, the greatest global force politically, militarily, economically, and so on" (Miller 119). But what context justified the felicity of the Declaration's performativity? Instead of meeting the conditions of established conventions, as Austin's theory requires, the Declaration effects a decisive break with convention, creating a new set of conventions upon which its felicity is based. As Miller explains, "The Declaration of Independence creates the law by which it acts rather than depending on pre-existing rules. It breaks the pre-existing law rather than sustaining it" (125). Was the Declaration then a felicitous performative speech act? Or, as Derrida asks, "Is it that the good people have already freed themselves in fact and are only stating the fact of this emancipation in [*par*] the declaration? Or is it rather that they free themselves at the instant of and by [*par*] the signature of this Declaration?" ("Declarations" 9).<sup>2</sup> Deconstructive iterability demands that these questions remain unanswerable.

In an important tension that most of his readers (including Hayles) ignore, the constructive force of Derrida's double writing removes the possibility of deciding whether a mark is performative or constative: every mark must be possibly both but never entirely either. Just as iterability requires the mark to simultaneously conform to and break with previous iterations, the speech act can produce effects only if it both conforms with and breaks with the conventions of the context it inscribes. Derrida says in "Declarations" that "one cannot decide—and that's the interesting thing, the force and the

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<sup>2</sup> A question might be asked here of the translators' use of "in" and "by" for "par." Based on the prefixes in Austin's terms illocutionary and perlocutionary, these sentences might have been more accurately translated, "Is it that the good people have already freed themselves in fact and are only stating the fact of this emancipation **by** [*par*] the declaration? Or is it rather that they free themselves at the instant of and **in** [*par*] the signature of this Declaration?" Reversing the "by" and "in" aligns Derrida's sentences with Austin's terms: the good people free themselves in the signing of the Declaration. In its original French the passage reads, « Est-ce que le bon peuple s'est déjà libéré en fait et ne fait que prendre acte de cette émancipation par la Déclaration? Ou bien se libéré-t-il à l' instant et par la signature de cette Déclaration? » ("Otobiographies" 20).

coup of force of such a declarative act—whether independence is stated or produced” by the Declaration of Independence (9). Like the necessary undecidability of the iterable mark, the necessary undecidability of the speech act makes possible its effectiveness. This undecidability is necessary because “for an ungrounded or self-grounding performative to work, it must convey the illusion, fable, or fiction of having a solid, preexisting ground or law to erect itself on, while claiming for itself autonomous performative force” (Miller 127). The claims to authority made by self-grounding speech acts are evident in many of Austin’s examples of simple performatives. Ordinary institutions (such as marriages, wills, promises, and even the names of ships) construct the illusion of a legitimizing foundation—most of them ultimately refer back to fictional justifications such as Right, Law, Truth, or God. Derrida’s study of the Declaration of Independence shows that the text (the Declaration or any other text) must remain open to both a constative and a performative reading; as Miller notes, “textual support for either way of reading can be cited, though the two readings are incompatible” (127). Miller’s reference to “textual support” is an important reminder of the constraints that limit the effects of iterability.

Many critics (most notably John Searle in his *Glyph* article “Reiterating the Differences: A Reply to Derrida”) have argued that Derrida’s disruptive ideas, such as iterability, legitimize a radical relativism that denies the possibility of consciousness, meaning, intentionality, and even communication. But Derrida describes strict restraints that limit the effects of iterability. He argues that by no means does he “draw the conclusion that there is no relative specificity of effects of consciousness, or of effects of speech..., that there is no performative effect, no effect of ordinary language, no effect of

presence or of discursive event” (*Limited Inc* 19). Instead, iterability demands that ordinary effects not “exclude what is generally opposed to them, term by term; on the contrary, they presuppose it, in an asymmetrical way, as the general space of their possibility” (*Limited Inc* 19). The dehiscent fracture of the mark is both the condition and limit of its signifying possibility. Just as the mark produces an undeniable gap in signification, the context inscribed by the iterable performative is never absolutely determined. The force the mark has to delimit the boundary of a context is always limited, “no mark can create or engender a context on its own, much less dominate it. This limit, this finitude is the condition under which contextual transformation remains an always open possibility” (*Limited Inc* 79). Maintaining the open possibility of contextual transformation denies the logic of the strictly bounded, coherent context that excludes whatever is deemed other, fictional, or parasitic. Iterability does not deny the possibility of context but denies the possibility of a standard, normal context purged of all fictional effects. As Loxley explains, “no set of conventions... will ever be able ultimately to close on itself; no code can ever be assumed to be complete or properly bounded” (105). For Katherine Hayles, however, the code that animate computing machines is strictly bounded.

### **Chapter Three – Hayles’ Performative and the Iterability of Code**

Just as Austin assumes that ordinary language is free from the uncertainty characteristic of fictional utterances, Hayles maintains that computational code is not disrupted by the slippages that disrupt human languages. In order to support this claim, Hayles argues that computational processes and natural languages produce two distinct

and incompatible worldviews. Within this model, computer processes are more powerfully performative than human languages because they function directly and mechanically. In this chapter I argue that in order to make these claims Hayles must ignore not only the assumptions and contradictions that bog Austin down, but she also must ignore Derrida's thorough deconstruction of Austin's speech-act theory. Her distinction between computational and natural language worldviews closely resembles Austin's problematic distinction between ordinary and parasitic language. Hayles' theory of performativity follows an oversimplified Austinian model, not the complex and paradoxical iterable performative theory that Derrida describes. Her reductive misreading of Austin and Derrida leads to three main problems in Hayles' work: first, her analysis of the linguistic functions of code produces two rigid hierarchies, despite her claims that she is working to establish recursive, multi-causal theories; second, her oversimplified theory of performativity causes her to overlook the often subversive performances made by her own texts; third, coupled with her theory of performativity, her claim that the computational worldview occludes uncertainty ignores the complex cyber-performative effects at work in many virtual spaces.

Hayles claims that computer code embodies a new form of performativity. She argues that "code that runs on a machine is performative in a much stronger sense than that attributed to language" (*My Mother* 50). Her application of speech-act theory to computational code produces an effective framework for investigating the development of the forces of communication and control that dominate our digitally mediated historical moment. Whereas the "actions" that comprise the performativity of "natural" languages only "happen in the minds of humans," Hayles observes that the performativity

of computer code “can set off missiles or regulate air traffic; control medical equipment or generate PET scans; model turbulent flow or help design innovative architecture” (*My Mother* 48). As computational processes further infiltrate twenty-first century life, the performativity of code accrues immense illocutionary and perlocutionary force. But for Hayles, machine codes and human languages are part of different worldviews. The “computational worldview” does not “tolerate the slippages Derrida sees as intrinsic” to the functioning of language (*My Mother* 47-48). Hayles quotes software engineer Ellen Ullman, who describes the difference between “natural” and machinic communication: “We can use English to invent poetry, to try to express things that are very hard to express. In programming you really can’t. Finally, a computer program has only one meaning: what it does. It isn’t a text for an academic to read. Its entire meaning is its function.” Hayles argument seems to be sound—the slippery iterability of human language seems to be excluded from computation, which seems to be based on direct, mechanical processes. Unlike the biological processors that deal in human languages, “the digital computer is a logic machine” (*My Mother* 48). But Hayles’ arguments depend on a reductive reading of Derrida’s speech-act theory and a similarly reductive investigation of the performative force of code. These oversimplifications, and her ambiguous use of the word “code,” force Hayles to construct two rigid hierarchies within her supposedly multi-causal theory, to overlook the performative force of her own texts, and to ignore many of the complex performative effects at work in elaborate media such as remixes and *Second Life*.

Despite Derrida’s deconstruction of Austin’s speech-act theory, Hayles’ notion of performativity often resembles Austin’s early ideas. Her first mention of performative

language, in *How We Became Posthuman* (1999), refers to an apparently already established connection between computational theory and performativity. In her analysis of Neal Stephenson's novel *Snow Crash*, Hayles claims that Stephenson's inspiration to use performative language comes "not from J.L. Austin or Judith Butler but from computational theory" (*Posthuman* 274). Her failure to mention Derrida in this passage is surprising, and the contents of her endnote at the end of this sentence are also unexpected. While the reader might suppose that her endnote will contain examples of the "computational theory" that inspired Stephenson to write about performative language, Hayles provides only bibliographical information for Austin's *How To Do Things With Words* and Butler's *Gender Trouble*—the very texts that she says Stephenson *did not* take his inspiration from (*Posthuman* 321 n.11). She does not clarify what she means by "computational theory," nor does she explain its connection to theories of performativity. Hayles goes on to summarize the influence of speech-act theory on Stephenson's text not in the terms of the computational theory that she claims motivated Stephenson, but in explicitly Austinian terms. For example, she says that, "in natural languages, performative utterances operate in a symbolic realm, where they can make things happen because they refer to actions that are themselves symbolic constructions.... Computational theory treats computer languages as if they were, in Austin's terms, performative utterances" (*Posthuman* 274). Echoing Austin, Hayles assumes that the performative utterances of "natural languages" can only "make things happen" because they "operate" within a "symbolic realm" that is coherent and predetermined. As opposed to the interplay between mark and context that Derrida describes, Hayles' explanation of performative utterances follows Austin's model, in

which the context or symbolic realm dictates the utterance's ability to make things happen.

Hayles reverts to a simplified Austinian theory of speech acts in her other texts as well. In *My Mother*, she says that “the infinite iterability and citation that Derrida associates with inscription” allows that “any phrase, sentence, or paragraph can be lifted from one context and embedded in another” (48). This claim ignores both the important role that convention plays in iterability, and the impossibility of knowing the bounds of a particular context. First, the mark cannot simply be “lifted from one context and embedded in another” if the bounds of the context are necessarily undetermined, or are only delimited by the iterable mark. Second, the mark cannot be “embedded” in a new context (Hayles presumably means reiterated) without carrying with it the traces of all its preceding iterations; without the conventional support of previous iterations, the mark would have no signifying force. Hayles, like Austin, recognizes that languages (human or computer) are based on arbitrarily assigned networks of relational difference. But, also like Austin, she fails to recognize that the meaning or signification of language is an effect of iterations coalescing into convention through repetition. Hayles' analysis initially fails to explain the relationship between computational theory and speech-act theory, and then ignores Derrida's deconstruction of performativity.

In the section of *My Mother* titled “Derrida's *Différance* and the Clarity of Code” (45-51), Hayles claims that computer code is not iterable. She argues that, “although Derrida asserts that...iterability is not limited to written language but ‘is to be found in all language’ (*Limited Inc* 10) this assertion does not hold true literally for code, where the contexts are precisely determined by the level and nature of the code” (48). Adrian

Mackenzie notes that this passage misrepresents Derrida's argument. He warns that "any reading of Derrida that calls on literal truth ('true literally') let alone 'precisely determined' contexts is bound to alarm constructionists, deconstructionists and perhaps post-constructionists" (150). Hayles also reduces Derrida's difficult (non)concept of iterability to commonsense. She argues that iterability does little more than highlight the fact that writing is easier to cite than speech: "much of [Derrida's] analysis derives from a characteristic of writing that would likely spring to mind if we were asked to identify the principal way in which writing differs from speech. Writing, unlike speech... is not confined to the event of its making." Though she does admit that Derrida "complicates and extends this commonsense idea by linking it with a powerful critique of the metaphysics of presence," she immediately reasserts the argument that the complexities associated with iterability "have their root in something most people would identify as a constitutive difference between speech and writing," that writing is easier to reiterate than speech (*My Mother* 40). Though perhaps "most people" could identify the root of iterability in the difference between writing and speech, those people must (necessarily) not *understand* iterability. To understand iterability, to know what it means and be certain of what it signifies, is to misunderstand it.

Hayles also presents a reductive analysis of Derrida's deconstructive methodology. She claims that one of Derrida's "critical points is that writing exceeds speech and cannot simply be conceptualized as speech's written form." Her analysis, she says, will expand on Derrida's work and "argue that code exceeds both writing and speech" (*My Mother* 40). But Hayles' argument reduces Derrida's theory of performativity to a simple inversion of speech and writing. She suggests that such an

inversion is a typically Derridean technique: “Derrida’s deconstruction of this hierarchical arrangement is typical of his treatment of hierarchical dichotomies in general, for he shows that the privileged term must in fact contain and depend on what it tries to exclude” (*My Mother* 53). But Derrida’s goal is never to simply invert the hierarchical relationship that has traditionally favoured speech over writing. The force of his deconstruction certainly upsets the hierarchy of the speech-writing binary, but that is only the first part of his project. The second part, the often overlooked constructive component of deconstruction, involves reconstituting, out of the inverted binary, a moment of inquiry that is free from simple binary oppositions. As Derrida explains, “Deconstruction cannot be restricted or immediately pass to a neutralization: it must, through a double gesture, a double science, a double writing—put into practice a *reversal* of the classical opposition *and* a general *displacement* of the system.” Only through this double writing can deconstruction “provide the means of intervening in the field of oppositions it criticizes and that is also a field of nondiscursive forces” (*Limited Inc* 21). The iterable mark breaks not simply with speech, it must always break from its own “original” iteration—no matter if that iteration was presented in writing, speech, code, or even an involuntary gesture. Whereas Hayles claims that Derrida’s theory privileges writing over speech, for Derrida, writing exceeds writing just as completely as it exceeds speech, code, or any other mark. Ironically, Hayles’ analyses perform the complex iterability that she reduces to commonsense: her ambiguous writing of the word “code” causes a destabilizing slippage that creates gaps and contradictions in her theory.

In the prologue to *My Mother*, Hayles argues that traditional theories of communication cannot explain the complexity of computer-mediated communication.

She claims that she will “reveal the inadequacy of traditional ideas of signification for understanding the operation of code,” and that she will attempt to “understand the processes of intermediation by which [so-called ‘natural’ languages] are in active interplay with the worldview of code” (8). But the “interplay” Hayles describes retains a confusing boundary between code and language. This boundary is confusing because Hayles uses “code” and “language” to mean different things, and because her texts often show that the computational worldview and the natural-languages worldview cannot be separated. Like Austin’s “constative” and “performative,” the words “code” and “language” seem to collapse into each other. In the first endnote to chapter one of *My Mother*, Hayles attempts to explain what she means by “code” and “language”:

“Hereafter when ‘code’ and ‘language’ appear together, ‘language’ refers to natural language and ‘code’ to digital computer code, unless otherwise specified” (245 n.1). This tentative definition sets the stage for the confusing and contradictory references she makes to both terms. Despite her repeated use of the term “code,” one-hundred pages pass before she defines what “code” is. *My Mother*’s index entry for “code: definition” refers the reader to page 108, where Hayles argues that, “in the narrow sense in which it operates in computers, code can be defined as a system of correspondences that relate the elements of one symbol set to another symbol set.” This definition differentiates computer code from the general sense of code that Jerome McGann and Roland Barthes use when considering the various ways that print texts are “coded” (*My Mother* 108). Hayles goes on to hint at the performative force of computer code, noting that it is “active, for it functions as instructions that initiate change in the system’s behavior.” These code instructions, she continues, have been developed by “writers” into a new kind

of “writing” that has its own form and style. In fact, “writers of electronic literature view code as a resource for signifying practices” (108). While this is a compelling argument, it seemingly contradicts some of her earlier claims, including her distinction between the natural language and computational worldviews. For example, in chapter one of *My Mother*, Hayles implies that code, programming languages, and human languages all work in different ways. She calls for the development of “a theoretical framework in which language and code... can be systematically thought together” in order to help examine, among other things, “the constitution of subjectivity through bits as well as words” (16). She argues that “programming languages and the code in which they are written complicate the linguistic situation as it has been theorized for ‘natural’ language, for *code and language operate in significantly different ways*” (15; emphasis added). Soon after, however, she describes code as language; she claims that she will “consider the relation of computation (*and hence code, the language in which computation is carried out*)” to established metaphysical models (17; emphasis added). She further complicates the meaning of the word “code” when she refers to it, again parenthetically, as “a synecdoche for information” (20). Elsewhere, “code” seems to mean only the systems of ones and zeroes known as binary code. For example, Hayles claims that her analyses will try to “understand how processes of signification change when speech and writing are coded into binary digits” (39). She also implies a strong correlation between computer language, binary code, and voltage. For example, she says that the “transition from binary code into high-level languages, and from high-level languages back into binary code must happen every time commands are compiled or interpreted, for voltages and the bit stream formed from them are all the machine can understand” (45). In this

passage, what is the “code” that she refers to so casually throughout the rest of the text—is it “high-level languages,” binary code, voltages, information, or a form of language? The word “code” seems to slip between these categories throughout Hayles’ work. This slippage is important because it signals the breakdown of the distinction Hayles makes between the seemingly logical and bounded computational worldview and the unruly natural language worldview.

In some of her most confusing and problematic passages, Hayles attempts to explain the signification of code in the linguistic terminology used by Ferdinand de Saussure and Jacques Lacan. Hayles proposes the idea of the “flickering signifier” in *How We Became Posthuman* (30). Supposedly evolving out of Lacan’s disruptive reading of Saussure’s signifier/signified model, Hayles’ flickering signifier attempts to explain the mechanics of the signification at work in the “interplay between pattern and randomness” that characterizes the flow of information in digital systems (30). The flickering signifier concept is necessary, Hayles argues, because, “in informatics, the signifier can no longer be understood as a single marker, for example an ink mark on a page. Rather it exists as a flexible chain of markers bound together by the arbitrary relations specified by the relevant codes” (*Posthuman* 31). This chain of markers is established as data traverses a series of different computer languages between input and output, for example between a keyboard input and the corresponding output displayed on a monitor. Along this series of translations, Hayles argues, “a signifier on one level becomes a signified on the next higher-level” (*Posthuman* 31). At each stage along the series of computer languages, the data’s power of signification increases—its perlocutionary force increases. As Hayles says, “The longer the chain of codes, the more

radical the transformations that can be effected. Acting as linguist transducers, the coding chains impart astonishing power to even very small changes” (*Posthuman* 31).

Concurrent with this increase in power, however, is an increase in the potential for randomness. “Information theory,” says Hayles, “treats the communication situation as a system in which a sender encodes a message and sends it as a signal through a channel. At the other end is a receiver, who decodes the signal and reconstitutes the message” (*Posthuman* 31). When Hayles sends an email to her students, “the computer encodes the message in binary digits and sends a signal corresponding to these digits to the server, which then reconstitutes the message in a form the students can read. At many points along this route, noise can intervene. The message may be garbled by the computer system, so that it arrives looking like ‘\*\*#e%^&s\*\*’” (*Posthuman* 31-32). Contrary to the claims she makes later in *My Mother*, in *Posthuman* Hayles recognizes the importance of noise, uncertainty, and mutation in her analysis of the signification of code.

Hayles expands on the idea of the flickering signifier in *My Mother*, though she oddly ignores Lacan in this later text, referring only to Saussure’s model of the sign. She suggests that, “given the importance of the binary base,” the voltages that computers interpret into binary code can be thought of as the signifier of Saussure’s sign; the “interpretations that other layers of code give these voltages” are therefore analogous to Saussure’s signified. Out of this initial reformulation of the Saussurian sign, Hayles imagines the different levels of code as an “interlocking chain of signifiers and signifieds, with signifieds on one level becoming signifiers on another” (45). Though this formula suggest a possible explanation for the way computers can represent complexity using only a few simple rules and the zero and one of binary code, Hayles fails to explain how

an “interpretation” that functions as a signified (a “concept” in Saussure’s terms) is transformed into a signifier for the next level of interpretation. If complexity develops through attaching the “interpretations” of the previous level of signification to a new set of “interpretations,” thereby producing another link in the chain of signification (as Hayles seems to be suggesting), using Saussure’s terms only complicates the model. Hayles describes the development of complex signification in computers as a repetitively dialectical process—the code and interpretation at one stage of the chain become the code for the next link, to be met and combined into a new code with a higher level of interpretation, and so on. But the terms “signifier” and “signified” complicate her theory, first by suggesting Saussure’s notions of “sound-image” and “concept” (Saussure 964), but also by implicitly referring to Lacan’s reinterpretation of Saussurian linguistics. Saussure’s theory, like Austin’s, is an important but deeply flawed analysis of language. Just as Derrida deconstructed Austin’s speech-act theory in *Limited Inc*, Lacan deconstructed Saussure’s linguistic theory in “The Instance of the Letter in the Unconscious.” And just as the slippages of Derrida’s iterability threaten Hayles’ notion of the coherent context, the unmotivated sign that Lacan theorized threatens her Saussurian model of code (Lacan 415-418). The distinctions she makes between the computational and natural language worldviews forces Hayles to vacillate between analyses of code as language and analyses of code as system. The gaps opened by her irregular use of the word “code” create several contradictions and shortcomings within her theory. For example, the problematic chain of evolving signifiers and signifieds that Hayles describes solidifies into a hierarchical system of signification that conflicts with

the supposedly progressive theory of communicative complexity that Hayles claims to support.

Though she says that her theories are motivated by a desire to promote intellectual inquiry based on dynamic complexity and entwined recursive loops, Hayles' work contains two rigid hierarchies: a hierarchy within computer mediated communication that establishes an inverse relationship between precision and narrative potential, and a hierarchy among forms of communication that privileges code over writing and speech. In the prologue to *My Mother*, Hayles describes her interest in the way the “Computational Universe works *simultaneously* as means and metaphor... producing and also produced by recursive loops that entangle with one another” (4). Throughout *Posthuman*, *Writing Machines*, and *My Mother*, Hayles returns to the complexity offered by feed-back loops, celebrating the way recursive systems undermine the authority of the “original” (*My Mother* 20-22). She argues that powerfully productive recursive processes create new methods for “re-envisioning and remaking” computer-based works and traditional literary texts (*My Mother* 4). She repeatedly emphasizes the necessity to “think in terms of multiple causalities, complex dynamics, and emergent possibilities” (*My Mother* 7). “We should conceptualize texts as clustered in assemblages,” says Hayles, “whose dynamics emerge from all the texts participating in the cluster, without privileging one text as more ‘original’ than any other” (*My Mother* 9). She similarly favours the “entwined concepts of emergent processes and dynamical hierarchies, which represent ways of thinking that are powerful heuristics through which to understand the dynamics of complex systems of many different kinds” (*My Mother* 30). Her theory develops into a strong critique of “multicausal and multilayered hierarchical systems,

which entail distributed agency, emergent processes, unpredictable coevolutions, and seemingly paradoxical interactions between convergent and divergent processes” (*My Mother* 31). Eventually, foreshadowing her turn to Gilles Deleuze and Felix Guattari in the final section of *My Mother*, Hayles proposes the distinctly rhizomatic terms “media ecology” and “intermediation” (*My Mother* 32-33). For Hayles, “intermediation” signals the various processes that are “operating in the contemporary moment to challenge received ideas about language, subjectivity, literary objects, and textuality, including both print and electronic forms” (*My Mother* 11). In spite of these numerous arguments in favour of dynamic complexity and entwined recursive loops, two rigid systems develop throughout Hayles’ work. These two systems are especially evident in *My Mother*.

First, Hayles’ model of computation is based on an inflexible hierarchy that grows out of her assumption that code and the computational worldview are free of slippage and iterability. The lowest level of this hierarchy occludes error and ambiguity. Mackenzie notes that “despite the recursive processes [of intermediation]... code execution forms a curiously rigid, almost monolithic substrate at important points in Hayles’ account” (149). Hayles recognizes this hierarchy—an important section of chapter two is titled, “The Hierarchy of Code” (52-55). In this section, she admits that the hierarchy of code functions “somewhat paradoxically.” For example, she acknowledges that “flexibility and the resulting mobilization of narrative ambiguities at a high level depend upon rigidity and precision at a low level. The lower the level, the closer the language comes to the reductive simplicity of ones and zeros, and yet it is precisely the ability to build up from this reductive base that enables high-level literariness to be achieved” (53-54). But, as Mackenzie wonders, “Do we need to attribute irreducible specificity to code?” (150).

Iterability suggests that if code is to function as a language (and Hayles claims it will), it must be re-iterable—its signification must slip into ever new contexts that are always (though never totally) of its own creation. In order to maintain the structural integrity of her hierarchy, Hayles (by oversimplifying Derrida’s theory of performativity and by using the word “code” ambiguously) claims that code is both impervious to the destabilizing effects of iterability and more powerfully performative than speech or writing. But, as Mackenzie argues, Hayles’ system “suffers from constant tremors precisely because ‘the machine’ has no more unity than the literary text. It too assembles relations and finds itself shaken by extra-machinic forces (for instance, market competition between semiconductor manufacturers)” (150). Numerous extra-machinic forces explode the boundaries of the code utterance, disrupting what might be called (echoing Austin’s “total speech situation”) the “total computational situation.” Just as Austin assumes that contexts and conventions are stable, natural settings, Hayles assumes that computers are explicit, self-contained physical settings. This assumption becomes more problematic as electronic devices arrive at consumers not only pre-programmed and configured, but also already connected—wirelessly—to the over-determined and heterogeneous network of networks that relentlessly interpellate them. Social, economic, and political pressures also penetrate the boundary of the machine and disrupt the functioning of code. For example, in the recent disagreement between Google and China, the Chinese government has insisted that the results of Google internet searches conducted in China be censored according to government guidelines.<sup>3</sup> The politically motivated pressure exerted by China has constrained the performance of the code of the

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<sup>3</sup> Google’s search results are always censored, no matter where the searcher is located. The disagreement between Google and China arose because the Chinese government tried to force Google to remove Chinese human rights violations from search results (Thompson).

Google search engine. Many other forces, such as embedded Digital Rights Management technology, threaten the hierarchy of code that Hayles proposes. A second, more general hierarchy also develops throughout *My Mother*.

Even though she claims that she is not trying to “subordinate speech and writing to code” (*My Mother* 42), Hayles’ analysis creates a hierarchy of media in which “code exceeds both writing and speech” (*My Mother* 40). She refers repeatedly to speech and writing as “legacy systems” (8, 39, 57), and describes a “progression from speech to writing to code [in which] each successor regime reinterprets the system(s) that came before” (39). She goes on to describe speech and writing as “evolutionary stepping stones” on the path to human comprehension of the “computational nature of reality” (55). Further, she describes a sedimentation of technology in which the “lower levels bear the fossilized marks of technologies now extinct” (57). As *My Mother* progresses, Hayles’ focus expands to a subtle critique of writers and, somewhat disparagingly, humanities scholars. For example, she warns that “in the worldview of code, the generation of meaning happens in ways that scholars trained in the traditional humanities sometimes find difficult to understand and even more difficult to accept” (46). Her comparison of the way that “performative code makes machines do things” to the way that “figurative language makes people do things,” leads Hayles to a puzzling evaluation of literary texts. She argues that the “effective” writer employs a variety of literary “tricks” in order to be “persuasive.” She goes on to claim that, “although these tricks can be seen as lies from one perspective, every student of literature understands what it means to say that writers lie to tell the truth” (127). Even if every student of literature does understand that “writers lie to tell the truth,” it is certainly not clear why she

associates literature with lying. However, Hayles continues this theme on the following page when she refers to the “contradiction between the up-front nature of code and the devious nature of figurative language” (128). Used to describe language and code, the terms “up-front” and “devious” are examples of figurative language—personification, which attributes human characteristics to abstract or inanimate things. In his review of *My Mother*, Neil Easterbrook argues that Hayles’ failure to “interrogate metaphor” creates a problematic gap in her analysis. For example, he notes that even if “code is as literal, referential and denotative a signifying medium as possible, her book isn’t written in code. English, like all natural languages, is ineluctably interwoven by metaphor (here a synecdoche for all tropes and figures). Hayles often deploys metaphors that aren’t analyzed, such as the figure of ‘slippage,’ in discussing Derrida” (520). Combined with her reductive notion of performativity and her ambiguous use of “code,” Hayles’ lack of self-reflexivity causes her to overlook the important, and at times subversive, performative characteristics of her own texts.

Though Hayles argues that literary analyses must consider the materiality of texts, she rarely comments on the materiality of her own texts. To make such a self-reflexive study would be convincingly performative: the physical ink and paper (the material context of her signifying strategy) could be used to embody or perform the arguments she makes. The closest Hayles comes to this strategy is when she claims that chapter eight of *My Mother* “can be read as one of several narratives in this book designed to accomplish” the suturing together of “the analog subjects we still are” and the “digital subjects we are becoming” (204). More than *Posthuman* or *My Mother*, *Writing Machines* attempts to self-reflexively emphasize its own materiality. While the book’s textured cover,

innovative blend of typefaces, and various visual signifiers are interesting, they do little to explore, or even reinforce, the theoretical arguments Hayles makes. For example, she says, “When a literary work interrogates the inscription technology that produces it, it mobilizes reflexive loops between its imaginative world and the material apparatus embodying that creation as a physical presence” (*Writing Machines* 25). But this passage is not accompanied by any information about the inscription technology that produced it; no reflexive loops are mobilized between the words Hayles writes (the “imaginative world” of the passage) and the page of her book (the work’s “physical presence”). Hayles might have simply included an image of the printers at MIT Press as a background, or even reproduced the binary code of the keystrokes that created the letters and spaces of the passage. In the character-encoding scheme known as the American Standard Code for Information Interchange (ASCII), which is often used to represent text in binary code, the first four words of Hayles’ sentence (“When a literary work”) are rendered,

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010101110110100001100101011011100010000001100001001000000110
110001101001011101000110010101110010011000010111001001111001
0010000001110111011011110111001001101011. (Roubaix Interactive)
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Hayles might have mobilized reflexive loops between the imaginative world of her text and the material presence of the inscription processes that produced it by considering the relationship between the English version of her sentence and its binary code version. She could then have emphasized the complex and recursive signification of writing binary code using a word processor (as done here). Each “1” and “0” that is typed as an example of a binary digit (as above) requires its own series of binary ones and zeros: the ASCII code of “1” is 00110001 and “0” is 00110000. The “W” that starts her sentence is “01010111,” but writing “01010111” here (on a computer, in a word-processing

program) requires the binary string

“0011000000110001001100000011000100110000001100010011000100110001.” Of course, typing this longer string here (as I have just done) requires another, exponentially longer, string of code, which itself would require a still longer string, and so on. This feedback loop between binary code and text seems to be the type of complex, multi-causal analysis that Hayles favours, yet she fails to consider the implications it might have for her own texts. She also fails to consider that her texts might be performing in opposition to her arguments.

Though she argues that code is more powerfully performative than natural languages, Hayles’ analyses of literary texts often focus on the performative effects of speech, writing, and literature. The central argument of *Writing Machines* is not only that all texts are in some way embodied, but also that the importance of that embodiment has been ignored by literary scholars. “Literature was never only words, never merely immaterial verbal constructions,” Hayles says, “Literary texts, like us, have bodies, an actuality necessitating that their materialities and meanings are deeply interwoven into each other” (*Writing Machines* 107). The materiality and meaning of the literary texts Hayles focuses on often work in tandem—*form* and *content* communicate the same message, the texts *show* instead of *tell*, and they *do* what they *say*. In other words, Hayles seems most interested in literary texts that are performative. For example, she argues that William Gibson’s cyberpunk texts “have been so influential not only because they present a vision of the posthuman future that is already upon us... but also because they embody within their techniques the assumptions expressed explicitly in the themes of the novel” (*Posthuman* 39). Hayles makes a similar argument about the confluence of

content and form in, among other works, Philip K. Dick's *Ubik* (*Posthuman* 163, 188), Elizabeth Grosz's *Volatile Bodies* (*Posthuman* 196), Wim Coleman's *Terminal Games* (*Posthuman* 257), and Neal Stephenson's *Snow Crash* (*Posthuman* 278) and *Cryptonomicon* (*My Mother* 10). Ironically, through her focus on literary texts that are performative, Hayles' analyses perform a preference for works with performative dimensions. Though this assertion borders on tautology, it is important to note because, unlike Derrida and to a lesser extent Austin, Hayles fails to consider the performative force of her own utterances (made in speech, writing, and code).

Whereas Hayles fails to emphasize the effective force of her own texts, Derrida self-consciously manipulates the reader with his iterably performative work. For example, at the beginning of *Limited Inc* Derrida's writing both tells and performs the inherent difficulty of "communication" that he hopes to explain (or not explain). He notes that we cannot assume a metaphorical connection between "communication" as a linguistic effect and "communication" in a physical sense (such as communicating a force) "because the value of displacement, of transport, etc., is precisely constitutive of the concept of metaphor with which one claims to comprehend the semantic displacement that is brought about from communication as a non-semiolinguistic phenomenon to communication as a semio-linguistic phenomenon" (2). This densely performative passage forces the reader to experience the difficulty of "communication" that Derrida is describing. He is saying, perhaps, that the semiolinguistic use of the word "communication" cannot be a metaphor for the non-semiolinguistic use of "communication" (or vice-versa), because the concept of metaphor which one uses to understand the displacement (or "communication," in the non-semiolinguistic sense)

from non-semiologic to semiologic is *itself* dependant upon the notion of displacement in the semiologic sense. Just as the iterable mark is both the grounds for and product of its context, the semiologic sense of the word “communication” comes both before and after itself. Derrida’s passage performs the argument it makes, simultaneously doing and saying. Even (or especially) when the reader cannot understand his passage, Derrida makes his point: communication is difficult, it never works out exactly right, and once one starts to say something about communication one must already have done something with communication, communication must already have happened. The performative characteristic of Derrida’s writing is “up front, in your face, underlined, salient. Derrida wants *Limited Inc* to do something with words... and he wants the reader to notice that this is happening” (Miller 76). Whereas Derrida emphasizes the illocutionary force of the marks he makes, Hayles (like most writers and critics) focuses only on the perlocutionary consequences of her arguments. Ironically, the illocutionary forces at work in her texts often disrupt the perlocutionary effects of her claims.

For example, Hayles’ texts inadvertently support Derrida’s theory of iterable performativity. In *My Mother* she writes, “This chapter will show how the worldview of computation sketched in chapter 1 manifests itself in the specific case of the digital computer” (39). This sentence can be read (at least) two ways—one rhetorical and the other technical. These two readings play on the different possible meanings of the word “case.” First, the sentence suggests that chapter two will build on the arguments made in chapter one, but focus specifically on how those arguments apply in the specific example (or “case”) of the digital computer. This rhetorical reading is what Hayles intends—at

least, that is what chapter two does provide. But a second reading of this sentence might take it to mean that chapter two will trace the computational processes, which took place inside the physical cabinet (or “case”) of the computer, that were used in constructing the arguments “sketched” (or presumably typed) in the first chapter. The computational processes perhaps took place inside the case of Hayles’ home computer, or even in the digital systems used by the University of Chicago Press. In other words, “this chapter” might apply the arguments made in “chapter 1,” or it might describe the technological processes that were used to compose, edit, and print “chapter 1.” This example shows that Hayles’ text performs Derrida’s argument, despite her reductive reading of Derrida’s notion of iterability. Like all marks, her texts often perform more and other than they say.

In *Writing Machines*, Hayles repeatedly uses the term “mark” (24, 96, 124). For example, she says, “*To count as an inscription technology, a device must initiate material changes that can be read as marks*” (24). As noted earlier, Derrida insists on the iterability of the “mark.” Whether she is aware of it or not, Hayles’ choice of the word “mark” disrupts her theory as it re-iterates Derrida’s use of the same term. Anne Burdick, the graphic designer who collaborated with Hayles on *Writing Machines*, provides a similar example. In her “Designer’s Notes” at the end of the text, she says that the cooperative process of creating the book “allowed [her] to work as a designer *with* words rather than *after* words” (140). Though she is describing the reduced temporal displacement between the writing and design processes, Burdick’s statement, whether she realizes it or not, echoes Austin’s title—she was *doing things with words*. Finally, in a wonderfully felicitous and subversive moment, Hayles says other than she intends when, in *My Mother*, she proclaims that “to write a command line is be in command...” (126).

Just at the moment when she asserts her command over language and the computer codes of her word processor, her authority is undermined by linguistic or computational slippage. At some level, Hayles is not in command of the sentence, or perhaps the word-processing code that underlies it: a crucial “to” has slipped away. The utterance “to write a command line is be in command” is a performative with subversive illocutionary force—it simultaneously does and says: *in* writing the words, Hayles ironically undermines the meaning she intends to communicate. She performs the linguistic slippage that she had reduced to commonsense. It would surely have pleased Derrida that Hayles’ “to” is made more present, more disruptively performative, in its absence.

If code is mechanical and un-iterable, then, following Derrida, code cannot function beyond its original inscription and cannot actively and performatively inscribe the boundaries of context. If they were un-iterable, codes, and by extension the electronic devices they animate, could carry no performative force and only function as passive tools. However, as Hayles notes, “computers are no longer merely tools (if ever they were).” Electronic devices “are complex systems that increasingly produce the conditions, ideologies, assumptions, and practices that help to constitute what we call reality” (*My Mother* 60). Electronic devices can do little without the codes that make them run. As Hayles says, “Code has become an important actor in the contemporary world because it has the power to change the behaviour of digital computers, which in turn permeate nearly every kind of advanced technology” (*My Mother* 48). If electronic devices and their animating codes are producing the conditions of our reality, then code marks function performatively exactly as Derrida predicts, inscribing the limits of the contexts in which they operate. And code is iterable, not only within the machine, but

also across different media. In *Writing Machines*, Hayles inadvertently reveals that code functions iterably, always saying other and more and engendering new contexts.

#### **Chapter Four – Iterability and Computation**

The iterability of code disrupts the distinction Hayles makes between computational and natural language worldviews. In this chapter I argue that code signifies iterably beyond itself, even in opposition to itself. By carefully re-reading Hayles' analysis of Talan Memmott's artistic use of code, I show that the performance Hayles' text *Writing Machines* makes is in opposition to her argument in that text: code in *Writing Machines* does what Hayles says it cannot do. Computational processes also signal beyond themselves through phenomena such as ringing and the propagation of electromagnetic fields. These other modes of signification are important to cyber-performative theory because they occur simultaneously with the intended signification of code, granting marks made in computational processes the capacity to function simultaneously across numerous channels. Revealing the multiple significations of code further undermines Hayles' distinction between computational and natural language worldviews by exposing the arbitrary and conventional characteristics of the standards of computation that are often assumed to be natural or inherent. Just as Derrida argues that social and political forces create the illusion of natural or ordinary human languages, cyber-performative analysis emphasizes that signification mediated by computational processes is similarly dictated by social, economic, and political forces.

In her analysis of his web-based work *Lexia to Perplexia*, Hayles notes that Talan Memmott "creates a CREOLE discourse compounded from English and computer code."

This new mode of signification “is formed as code erupts through the surface of the screenic text, infecting English with machine instructions and machine instructions with English, as if the distinction between natural and programming language has broken down and the two scripts are mingling promiscuously inside the computer” (*Writing Machines* 50). Hayles’ choice of the word “infecting” is reminiscent of Austin’s use of “parasitic,” and the tone of this passage—with code “erupting” and the two languages “mingling promiscuously”—is oddly grimy. Hayles’ analysis of Memmott’s text unintentionally suggests that code functions iterably in and beyond *Lexia to Perplexia*.

To reinforce her argument, Hayles reproduces—in a blatant act of photographic re-iteration—the opening screen of *Lexia to Perplexia*. This re-iteration produces a complex interplay of simultaneous and competing significations (anticipating the complexities of the multiple significations of the cyber-performative act). The reader of *Writing Machines* is exposed simultaneously to at least three different layers of signification: the signification of the photo of Hayles’ computer screen, presented on the page of *Writing Machines*; the signification of the text in the image—both its English and code components (which for Hayles forms a creole); and two competing computer codes—the codes Hayles used creating *Writing Machines* (which cannot be seen directly but only for their effects) and, lurking somewhere even further behind the marks on the page of *Writing Machines*, the codes Memmott used when constructing the screen that appeared for Hayles to photograph (51). From the image she has re-iterated, Hayles re-iterates the passage “<HEAD>[FACE]<BODY>” on the next page of *Writing Machines* (52). In HTML, instructions for web browsers are located between “opening tags” and “closing tags,” which tell the browser when to start and stop performing the computation

located between the tags. Opening tags take the form “<...>” and closing tags take the form “</...>.” Most HTML documents have a “head” section that is bounded by the instructions “<head>” and “</head>,” and a “body” section bounded by the tags “<body>” and “</body>.” These instructions tell web browsers how to differentiate between the contents of the web-page (its “body”) and other information, such as the title of the web-page or keywords for search engines (located in the web-page’s “head”). Read as HTML, Hayles argues, this passage “has two opening tags but no closing tags, which would indicate that FACE is part of HEAD but is not included in BODY.” But Hayles’ claim that code operates according to strict, mechanical logic forces her to misread the performance that “<HEAD>[FACE]<BODY>” makes as HTML code. As web-designer Matthew MacDonald notes, web-browsers can often understand poorly written or incomplete code (34). Instead of removing “FACE” from “BODY” and connecting it only with “HEAD,” Mozilla Firefox separates “FACE” from “HEAD.” The only thing that Mozilla Firefox displays on the simple webpage described by the HTML code “<HEAD>[FACE]<BODY>” is a single line of text: “[FACE]” (see Appendix One).<sup>4</sup> In an attempt to reveal the intermediation between the computational and natural language worldviews, Hayles juxtaposes her HTML interpretation of “<HEAD>[FACE]<BODY>” with a reading of these marks as English words.

Read as English, Hayles argues, the “creolized puns [of the passage <HEAD>[FACE]<BODY>] make a serious point, for they allude to the mind/body split in which the face, the most intensely signifying part of the human form, is first associated with the head or mind and then read as part of the body” (52). By reading Memmott’s marks as both HTML code and English, Hayles inadvertently reveals that the

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<sup>4</sup> Internet Explorer and Safari render the same page.

signification of code in her computational worldview is not as direct and logical as she first claims. “<HEAD>[FACE]<BODY>,” despite being HTML code, functions iterably as it is re-iterated and re-re-iterated in Hayles’ text (and then re-re-re-iterated in this paper, and again, in a different form, in Appendix One). This confused and confusing interplay of code, language, and signification opposes Hayles’ claim that the computational worldview does not tolerate the performative slippages that are integral to Derrida’s iterability. Code functions beyond its machinic context, iterably repeating itself *différently* and inscribing a series of disparate contexts. Though she claims that the performative effects of code “are built ultimately on a base of binary code and logic gates that are intolerant to error” (*My Mother* 48), errors and uncertainty remain a necessary possibility at every stage of computation.

Even the seemingly exact voltage changes that underlie the ones and zeroes of binary code are less secure than Hayles suggests. Just as Austin excludes non-serious, parasitic utterances from his speech-act theory, Hayles argues that computers can only function if “every change in voltage [is] given an *unambiguous* interpretation.” She goes on to claim that a program which attempts to reconcile ambiguous voltage “is likely not to function *as* intended,” and that, “for the machine, obsolete code is no longer a competent utterance” (*My Mother* 47). In a sense, Hayles is correct: in order to perform the *intended* processes, computers *give* every change in voltage an *unambiguous interpretation*. But unambiguous interpretation is not an inherent quality of computation. Like language, computers are based upon an arbitrary system of differential terms that creates an illusion of rigid, direct signification. In his *Introduction to Circuits and Electronics*, J.R. Cogdell explains that, “[i]n a typical system, a voltage between 0 and

0.8V would be considered a digital zero, a voltage above 2V would be considered a digital one, and anything between 0.8 and 2V would be forbidden” (266). Like Austin’s distinction between ordinary and parasitic language, the distinction between acceptable and *forbidden* voltage is rooted in a traditional metaphysics of presence. The “binary” of binary code demands two opposing terms—one and zero. But the digital zero is not a recognition of the importance of absence; the digital zero is present just as much as the digital one. One and zero are arbitrary signifiers for two different states of presence (in the *case* of a computer, two voltages). As Cogdell explains, “we may call these two values by any names we wish: yes/no, true/false, one/zero, high/low, even black/white”; one and zero are used because they correspond to the terms of the base-two number system and so can be used for representing numerical information, the most basic computations performed by computers (Cogdell 266). Cogdell goes on to explain the connection between digital information and traditional forms of philosophical inquiry: “When this type of [binary] mathematics was used primarily for analysis of philosophical arguments through symbolic logic, the values of the variable were called true or false, according to the validity of the logical propositions being represented. Recently the names one/zero have come to be preferred by engineers and programmers dealing with digital codes” (266). The “/” Cogdell uses to separate one and zero represents the absence that allows the digital binary system to function. The zone of forbidden voltages, like the fictional utterance in Austin’s theory, is a structural necessity. The forbidden values between 0.8 and 2V are required if digital zero is to be differentiated from digital one. Just as Austin’s ordinary speech-act depends on the forbidden fictional utterance, binary

code is dependent upon the voltage it excludes. And just as words slip iterably in language, voltages signify other and more than is intended, expected, or even desired.

The changes in voltage that carry simple binary data also produce complex electromagnetic fields—the field of radio waves emitted by any moving charge. Electromagnetic waves are a byproduct of the flow of electrons that animates electronic devices. The electrons that flow through one channel (such as a wire) can create electromagnetic fields that interact with the flows of electrons in adjacent channels. Electromagnetic waves often pass through each other with no effect. However, if the wavelength or frequency of the waves are too similar, the two fields can influence and distort each other, resulting in “noise.” Noise disrupts the smooth flow of electrons, causing fluctuations in voltage and potentially affecting data.<sup>5</sup> As Ron White explains in *How Computers Work*, “[t]he more noise computer components have to contend with, the more difficult it is for a component to tell whether some passing spike in current is intended to convey data or is just strong noise” (180). Data traveling through the pathways of a computer therefore simultaneously perform two marks—a binary one or zero and an electromagnetic signal. Many advancements in computer engineering have resulted in both increases in the transmission of data and reductions in the effects of noise (White 180). However, the electromagnetic noise of a computer can operate as a mark that exceeds the context in which it is made, signaling beyond the *case* of the computer.

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<sup>5</sup> Of course, many processes and redundancies that serve to ameliorate the effects of noise are built into modern computers; a computational error caused by noise is a highly unlikely event. My point here is not that computers are precarious contraptions that might go wrong at any second, but that any system, especially one as complex as a computer, contains noise and that noise might be doing things that are unexpected or unnoticed. The importance of noise is not the potential effects of its presence becoming manifest in a computational error; instead, the importance of noise is the limitations that its necessary absence puts on the possibilities of computation, and the excluded or foreclosed performances made by the noise, which are rendered parasitic, fictional, and other by the system.

In an essay that raised concerns about the security of data, computer-scientist Wim van Eck argues that “any conductor carrying a current with varying strengths (alternating current) can [be] regarded as a transmitting antenna. Digital equipment will therefore generate electromagnetic fields containing all frequency components of all signals inside the equipment” (280-281). van Eck notes that all electronic equipment produces an electromagnetic field: “Even circuits not designed to carry a certain signal may radiate part of this signal due to cross talk and because the circuits are resonant for some of the signal’s frequency components. A striking example of such a radiating circuit is the main power cable of a piece of equipment” (270). Since electromagnetic fields are a type of radio wave, the “noise” in a computer can be gathered by an external antenna and reconstituted into the original binary voltage changes—the original data marks. The process of discerning the data flows in an electrical system, based on the noise that the system (or one of its peripheral devices—van Eck focused on CRT monitors) creates is called van Eck Phreaking. Unlike the direct relationship between voltage and unambiguous interpretation, which for Hayles characterizes the computational worldview, van Eck Phreaking reveals the complex signifying potential of digital binary marks. A single transmitted voltage might simultaneously perform the one or zero of binary code, disrupt adjacent data with its electromagnetic noise, and be received as radio waves by an external antenna. Like Derrida’s iterable mark, voltage changes are subject to slippage—they often signify other and more than intended or expected. This complexity is not limited just to the interpretation of voltage changes: changing voltage is not a simple or direct process.

In his novel *Cryptonomicon*, which Hayles refers to several times in her work, Neal Stephenson describes van Eck Phreaking in connection with the fluctuation in voltage known as “ringing.” Echoing Cogdell’s description of the representation of binary code in voltages (though with slightly different values), the narrator of *Cryptonomicon* explains,

The way that you represent bits in a computer is by switching a wire’s voltage back and forth between zero and five volts. In computer textbooks these transitions are always graphed as if they were perfect square waves, meaning that you have this perfectly flat line at  $V=0$ , representing a binary zero, and then it makes a perfect right-angle turn and jumps vertically to  $V=5$  and then executes another perfect right-angle turn and remains at five volts until it’s time to go back to zero again, and so on. (436)

But such a model is the “Platonic ideal of how computer circuitry is supposed to operate.” The waves aren’t perfectly square; monitored with an oscilloscope, “[t]he voltage jumps, but after it jumps it oscillates back and forth around the new value for a little while” (Stephenson 437). Oxford’s *Dictionary of Computing* explains that ringing is “a damped oscillation that occurs in many electrical circuits when signals change rapidly, and is due often to unwanted capacitance and inductance in devices and connecting wires.” The voltage changes that form the stable foundation of Hayles’ hierarchy of code are therefore not as stable as she suggests. The effects of ringing, though undoubtedly minute, introduce an instability into the system that imposes a limit on the minimum change of voltage that can differentiate binary one from binary zero: the voltage changes that represent data must remain larger than the oscillations of ringing. The “reductive simplicity of ones and zeroes,” which Hayles argues permits the “mobilization of narrative ambiguities at a higher level” of computation (*My Mother* 53-54), is more complex than Hayles suggests.

Contrary to the argument she makes throughout her work that theoretical inquiry (especially within literary studies) must consider the importance of physical materiality, the hierarchy of code that Hayles describes in *My Mother* separates the physical phases of computation from the computational processes that manipulate data. Though she admits that in any physically embodied system “some noise and, therefore, possible ambiguities are always present,” Hayles quickly denies that this noise has any effect on the supposedly direct and logical processes of computation. Any noise that enters the system, she claims, “is rectified into unambiguous signals of one and zero before they can enter the bit stream” (*My Mother* 46). But the so-called “bit stream” cannot be separated from the physical properties of the channel that transmits it. The effects of electromagnetic fields and ringing are important because they perpetually threaten the flow of data, at every stage of computation—from voltage changes through to higher-level computer languages. Most computer engineers are reluctant to separate the manipulation of data from the channels that carry it. In *Error-Control Techniques for Digital Communication*, Arnold Michelson and Allen Levesque argue that in “any real communication system we cannot expect to receive exactly what is transmitted. At the very least, we can expect noise to be added to the transmission, causing random errors” (4). John Baylis makes a similar claim in *Error-Correcting Codes*. Baylis explains that “cunning coding,” including different forms of redundancy, is used to reduce the disruptive effects of “the channel—[the] cause of the problem” (2-3). Various error-detecting and error-correcting codes, such as the commonly used cyclic redundancy check, are designed to identify accidental changes in data caused by the physical characteristics of the system. The algorithms of computation effect physical changes within and beyond the *case* of the

computer. A host of other physical forces also interact with computation. These forces come from outside the computer, as input, and are reproduced by the computer, as output.

Computation is generally broken down into three distinct stages—input, processing, and output. As computer scientist Irv Englander explains, no matter what the computation is, “the work of a computer can be characterized by an input-process-output model; that is, a program receives input from a disk file, mouse, keyboard, or some other input device, performs some processing on the input, and produces output to a disk file, a printer, a video screen, or some of other output device” (9). Austin’s ordinary-language theory of performative language can be applied to this simple model of computation. In Austin’s terms, input can be described as a performative utterance: input into the system does something (with words, numbers, sounds, images, pressures, temperatures, or any other form of input). An input is doing something, both physically (in the voltages and mechanisms of the computer) and computationally (in the abstract mathematics of processing algorithms). Like performative speech acts, inputs are not true or false reports or statements—they effect change in being made. Conversely, output can be described as a constative utterance: output from the system makes a statement or report about the computation that has already taken place (rarely is the processing of inputs concurrent with output, the results of the processing generally need to be converted into an output that is, for example, visual or tactile). Output might also be judged “true” or “false.” For example, a computer running too slowly to synchronize mouse movements with the position of the cursor on the screen presents a false report of the inputs. Similarly, video-input programs often fumble images together or create false pauses in their representation

of the input. Like the distinction Austin makes between performative and constative, however, the difference between input and output breaks down.

Just as context and conventions are central to Austin's speech-act theory, established conventions play a crucial role in maintaining the illusion of the input/output binary (often shortened to I/O). Englander explains that "the data conversion process... transform[s] the input data into a representation that conforms to a standard. In general, a standard is an agreement that makes it possible for users on different systems... to share and exchange data" (63). In the same way that Austin ignores the metaphysics of presence that underlies his speech-act theory, Englander ignores the powerful economic (and political) forces that contribute to the development of communications and computations standards. "Many standards occur naturally," he claims, "a proprietary data format belonging to a single vendor becomes a de facto standard due to the popularity of the product" (64). Of course, there is nothing "natural" about the popularity of a product—marketing and licensing agreements have traditionally influenced product popularity and thus dictated the definition of standards.<sup>6</sup> The standards that have labeled one type of information "input" and another "output" assume a bounded computational situation.

Just as Austin assumes a coherent and unified "total speech situation," the distinction between input and output depends upon the unity of the total computational situation. And just as Austin's total speech situation breaks down under the iterable force of language, the boundaries of the total computational situation are permeated by the iterability of code, electromagnetic fields, and ringing voltages. White argues that the I/O

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<sup>6</sup> The most famous example of this trend is perhaps the "format wars" that took place between Sony's Betamax and JVC's VHS home videocassette systems in the late 1970s and throughout the 1980s.

binary breaks down even in the process of computation. As data moves through the system, “one computer component’s output [becomes] another component’s input” (White 178). Other factors that lie outside the moment of computation—such as the actions or intentions of the programmers and engineers who constructed the system and the consequences of the computation (as Hayles notes, potentially setting off missiles or controlling medical equipment)—also cannot be excluded from the total computational situation. As N. S. Caswell says in his essay “Introduction to Input Devices,”

input systems are only a part of a larger system consisting of the real world, the user, the processor, and the output systems of the processor. While this is obvious, it causes a great deal of confusion. How much of the system is included in the discussion of input and which interaction (user/device, user/application, device/application) drives the discussion is a matter of purpose and taste. (2)

The I/O binary breaks down as the computational context expands (as Miller says of Austin’s total speech situation) to include “vaguer and more distant fringes that are neither quite part of the context nor able to be put firmly beyond its borders...” (Miller 100). The illusion of the total computational situation begins to resemble the unbounded heterogeneity into which Derrida’s iterable mark intervenes. Though he is emphasizing the importance of operating systems, White reinforces the similarity between the open context of computation and Derrida’s notion of context. White says, “A computer is only a collection of millions of possibilities until it has an operating system, which determines which of those possibilities come true” (24). Though the analogy does not hold for long, White’s operating system, like the iterable performative mark, effectively inscribes itself within a vast field of possibility. Faced with this field of possibility, the I/O binary breaks down and, like the tension between constative and performative that Derrida describes in “Declarations,” data becomes simultaneously input and output, simultaneously constative

and performative. Beginning with this simple application of speech-act theory terms to computational marks and processes, the theory of cyber-performativity builds to describe the numerous tensions and complexities that develop as marks made in and through computational spaces simultaneously embody a range of constative and performative effects.

Despite her reductive misreading of Derrida's speech-act theory and her oversimplified description of computation, Hayles' claim that computers effect change performatively is an important observation. As she says, code (in all the various ways Hayles uses the word) is "active," it initiates change in the behaviour of the computer system and beyond (*My Mother* 108). As well as the dramatic examples Hayles provides, such as launching missiles and controlling medical equipment, marks made through multiple channels of computation (offline and on) continue to accumulate force in the real world—from betting and banking to relationships, retail, and artistic production. While Hayles is right to argue that doing things with computers is performative, her separation of the computational and natural language worldviews and her reductive reading of speech-act theory limits the effectiveness of her theory's engagement with the complex performativity of marks made in computers and on-line. Conversely, cyber-performativity describes the multiple performative effects of marks made in and through virtual spaces by combining Hayles' analysis of the influence pervasive digital technologies have on communication, art, and the human condition (or posthuman condition, as Hayles would have it) with Derrida's notion of the iterable performative mark. Cyber-performative marks have the power to transform both the virtual world they are made in and the real world they are made from.

## **Chapter Five – Cyber-Performativity**

Little critical attention has been paid to the linguistic nature of the channels that mediate exchanges within computational spaces and between virtual worlds and the real world. Theorists from a wide range of disciplines have investigated the social, economic, and political effects of cyberspace and computer-mediated communication, but the processes by which these effects are communicated have largely been neglected. In this chapter I argue that the theory of cyber-performativity describes the linguistic mechanisms by which simple acts of language effect change in real and virtual spaces. I argue that the term “cyber-performative” simultaneously signals three things: “cyber” identifies an exchange of communication and control between machine and human, “performative” refers to the complex interplay of marks and contexts that Derrida described, and “cyber-performative” indicates the productive tension between these two terms. In general, cyber-performative analysis distinguishes between machinic, computational, and interface marks, though these arbitrary categories inevitably blend together. In order to illustrate the multiple performances made by cyber-performative marks, I examine the multiple channels of signification that are simultaneously presented by a video of the marriage ceremony that united a Japanese man named Sal and a video-game character named Nene.

Mimicking the multiply performative phenomenon it describes, the term “cyber-performative” simultaneously emphasizes three different things. The prefix “cyber” identifies the “unprecedented synthesis of the organic and the mechanical,” or computational, that characterizes the interaction of (post)human subjects and computing

devices (*Posthuman* 8). Derived from the Greek term for “steersman,” the word “cybernetics” came to describe the “theory or study of communication and control in living organisms or machines” (*Oxford English Dictionary*). “Cyber” thus signals a recursive exchange of information and control between human and machine. This exchange assumes a bounded notion of context, a traditional metaphysics of presence, and a scientific epistemology committed to physical laws and quantifiable truths. Though he later regretted the “co-optation of cybernetics by the military,” Norbert Wiener, the brilliant early twentieth-century philosopher and mathematician, devised the first modern cybernetic system: a World War Two anti-aircraft weapon that had the capacity to evolve new mathematical models of aircraft flight based on previous observations (*Posthuman* 106-107). In other words, Wiener developed a cybernetic gun that could learn.

In contrast to the scientific, phallogocentric perspective of “cyber,” “performativity” emphasizes the necessary and productive uncertainty that is characteristic of Derrida’s deconstructive iterability. “Performativity” denies the totality of control assumed by cyber, disrupts the scientific epistemology, and undermines the bounded context within which human and machine smoothly exchange information and control. The performative capacity of the cyber-performative retains Derrida’s insistence on the term “mark”; a cyber-performative mark might be made in voltage, speech, writing, code, mouse clicks, brain waves—any signal or sign. “Performative” also preserves the traces of Austin’s speech-act theory (the terms performative, constative, illocutionary, and perlocutionary) and all the attendant tensions between Austin’s ideas.

Like the tension between performative and constative effects that Derrida locates within the United States Declaration of Independence, the double term “cyber-

performative” maintains an opposition between the forces of control and iterability. The cyber-performative act is always both “cyber” and “performative”—always instantiated within the logic of cybernetics and simultaneously uprooted from that logic by pervasive iterability. This opposition is necessary not only because every mark is dehiscent and split from itself, but also because the cyber-performative act contains a multiplicity of marks, contexts, and performances that simultaneously interpenetrate one another. Unlike Hayles’ study of the performativity of code, cyber-performative theory refuses to differentiate between a computational worldview and an ordinary language worldview. Instead, cyber-performativity recognizes that any mark—whether speech, writing, code, or any other signal—can be, and might already be, performing simultaneously across several planes of signification. For example, a mark made in the virtual world *Second Life* simultaneously effects change in the environment of the virtual space (by creating a virtual item, such as a billboard); in the social space created by residents of *Second Life* (the billboard might advertise an event or product); and in the various levels of computer codes, voltages, and electromagnetic fields on the servers at Linden Lab (*Second Life*’s parent company), the computer from which the mark was made, and the computers of any of the 40 to 80,000 people at that moment logged into *Second Life* and within the vicinity of the mark.

Cyber-performative theory identifies marks across three broad planes of signification. These arbitrary categories bleed into each other and describe not the use of specific signifying systems (such as English or ASCII) but the general characteristics of three different types of system. In Saussure’s linguistic terms, cyber-performativity identifies three forms of langue, not parole. The first level consists of *machinic marks*,

including mechanical changes within the computing device (such as the spin of a hard drive, the pulse of a laser, and even the micro-vibrations of a processor's crystal oscillator), as well as changes in voltage, ringing, and the propagation of electromagnetic fields. The second level, which remains closely related to machinic marks, consists of *computational marks*, including the ones and zeroes of binary machine code and data, the multiple source codes and the various complex levels of programming languages manipulated by programmers (such as C++, Java, and HTML), and the operating systems and drivers which mediate between a computer's various software applications and its hardware components. The shell programs that allow computer users to interact with operating systems make use of the third level of signification identified by cyber-performative theory, the *interface mark*. Interface marks include all of what Hayles would call natural languages—human languages such as English, French, or sign-language. But interface marks also consist of colours, sounds, moving pictures, download speeds (or lag time), tactile sensations, and subtle design features such as text size, screen-orientation, and blank space. Instead of proposing a distinction between different types of signification (as Hayles does when she differentiates between the computational and natural language worldviews), the cyber-performative act performs simultaneously as a collection of machinic, computational, and interface marks. Unlike Hayles' oversimplified theory, cyber-performativity not only engages with the complex performative effects at work in elaborate media environments, but also demands that texts self-reflexively consider the forces of their own cyber-performativity.

Most texts today are at some point rendered digitally—including productions as diverse as literary texts, scholarly works, music, movies, art, fashion, and architecture.

Books are constructed using word-processing programs, design software, and printing algorithms; paintings and sculptures are digitally photographed and posted on-line or reproduced in textbooks, brochures, and advertising; music is recorded, mixed, and compressed into a host of digital formats; and films are not only stored and transmitted digitally but often composed using computer-generated imaging (CGI) technologies. Physical objects such as cars, buildings, and clothes are often rendered virtually before construction. Information and communication are routinely dispersed digitally—via email, instant-messaging, social-networking, on-line news, and numerous other channels. Despite the ubiquity of these transformations into and out of binary data, few texts interrogate or recognize the importance of their own cyber-performative effects. As noted above, Hayles ignores the interplay between text and technology that her own work performs when she fails to analyze the relationship between the codes that underlie her text and the human-interface marks displayed on the pages of *Writing Machines*. Cyber-performative theory insists that every digitally mediated mark simultaneously undertakes a host of different performances. For example, the word “cyber” creates the ASCII binary code “0110001101111001011000100110010101110010” (Roubaix Interactive), but in hexadecimal<sup>7</sup> “cyber” is given as “6379626572” (Wartoft). Typing the word “cyber” therefore creates a series of machinic marks (such as voltage changes and electromagnetic waves), a series of computational marks (including the ASCII and hexadecimal versions), and the interface marks that signal the English word. Each of these marks makes a different performance, creating a complex multitude of marks, performances, and contexts.

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<sup>7</sup> Hexadecimal is a base-sixteen positional numeral system that is used by most programming languages to convert binary code into numbers that are easier for programs to recognize and manipulate

Some applications take an artistic approach to revealing the multiple cyber-performative effects of text. For example, Wordle ([www.wordle.net](http://www.wordle.net)) creates text clouds based on the word frequency within a written work. Wordle calculates which words are used most often in a text and then displays those words in a rough cloud shape; the more frequently a word appears in the work, the larger its font size in the text cloud. By counting the number of times different computational marks are made within a particular document, Wordle can compare, for example, the number of times that “6379626572” (“cyber”) is written to the number of times that “706572666f726d6174697665” (“performative”) is written. The results of Wordle’s tally are used to modify the visual characteristics of the interface marks within the Wordle text cloud; for example, if “performative” is used twice as often in the document it might be rendered in interface marks twice the size of those used to display “cyber.” Wordle creates a simple visual representation of the text’s literary performance.<sup>8</sup> While the word clouds produced by Wordle are a simple way of revealing the simultaneous effects of cyber-performativity, many cyber-performative acts embody a more complex interplay of contexts, illocutionary forces, and perlocutionary effects.

On 24 November 2009, Lisa Katayama posted an article and video on Boing Boing (the popular technology and culture blog) about a Japanese man who married a video game character. The man, who identifies himself as Sal9000, married Nene Anegasaki, a character in the Nintendo DS (NDS) game “Love Plus.” In her Boing Boing article, Katayama notes that Sal and Nene’s marriage was broadcast live on Nico Nico Douga, a Japanese video-sharing site similar to YouTube. “Nico Nico Douga is home to

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<sup>8</sup> In a simple self-reflexive gesture, Appendix Two includes a Wordle text cloud for each chapter of this paper.

thousands of video projects by anonymous users,” Katayama explains; videos include “mashups of original art, pop music, anime, and web memes that only an insider to Japanese web geek culture can completely decipher” (Katayama). Nico Nico Douga viewers can also add text messages to videos being broadcast live; the messages are displayed in real-time during the broadcast. In the short (2:32 minute) video clip of the wedding that Katayama assembled from the live broadcast, dozens of messages in Japanese, English, and other languages scroll rapidly across the screen. These text messages, as well as Katayama’s editing of the live footage, complicate the signification and significance of Sal and Nene’s wedding. Even within Austin’s system of ordinary language, weddings contain powerfully performative speech acts: Austin’s first example of a performative utterance is the “I do” of a marriage ceremony (5). Of course, within Austin’s theory, Sal and Nene’s vows would be considered infelicitous speech acts—ordinary conventions dictate that a marriage is only successful if a real man and a real woman perform the requisite utterances. Within cyber-performative theory, however, the wedding, the viewers’ text messages, and Katayama’s video clip produce a host of interrelated effects.

Sal and Nene’s wedding ceremony, which included a priest, an MC, and friends and family (some physical and some virtual) of both the bride and groom, is an example of the complex interplay between machinic, computational, and interface marks that cyber-performative analysis investigates. Nene, the bride, is not a physical human—she exists only within the virtual computational space created by the hardware and software of the NDS system and the “Love Plus” game, and within the virtual social space that users such as Sal have constructed through their interaction with the cyber-performative

acts effected by “Love Plus.” The wedding between Sal and Nene playfully disrupts the separation between the apparently ordinary physical world and the supposedly fictional virtual world. Sal and Nene’s wedding reiterates the conventions of the traditional wedding context—including a priest, vows, an MC, speeches, family, and friends—but simultaneously effects a new set of conventions by incorporating the fictional (or in Austin’s terms, the parasitic) into the wedding. Like the Declaration of Independence made by the people of the “free and independent states,” the cyber-performative marks of Sal and Nene’s wedding simultaneously describe and inaugurate a new context—inscribing the condition of marriage onto the boundless heterogeneity of possible interactions between real and virtual that is offered by games such as “Love Plus.” Of course, the perlocutionary results of their marriage are potentially less effective than the performance of the marriage (and certainly less effective than the consequences of the United States Declaration of Independence). Presumably Sal and Nene’s marriage is not recognized by any ordinary institutions, such as religious or secular laws. But this lack of recognition is not an automatic result of incorporating the fictional (Nene) into the traditional conventions of the ordinary marriage; instead, this lack of perlocutionary force is a result of the powerful illusions of legitimacy already well established by traditional forces such as religion and law. In other words, the performative and constative effects of the machinic, computational, and interface marks that comprise the wedding are not rendered inconsequential by the potentially minor perlocutionary effects of the marriage; the perlocutionary effects are reduced because the illusion of legitimacy produced by the wedding conflicts with the ingrained illusions produced by law and religion. And the wedding did produce consequences in the real world. Sal and Nene ensured that the

cyber-performative effects of their wedding were immediately extended beyond the ceremony's limited audience by broadcasting it live on the internet.

At the machinic level, Sal and Nene created a second set of machinic marks—on top of the processes running the NDS—by digitally filming the ceremony. This second set of machinic marks was then broadcast, effecting further machinic changes in Nico Nico Douga's servers, in the fiber-optic cables that disperse information around the world, and in the devices Nico Nico Douga viewers (including Katayama) used to watch the broadcast. Even as just data, before being interpreted in any way or being assigned any type of “meaning,” the ceremony was doing things with machinic marks. The wedding also produced various computational marks, from the ones and zeroes that animated the NDS, digital cameras, cables, servers, and computers; through the numerous programming languages used to record sound and images, transmit data, input text, and display webpages; into the video-editing software Katayama used to construct her clip; and finally to the Boing Boing website and the web-browsers of Boing Boing readers. At each stage, the broadcast of their wedding was doing things with computational marks. The computational marks were then arranged into the interface marks that Boing Boing readers experienced. Like at the machinic and computational levels, the video of Sal and Nene's wedding contains many different styles of interface mark. This rich mix of interface marks reveals to the viewer the productive force of the three levels that make up the cyber-performative act. In the moment of the act's effectiveness, these three levels cannot be distinguished from each other—they blend together, generating the act's signifying force. The Boing Boing site has a simple design—black and red text on a white background. In contrast, Katayama's video is a frantic mix of visual, audio, and

linguistic cyber-performative marks. The Japanese wedding party can be heard in the background, behind Katayama's English narration. The video splices together screenshots of Nico Nico Douga's homepage, portraits of Sal and Nene, and clips from the wedding. Instead of relaying the marks of the original wedding ceremony, Katayama's video clip is a complex remix of the live film of the event; some of the computational and interface marks from the broadcast are forced to perform a new narrative—the narrative Katayama presents in her 2:32 minute clip. In another example of the iterability of code that Hayes denies, the codes that animate the Nico Nico Douga broadcast are re-iterated in the Boing Boing video. Katayama's clip also includes the dozens of text messages from viewers that scroll across the screen, nearly obscuring the ceremony. Most of the comments are in Japanese and others are attempts to disrupt the video (for example, long strings of “wwwwwwwwww”). Many of the English messages reveal the perlocutionary force of the collection of marks that make up Sal and Nene's wedding (and Katayama's video). Some of the comments are inane, such as, “lol we're on tv,” and “this is funny as hell.” But other messages expose the potential force the cyber-performative act has to effect change in the real world—to inscribe new contexts within the ordinary space of real life. One viewer is pleased by the wedding, exclaiming “congratulations!!!,” and another is worried about the implications of this cybernetic union of human and virtual: “YOUR GOING TO END THE HUMAN RACE” (Katayama). These responses anticipate the reaction the video provoked when it was posted on YouTube.

Katayama's video, titled “First-ever marriage between man and video game character in Japan,” was posted on YouTube in November 2009. As of February 2010,

the video had been viewed nearly two-million times and more than twelve thousand comments had been made in response. Some YouTube members defended Sal and celebrated the freedom the marriage embodied. For example, Webberjo commented, “It’s his life, let him do whatever he wants with it,” and mastergradeone exclaimed ruefully, “damn Japanese can do everything.. they can marry electronic devices.. we can’t even get gay couples to get married in america!?” (“First ever marriage”; all spelling and grammar errors in original comments). But many YouTube viewers found the clip offensive or disturbing, despite Katayama’s argument that the footage of “Sal and Nene tying the knot between real and virtual is a highly imaginative, multimedia project orchestrated by a guy determined to officiate his devotion to his video game, and to pay homage to the *otaku* subculture that nurtures this type of creativity.”<sup>9</sup> YouTube user gamedexterity commented, “I’m sorry, but this is messed up,” and teenken added, “i’ve lost my faith in humanity” (“First ever marriage”). Other comments indicate the effective force the marriage had as an event in the world outside of the internet’s data-stream. In a bizarre juxtaposition, PinoKidzProductions exclaimed, “WTF?! the worlds goin crazy, first 9/11 than this crap” (“First ever marriage”). Though PinoKidzProductions’ response grossly misrepresents the significance of Sal and Nene’s wedding, the thousands of comments made on YouTube and Boing Boing in response to Katayama’s video expose the potential real-world force of cyber-performative acts. This force is also evident in the growing influence of on-line virtual worlds such as *Second Life*.

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<sup>9</sup> “Otaku” is a Japanese slang term for someone “who is skilled in the use of computer technology and is considered by some to be poor at interacting with others” (*Oxford English Dictionary*).

## **Chapter Six – Cyber-Performative Marks and *Second Life***

*Second Life* has received extensive attention from popular media sources but little critical analysis from scholars. Most of the books published about *Second Life* are either how-to manuals (such as Paul Carr's *The Unofficial Guide to Second Life*) or business and law texts (such as Robert Freedman's *How To Make Real Money in Second Life* and Benjamin Duranske's *Virtual Law*). Though these texts have begun to investigate the influence of virtual spaces on the real world, none have examined the performative characteristics of language used in *Second Life*, or the changing status of language as a social, economic, and political force. In this chapter I argue that *Second Life* serves as a strong example of the generative force of cyber-performative marks. As an entirely virtual space, *Second Life* is composed exclusively from cyber-performative marks; the world of *Second Life* is a complex collection of machinic, computational, and interface marks. Though all aspects of *Second Life* are performatively constructed out of cyber-performative marks, I will focus on marriages, the virtual virtual, and machinima in order to highlight some of the more dramatic real-world effects of cyber-performativity. I also briefly outline several of the other channels through which *Second Life* effects change in the real world. The real-world force of the marks made in and through *Second Life* reveals the necessity of cyber-performativity theory, which describes the multiple and simultaneous effects of marks made in virtual spaces.

Started by Linden Lab in 2003, *Second Life* is an on-line virtual world that attempts to offer its users (called "residents") exactly what its name suggests: a second life. Anyone with a fast enough internet connection and a computer that meets the minimum hardware requirements can sign-up and download the *Second Life* software for

free. As of January 2010, more than eighteen million people around the world had signed up for *Second Life* accounts; usually between 40 and 80,000 residents are logged in at any one time.<sup>10</sup> Unlike most other massively multi-player on-line spaces, such as *World of Warcraft* and *EverQuest*, *Second Life* is not arranged around a set of goals, tasks, or objectives. *Second Life* residents are encouraged to build new items, explore the vast virtual world, and interact with other residents. Like Katayama's video of Sal and Nene's wedding, *Second Life* is an effective example of the generative force of the cyber-performative act. Like any other digitally mediated experience, *Second Life* exists as a collection of simultaneous machinic, computational, and interface marks. Unlike Katayama's video, the *Second Life* platform is designed to give residents the ability to manipulate the cyber-performative marks that comprise the virtual space, thereby transforming the passive viewer into an active and essential participant. This emphasis on participation has produced a complex social environment within *Second Life*.<sup>11</sup> As well as the proliferation of virtual strip-clubs and cyber-prostitution that has generally been presented in popular media, many *Second Life* residents have established strong emotional bonds with other residents. As Eyder Peralta reported in her *Houston Chronicle* article, "[t]he emotional connections you make [in *Second Life*] are real. If you offend someone they'll remember it. If you flirt or make a romantic gesture, it doesn't just disappear into a black hole; it's perceived by a human being on the other side" (Peralta). Like Sal's relationship with Nene, *Second Life* relationships often develop into romantic connections that are formalized in marriage.

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<sup>10</sup> Estimates vary widely and eighteen million is undoubtedly an exaggeration of the number of people with active *Second Life* accounts. Many people hold several or even dozens of alternate accounts (known as "alts"), and many accounts are largely inactive.

<sup>11</sup> Tom Boellstorff's *Coming of Age In Second Life* is an excellent anthropological investigation of this social environment.

Marriage ceremonies in *Second Life* also re-iterate and disrupt traditional wedding conventions. The cyber-performative tension between the disruptive potential of a virtual marriage ceremony and the persistence of established conventions is evident in the re-iteration of the “I do” utterance in many *Second Life* weddings. *Second Life* residents must re-iterate the conventional real-world marks of a wedding *because* virtual weddings break with normal conventions. Re-iterating the language of the conventional wedding creates an illusion of legitimacy for the virtual wedding. Within the (largely) unbounded interval of possibilities that *Second Life* opens to its residents, the marks of the conventional wedding delimit the virtual wedding context; just as Derrida argues, there can be no context (wedding) without the performative mark (conventional indicators of a wedding). *Second Life* residents know the context they are witnessing is a wedding because they recognize the performance of conventional wedding marks. Peralta describes the scene of a *Second Life* wedding she attended. In front of their assembled friends, two residents, Artic Gretzky and Minnie McGann, performed the marks of a conventional wedding ceremony:

Gretzky slowly takes McGann’s hands. Her veil flutters in the wind and a full moon brightens the night sky.

“We are united here today because I treasure you above all else,” says Gretzky. “I have learned with you that I do not need to be perfect to be loved. I will cherish every memory of our life together. Knowing this, Minnie, I choose to truly love you.”

...

“Today, Artic, I join my life to yours—not merely as your wife but as your friend, your lover and your confidant,” begins McGann. “I used to be afraid of falling in love, of giving my heart away in *Second Life*. Today I join my second life to yours. I love you more than you’ll ever know. Thank you for sharing your second life with me.”

There is no pastor, no question of whether they take each other as husband and wife. But the answers come anyway.

“I do,” says Gretzky.

“I will,” says McGann. (Peralta)

In *Coming of Age in Second Life*, anthropologist Tom Boellstorff describes a similar wedding. Boellstorff's friends Dax and Cynd were married in *Second Life* by an avatar named Drake, who owns a wedding chapel and charges a fee to organize and officiate virtual wedding ceremonies (big business in *Second Life*). The ceremonies Drake leads closely resemble conventional weddings. Boellstorff reproduces a log of the instant messages typed by Drake, Dax and Cynd during the ceremony:

Drake: Welcome everyone. Ladies and gentlemen, we have gathered today to bear witness to Cynd and Dax's declaration of love... You two will be sharing your love and energy with your friends, chosen family, and God. At this time I would like to ask Dax to lead and share his words now.

Dax: Today we make a commitment to one and other.... I promise to be your confident, your best friend and to share in your hopes and dreams. With these vows we face new responsibilities together, and I promise to love you in all circumstances.

Cynd: ty<sup>12</sup> baby :) Shall i go? I'm bawling :)

Drake: And now Cynd, please share your love and vows with Dax and us all

Cynd: Dax, you have made this "second life" for me.... When I played There,<sup>13</sup> I never could find anyone who could understand me, care for me, and treat me the way that you do. You make every day on here a joy and I find myself just counting the minutes till I can see you again. I never thought I could truly let myself love someone on a "game" but you have broken down the walls, and with that you have gained my full and complete respect. Never in a million years did I think I would be standing here in this beautiful chapel in a white gown saying all of this.

Dax: I love you baby :)

Drake: Dirk [*sic*], do you take Cynd to be your Secondlife Wife

Dax: I do

Drake: And do you Cynd take Dax to be your Secondlife Husband

Cynd: I do

Drake: Then it is my true heartfelt pleasure to pronounce you partners and present you to the world. May no man, woman, or lag do you under.

(168)

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<sup>12</sup> "Thank you" is often shortened to "ty" in instant-messages. Cynd also repeatedly uses smiley-face emoticons " : )."

<sup>13</sup> "There" is the name of another virtual world.

Like Gretzky and McGann's wedding, Dax and Cind's ceremony mimics the marks of a conventional wedding. But both ceremonies also contain marks that expose the unconventional nature of virtual marriage. As Peralta notes, Gretzky and McGann answer "I do" and "I will" in response to questions that have not been asked. Maintaining the illusion of the legitimate performative is so important that Gretzky and McGann re-iterate the conventional answers even when the questions are absent. Similarly, Drake hints at the layers of machinic and computational marks that will mediate Dax and Cynd's marriage when he asks that their relationship be free from lag ("May no... lag do you under"). Just as other interface marks—other men or women—might disrupt their union, a slow internet connection might upset their relationship.

Both couples also recognize the unconventional setting of their wedding. Drake calls Cynd and Dax "Secondlife Wife" and "Secondlife Husband," and McGann notes that she used to be afraid of "giving [her] heart away in *Second Life*." By simultaneously performing the marks of a conventional wedding and acknowledging the unconventional aspects of virtual marriage, both couples disrupt the boundary between real and virtual. Both weddings emphasize the importance of the performative "I do," but both also integrate the virtual (the parasitic) into the conventional performances. This incorporation of conventional and unconventional marks reveals the illusory or fictional justification that is conveyed by conventional, real, or ordinary weddings. By creatively including both the conventional and unconventional, weddings in *Second Life* inscribe new boundaries around the context of "marriage." These new contexts are effective outside of *Second Life*, destabilizing the real-world status of marriage. Like Sal and Nene's wedding, marriage ceremonies in *Second Life* create a new type of marriage, a new

definition of the term “marriage.” Again echoing the productive tension between constative and performative that Derrida revealed in “Declarations,” the cyber-performative marks of *Second Life* wedding ceremonies both performatively effect a new wedding context—which includes the parasitic—and constatively describe the events that took place. This tension between performative and constative has the potential to disrupt the legal foundations of conventional marriage ceremonies. In her 2007 Wall Street Journal Article titled “Is This Man Cheating on His Wife?,” Alexandra Alter notes that “[f]amily-law experts and marital counselors say they’re seeing a growing number of marriages dissolve over virtual infidelity.” Though on-line affairs aren’t legally considered adultery, they “may be cited as grounds for divorce and could be a factor in determining alimony and child custody in some states,” according to Jeff Atkinson, law professor and author of the American Bar Association’s “Guide to Marriage, Divorce and Families” (Alter). Many other cyber-performative marks created in *Second Life* are similarly disruptive.

Linden Lab provides only the basic geographic features of *Second Life*; the vast majority of the thousands of buildings, vehicles, objects, and works of art in *Second Life* are residents’ creations. In order to encourage resident creativity, Linden Lab endowed every resident—embodied in *Second Life* by an endlessly customizable avatar—with the ability to create and manipulate “prims.” Derived from the word “primitive,” prims are “the most basic building blocks for all *Second Life* objects” (Weber 22). Prims come in a range of basic three-dimensional shapes—including spheres, cubes, prisms, pyramids, cylinders, and cones—and can be stretched, hollowed, coloured, textured, and manipulated in almost any way. While prims make up the “physical” world of *Second*

*Life*, the Linden Scripting Language (LSL) animates *Second Life*. If prims are the atoms of *Second Life*, LSL is the world's energy: "Scripting allows objects to move and to communicate with avatars, and other objects and the Internet, and can give objects a rich and complicated set of behaviours" (Weber 96). By manipulating prims and LSL, *Second Life* residents have produced a multitude of cyber-performative marks that expose the complex relationships between marks, contexts, and performances.

Tom Boellstorff describes a visit he made to his friend Rhed's "sky-box." A sky-box is a structure built high above the virtual ground—there is no gravity in *Second Life* and all residents can both fly and instantly teleport. Boellstorff describes teleporting to Rhed's sky-box and finding himself beside a pond, "hundreds of metres in the air in a large box, on the inside of which Rhed had placed images depicting a countryside receding into the distance." The views of the countryside, Boellstorff notes, portrayed a "virtual virtual landscape." Boellstorff reproduces the conversation he had with Rhed inside the sky-box:

RHED: The scenery on the walls... is actually scenery here in sl [an abbreviation of *Second Life*]

ME: Oh wow, you're right

RHED: It took a while to get all the edges to line up so that it flowed smoothly. I wanted to go for that outdoorsy feel. (96)

In decorating her sky-box, Rhed simulated the "outdoorsy feel" by reproducing images of the already virtual landscape of *Second Life*. Rhed's sky-box "views" are re-iterations of the interface marks she experienced somewhere else in *Second Life*. Behind the views Rhed originally witnessed were numerous computational and machinic marks (from voltages to prims). Just as Katayama uprooted the marks of Sal and Nene's wedding and remixed them into the narrative of her video clip, Rhed remixed the *Second Life* marks of

scenery that she liked (ironically because it gave her an “outdoorsy feel”) into a new image of a *Second Life* landscape. Rhed’s remix creates a confused re-iteration of machinic, computational, and interface marks. As Boellstorff’s surprise at the source of the images indicates, Rhed’s landscapes are a convincing simulation of *Second Life* interface marks. Residents can capture images of the virtual space they are interacting with using *Second Life*’s built-in “Snapshot” feature. Snapshots can be saved in common image formats (JPEG, BMP, TIF) and then manipulated using photo-editing software. While the Snapshot feature captures and re-iterates the interface marks the resident experienced, within the image that Snapshot creates the *Second Life* scene’s machinic and computational marks are overwritten (though not erased) by the machinic and computational marks that create JPG, BMP, or TIF files. In a further layer of complication, those images can be reinserted back into *Second Life*, where they function not as the dynamic and three-dimensional spaces they once were (and as they likely still are, somewhere else in *Second Life*), but as two-dimensional objects, like pieces of inanimate art. In Rhed’s sky-box, Boellstorff assumed he was looking at a *Second Life* landscape, which he was, but instead of seeing the animate virtual space he was expecting, Boellstorff was looking at a simulation of *Second Life*, a “virtual virtual landscape.”

The complex interplay of cyber-performative marks, contexts, and performances at work in Rhed’s sky-box reveal the shortcomings of Hayles’ over-simplified theory of performativity, and the limitations produced by her distinction between computational and natural language worldviews. Rhed creates a new *Second Life* context within her sky-box by remixing the *Second Life* interface marks and disrupting the machinic and

computational performances going on unseen (by the resident) behind them. Her images re-iterate the shapes and colours of *Second Life*, but do so using a new set of machinic and computational marks—those that produce the interface marks of image files. The direct, logical process by which a “signification on one level becomes a signified on the next higher-level,” as in Hayles’ hierarchy of code (*Posthuman* 31), is undermined by the virtual virtual. Rhed’s images simultaneously signify at least two different chains of machinic and computational marks—the formerly interactive marks of the *Second Life* landscape, which still function somewhere in *Second Life* (and so haunt the sky-box), and the relatively static marks of Rhed’s images. Like Derrida’s iterable performative mark, the interface marks of Rhed’s images convey the illusion of a preexisting foundation—they convincingly simulate the *Second Life* landscape that they simultaneously inhabit. The complex effects of Rhed’s remixed interface marks are echoed in the production of “machinima,” movies made in *Second Life*.

The word “machinima” is a neologism combining “machine” and “cinema” that is used to describe movies that are made by capturing the action that takes place in video games or virtual spaces such as *Second Life*. In “High-Performance Play: The making of machinima,” Henry Lowood argues that “[m]achinima movies transform gameplay through performance, spectatorship, subversion, modification, and player communities” (25)—many of the effects of the cyber-performative act. Residents’ ability to create objects out of prims, customize avatars as actors, and animate scenes and objects using SLS makes *Second Life* a powerful movie-making tool.<sup>14</sup> Like the Snapshot feature, *Second Life* includes a video-capture program that allows residents to record and save

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<sup>14</sup> Machinima are generally referred to as “movies,” not “films,” perhaps because “film” suggests a physical medium that is wholly absent from the production of machinima.

movies made in *Second Life* (Weber 320). After recording and saving action in *Second Life*, machinima are assembled using post-production software, much like in traditional filmmaking: audio and music tracks are added and clips are cut and spliced together to create narrative. Like Rhed's remix of her Screenshot images, machinima movies disrupt the hierarchy of code and produce a complex interplay of re-iterated cyber-performative marks. The machinic and computational marks that produce the *Second Life* interface marks, which residents interact with directly, are over-written by digital video formats (such as MPEG-4 or AVI). Just as the machinic and computational marks used in the production of a book lurk somewhere behind the ink marks on the final paper product, several layers of marks that animate *Second Life* lurk behind the interface marks that are manipulated and remixed by machinima artists. Like Katayama's video of Sal and Nene's wedding, many machinima movies made in *Second Life* are available on video-sharing sites such as YouTube. Machinima techniques are a potential threat to the expensive and labour intensive animation techniques used by large studios such as Pixar and Disney (Lowood 27). As Christian Jones and Callum Munro explain, "Animation production using Machinima can be more cost effective than conventional 3D key frame animation (eg *Shrek* or *Toy Story*) as the animation is rendered in real-time during the playback [of the game]" (23). Many other cyber-performative marks produced in virtual spaces also effect changes in the real world. Cyber-performative marks possess the power to simultaneously transform both the virtual spaces they are made in and the real world they are made from.

In late 2001, economist Edward Castronova wrote a paper about the economic forces at work in the popular on-line game *EverQuest* ("Virtual Worlds: A Firsthand

Account of Market and Society on the Cyberian Frontier”). Castronova wrote the paper mainly as a joke, his contribution to a “tradition of tongue-in-cheek research in economics, in which authors will write a careful paper about the economics of trivial, funny things” (16). Castronova’s “Virtual Worlds” was listed on the Social Science Research Network (SSRN) website in January 2002. By that summer it had been downloaded more than twenty-thousand times, making it one of the top ten downloaded papers and the most downloaded economics paper ever listed on SSRN (Castronova 20).<sup>15</sup> The previously unknown Castronova suddenly began receiving calls and emails from gaming companies, journalists, entrepreneurs, lawyers, and government agencies who all wanted to know more about the economic impact of computer games and virtual spaces (Castronova 20-21). In 2003, in consultation with Castronova (and several others, including renowned Creative Commons founder and Stanford law professor Lawrence Lessig), Linden Lab established a new business model for *Second Life*. Instead of charging a monthly subscription fee and taxing users for building with prims, Linden Lab decided to “sell virtual land and charge usage fees for its regular maintenance” (Au 127). Under the new rules, residents were also granted the opportunity to trade Linden Dollars (\$L, the *Second Life* currency) on the open market for real currencies, something most other games and virtual spaces prohibited (Au 127). Finally, largely at Lessig’s insistence, the new business model granted residents intellectual property rights over the objects they designed in *Second Life* (Au 128). By granting intellectual property rights, Linden Lab gave residents permission not only to sell their virtual products in *Second Life* (as many do), but also to use those products or designs to make money outside of

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<sup>15</sup> As of February 2010, “Virtual Worlds” had been downloaded more than forty-three thousand times, making it the sixth most downloaded paper from the SSRN website.

*Second Life*. In 2004 an avatar named Kermit Quirk designed a simple gambling game based on a combination of Tetris and Bingo. Quirk's game, Tringo, became wildly popular among residents. As prolific *Second Life* blogger Wagner James Au notes, "You can pretty much find a match of Tringo in *Second Life* at any hour" (155). In 2006 Quirk sold Tringo to Donnerwood Media, who developed it for both on-line play and Nintendo's Gameboy Advance (Au 155). Australian interactive television company Way2Play also offers Tringo to Austar customers in Australia and Sky TV subscribers in New Zealand (Way2Play). Some other *Second Life* residents regularly earn substantial sums of Linden Dollars, which they can convert into real-world currencies.

In 2006, Anshe Chung became the first resident to amass US\$1-million in *Second Life* capital. Chung bought large parcels of cheap "land" (machinic and computational space on Linden Lab's servers, geographic space in the *Second Life* interface), subdivided it, and resold the lots to other residents. Chung's *Second Life* earnings allowed her to send real money to her family in China, and to support a family in Singapore (Guest 137-138). By the end of 2006, more than US\$1-million per day was being exchanged in-world by *Second Life* residents. The Linden Dollar to US Dollar exchange rate has generally fluctuated between L\$265 and L\$300 to US\$1 (Boellstorff 212); in other words, hundreds of millions of Linden Dollars are exchanged daily. According to Linden Lab, there were more than twenty-eight million transactions between residents in January 2010 (Linden Lab). As well as Chung's fortune, "over 2,000 residents were making more than US\$1,200 profit a year; [and] 58 were earning more than US\$60,000 a year" in 2006 (Boellstorff 212). New Business Horizons, one of the many companies that help real-world corporations establish an effective *Second Life* presence, lists more than one-

hundred fifty real-world businesses on its website—from Adidas and Calvin Klein to H & R Block and Harvard Law School (“Companies and Organisations”). Every transaction made both within *Second Life* and between the virtual space and the real world are mediated through cyber-performative machinic, computational, and interface marks. Simple machinic marks have the force to generate complex computational, interface, and real-world economic changes.<sup>16</sup> Following Harvard Law, hundreds of schools and universities around the world have joined *Second Life* and are exploring the educational potential offered by cyber-performative acts.

In 2006, the Berkman Centre for Internet and Society at Harvard Law School offered the first for-credit university course hosted partially in *Second Life*. Students in “CyberOne: Law in the Court of Public Opinion” met “weekly with their instructors and fellow students in *Second Life* for usual classroom activities as well as innovative projects that [made] use of the myriad possibilities of the *Second Life* environment” (“Berkman Center”). Also in 2006, the New Media Consortium (NMC), a non-profit group of learning-related organizations, began using *Second Life* to support its mission “to encourage the use of emerging technologies in support of teaching, learning, research, and creative expression” (“Developing New Learning” 1). In their 2009 case study of the educational opportunities provided by *Second Life*, Linden Lab notes that, “By helping more than 150 colleges and universities learn to make broad use of virtual spaces, including institutions like MIT, Harvard, Yale, Princeton, USC, Rice, and many others, the NMC has built the largest educational project in any virtual world” (“Developing

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<sup>16</sup> Outside of *Second Life*, these economic effects are experienced daily by people who buy or sell things, do their banking, or gamble on-line.

New Learning” 1). Not only have some of the world’s largest educational institutions entered *Second Life*, several countries have also signed up.

On 22 May 2007, the Maldives became the first country to establish a virtual presence on *Second Life*’s Diplomacy Island. The Maldives Mission website claims that their embassy is “a place in *Second Life*... where visitors can come to find out about political, social or economic development in the Maldives, where they can meet virtual Maldivian diplomats and ask questions... or where they can simply relax, listen to Maldivian music and meet friends” (“Maldives Virtual Embassy”). Several other countries have followed the Maldives into *Second Life*. The Swedish Agency, a public agency under the Swedish Foreign Ministry, constructed the House of Sweden in *Second Life* in 2007 (Simmons). Also in 2007, Serbia opened its virtual embassy, in a ceremony that included a concert directed by Ivan Tasovac of the Belgrade Philharmonic (“Serbia enters virtual world”). Duncan Riley reports that Estonia, who also joined in 2007, uses *Second Life* “as a conduit for information to countries where Estonia has no representation (literally a virtual embassy).” Less interested in virtual diplomacy, the Philippines runs a marketing campaign in *Second Life*. Working with MTV, the Philippines’ 2009 “Awesome Philippines” campaign targets young thrill-seekers—avatars who visit the Philippines’ *Second Life* island are encouraged to try virtual windsurfing and parasailing, popular tourist activities in the real Philippines (Mao).

Many other governments and government agencies have entered *Second Life* for a variety of reasons. In September 2007, the Information Resource Management College (IRMC) at the U.S.’s National Defense University established a multi-agency consortium with the mandate to make “a major push to establish a federal presence in *Second Life*

and other virtual environments, and along the way create processes and procedures to make it simpler for agencies to get a life in *Second Life*” (Brewin). Continuing the long tradition of the U.S. military’s interest in computer games as training and recruiting grounds,<sup>17</sup> the American Air Force and Navy were among the first members of the IRMC consortium (Brewin). Just as they funded the development of Wiener’s cybernetic anti-aircraft weapon, American military agencies (and many others around the world) are working to harness the generative force of the cyber-performative act. Unlike the disruptive and creative remixes performed by Katayama, machinimists, and *Second Life* residents, government, corporate, and military use of virtual spaces often exploit the cybernetic potential for communication and control. Maintaining a theoretical framework that occludes the slippage of human communication (such as Hayles’ does) or the disruptive force of the fictional (as Austin’s does) contributes to the illusion that computer-mediated communication is constructed upon a logical, bounded, and error-free foundation that is natural and inherent to computational processes. This illusion dangerously undermines the potentially disruptive artistic and creative application of virtual spaces (and computation in general). Ignoring the iterable signification of code relinquishes the dehiscent force of the cyber-performative act to the conventional illusions of legitimacy produced by military, government, or corporate authorities. If theoretical analyses deny the possibility of continuous contextual transformation (by excluding the fictional or slippery), some modes of thought or expression become privileged and others are excluded. Within such limits, new forms of technology produce

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<sup>17</sup> The most recent example of the U.S. military’s involvement in computer gaming is the popular America’s Army series of first-person shooter games—developed by the U.S. Army and available for free download at [www.americasarmy.com](http://www.americasarmy.com).

not new forms of culture and subjectivity, but, as real life moves into virtual spaces and the line blurs between real and virtual, more pervasive forms of repression.

### **Conclusion**

Simple linguistic marks that effect change in virtual spaces accrue real-world force as on-line worlds such as *Second Life* influence social, economic, and political developments in the real world. By failing to critically engage with the disruptive potential effected by the cyber-performative forces of digitally-mediated information, oversimplified analyses of the performativity of code perpetuate the illusion that computation is comprised of logical, bounded, and standard processes that, like Austin's speech-act theory, exclude the fictional or parasitic. The danger of such theories is that they occlude the possibility of contextual transformations and foreclose the contributions of what Derrida calls the "wholly other" (Miller 84). Marks that oppose or disrupt the illusions of legitimacy conveyed by religious, corporate, government, or military institutions can be excluded as "invalid." By locating the disruptive potential of iterability within the analysis of machinic, computational, and interface marks, cyber-performative theory maintains the possibility of the dehiscent rupture, of the ghosts in the machine, of the ringing and electromagnetic forces that haunt the logic gates of computation. As virtual worlds and digitally mediated texts, subjects, and objects continue to accumulate social, economic, and political force, traditional distinctions between reality and simulation continue to dissolve. With this dissolution, language—re-imagined as a technology of iterable marks—develops the power to simultaneously effect multiple changes across numerous virtual and physical realities. Combining the theories of

performativity advanced by Austin and Derrida with Hayles' identification of the performativity of computer code, cyber-performative theory recognizes that marks made in and through virtual spaces are simultaneously iterable across multiple channels of signification.

As Hayles argues, language is the most naturalized human technology ("Narrating Consciousness"). Like any technology, language therefore has the potential to reshape human culture and subjectivity. The social, economic, and political status of language is altered as marks are accelerated and dispersed by networked digital media that effect change in the real world. Cyber-performative theory refuses to foreclose the signifying potential of the fictional or parasitic, instead maintaining the disruptive force of machinic, computational, and interface marks such as those produced by the cyber-performative in *Second Life*.

## Works Cited

- Alter, A. "Is This Man Cheating On His Wife?" *The Wall Street Journal*. 10 August 2007. W1. Web. 20 September 2008. <<http://online.wsj.com/article/SB118670164592393622.html>>.
- Austin, J.L. *How To Do Things With Words*. Eds. J.O. Urmson and Marina Sbisa, 2<sup>nd</sup> ed. Cambridge: Harvard UP, 1962. Print.
- Au, W.J. *The Making of Second Life*. New York: Collins, 2008. Print.
- Baylis, John. *Error-Correcting Codes: A Mathematical Introduction*. New York: Chapman and Hall/CRC, 1998. Print.
- "Berkman Center and Harvard Extension School to Offer First University Course through Second Life, a 3-D Virtual Environment." Berkman Center For Internet and Society at Harvard University. 11 September 2006. Web. 4 February 2010. <<http://cyber.law.harvard.edu/node/2126>>.
- Blair, Jonathan. "Context, Event, Politics: Recovering the Political in the Work of Jacques Derrida." *Telos* 141 (Winter 2007): 149-165. Print.
- Boellstorff, Tom. *Coming of Age in Second Life: An Anthropologist Explores the Virtually Human*. Princeton: Princeton UP, 2008. Print.
- Brewin, Bob. "Feds Lead A Second Life." *Government Executive*, 10 September 2007. Web. 18 February 2010. <[http://www.govexec.com/story\\_page.cfm?filepath=/dailyfed/0907/091007wb.htm&oref=search](http://www.govexec.com/story_page.cfm?filepath=/dailyfed/0907/091007wb.htm&oref=search)>.
- Butler, Judith. *Excitable Speech: A Politics of the Performative*. New York: Routledge, 1997. Print.
- . *Gender Trouble*. New York: Routledge, 1990. Print.
- Castronova, Edward. *Synthetic Worlds: The Business and Culture of Online Games*. Chicago: U Chicago P, 2005. Print.
- Caswell, N.S. "Introduction to Input Devices." *Input Devices*. Ed. Sol Sherr. Toronto: Academic P Inc. 1988. 1-70. Print.
- Cogdell, J.R. *An Introduction to Circuits and Electronics*. New Jersey: Prentice-Hall, 1986. Print.
- "Companies and Organisations in Second Life." *New Business Horizons*. Web. 18 February 2010. <<http://www.nbhorizons.com/list.htm>>.

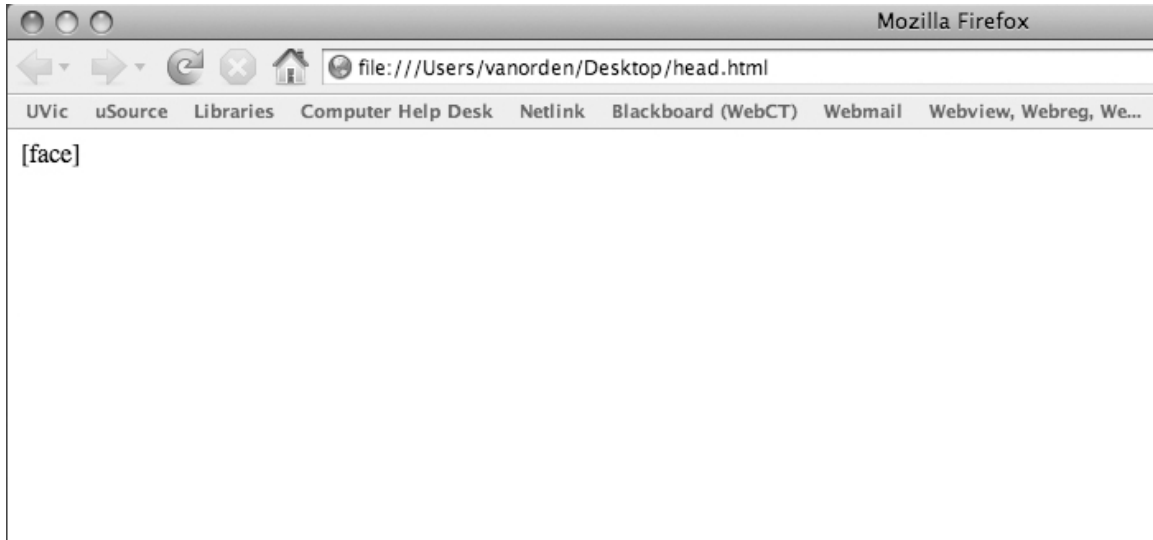
- Crystal, David. *Language and the Internet*. 2<sup>nd</sup> ed. New York: Cambridge UP, 2006. Print.
- “cyber.” *Oxford English Dictionary*. Oxford University Press, 2009. Web. 18 February 2010.
- Derrida, Jacques. “Declarations of Independence.” Trans. Tom Keenen and Tom Pepper, *New Political Science* 15 (1984): 7-15. Print.
- . *Limited Inc*. Ed. Gerald Graff, Trans. Samuel Weber. Evanston: Northwestern UP. Print.
- . *Otobiographies: L'enseignement de Nietzsche et la politique du nom propre*. Paris: éditions galilée, 1984. Print.
- “Developing New Learning and Collaboration Environments For Educators: The New media Consortium (NMC) In Second Life.” Linden Lab. 2009. 1-6. Web. 4 February 2010. <[http://secondlifegrid.net.s3.amazonaws.com/docs/Second\\_Life\\_Case\\_NMC\\_EN.pdf](http://secondlifegrid.net.s3.amazonaws.com/docs/Second_Life_Case_NMC_EN.pdf)>.
- Easterbrook, Neil. “Mediating Intermediation” Rev. of *My Mother Was A Computer* by N.K. Hayles. *Science Fiction Studies* 33.3 (2006): 517-522. Print.
- Englander, Irv. *The Architecture of Computer Hardware and Systems Software: An Information Technology Approach*. 2<sup>nd</sup> ed. Toronto: John Wiley and Sons, 2000. Print.
- “First-ever marriage between man and video game character in Japan.” Youtube. 23 November 2009. Web. 18 February 2010. <<http://www.youtube.com/watch?v=hsikPswAYUM>>.
- Fish, Stanley E. “With the compliments of the Author: Reflections on Austin and Derrida,” *Critical Inquiry*. Vol. 8 No. 4 (Summer 1982): 693-721. Print.
- Guest, Tim. *Second Lives: a journey through virtual worlds*. New York: Random House, 2007. Print.
- Hayles, N.Katherine. *How We Became Posthuman*. Chicago: U of Chicago P, 1999. Print.
- . *My Mother Was a Computer*. Chicago: U of Chicago P, 2005. Print.
- . “Narrating Consciousness: Language, Media and Embodiment.” Technology and Society Lecture Series, PACTAC, University of Victoria, Victoria BC, 26 September 2008. Web. 10 January 2010. <<http://www.pactac.net/pactacweb/web-content/video66.html>>.

- . *Writing Machines*. Cambridge: The MIT P, 2002. Print.
- Jones, Christian and Callum Munro. "Using Machinima to Promote Computer Science Study." *Proceedings of the Tenth Australasian User Interface Conference (AUIC 2009)*. Eds.G. Weber and P. Calder. 21-29. Web. 18 February 2010.
- Katayama, Lisa. "Man In Japan Weds Anime Game Character." Boing Boing. 24 November 2009. Web. 18 February 2010. <<http://www.boingboing.net/2009/11/24/footage-from-the-fir.html>>.
- Lacan, Jacques. "The Instance of the Letter in the Unconscious." *Écrits*. Trans. Bruce Fink. New York: W.W. Norton and Co, 2002. 412-441. Print.
- Linden Labs. Economic Statistics (Raw Data Files). Web. 18 February 2010. <<http://secondlife.com/statistics/economy-data.php>>.
- Lowood, Henry. "High-Performance Play: The making of machinima." *Journal of Media Practice*. Vol. 7 No. 1 (2006): 25-42. Print.
- Loxley, James. *Performativity*. New York: Routledge, 2007. Print.
- MacDonald, Matthew. *Creating Web Sites: The Missing Manual*. Cambridge: Pogue P, 2006. Print.
- Mackenzie, Adrian. Rev. of *My Mother Was a Computer*, by N.K. Hayles. *Theory, Culture and Society* 25.5 (2008):145-152. Print.
- "Maldives Virtual Embassy." Maldives Mission, 22 May 2007. Web. 18 February 2010. <<http://maldivesmission.ch/index.php?id=65>>.
- Manovich, Lev. *The Language of New Media*. Cambridge: The MIT P, 2001. Print.
- Mao, Sonia. "Philippines Tourism Campaign Engages Audience of New Media." AsiaOne – Travel, 15 May 2009. Web. 18 February 2010. <<http://www.asiaone.com/Travel/News/Story/A1Story20090515-141701.html>>.
- Massumi, Brian. *Parables for the Virtual*. Durham: Duke UP, 2002. Print.
- Michelson, Arnold M. and Allen H. Levesque. *Error-Control Techniques for Digital Communication*. Toronto: John Wiley and Sons, 1985. Print.
- Miller, J.Hillis. *Speech Acts in Literature*. Stanford: Stanford UP, 2001. Print.
- "Otaku," *Oxford English Dictionary*. Oxford University Press, 2009. Web. 18 February 2010.

- Riley, Duncan. "You're Not In The USSR Any More: Estonia Opens An Embassy in Second Life." TechCrunch, 2007. Web. 18 February 2010. <<http://techcrunch.com/2007/12/05/youre-not-in-the-ussr-any-more-estonia-opens-an-embassy-in-second-life/>>.
- "ringing." *A Dictionary of Computing*. Eds John Daintith and Edmund Wright. Oxford University Press, 2008. *Oxford Reference Online*. Oxford University Press. Web. 4 February 2010. <<http://www.oxfordreference.com>>.
- Roubaix Interactive. Web. 4 February 2010. <[www.roubaixinteractive.com/PlayGround/Binary\\_Conversion/Binary\\_to\\_Text.asp](http://www.roubaixinteractive.com/PlayGround/Binary_Conversion/Binary_to_Text.asp)>.
- Saussure, Ferdinand de. "Course In General Linguistics." *The Norton Anthology of Theory and Criticism*. Ed. Vincent B. Leitch. New York: W.W. Norton and Company, 2001. 960-977.
- "Serbia Enters Virtual World." B92-News, 25 September 2007. Web. 18 February 2010. <[http://www.b92.net/eng/news/societyarticle.php?yyyy=2007&mm=09&dd=25&nav\\_id=44040](http://www.b92.net/eng/news/societyarticle.php?yyyy=2007&mm=09&dd=25&nav_id=44040)>.
- Simmons, Cari. "Sweden Opens Virtual Embassy 3D-style." The Swedish Agency, 2007. Web. 18 February 2010. <<http://www.sweden.se/eng/Home/Lifestyle/Reading/Second-Life/>>.
- Social Sciences Research Network. *Social Science Electronic Publishing, Inc.* Web. 18 February 2010. <[http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=294828](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=294828)>.
- Stephenson, Neal. *Cryptonomicon*. New York: Avon Books, 1999. Print.
- Thompson, Bill. "Google's About Turn in China." BBC News Online. Web. 29 January 2010. <[news.bbc.co.uk/2/hi/technology/8456622.stm](http://news.bbc.co.uk/2/hi/technology/8456622.stm)>.
- van Eck, Wim. "Electromagnetic Radiation from Video Display Units: An Eavesdropping Risk?" *Computers and Security* 4 (1985): 269-286. Print.
- Wartoft, Marianne. "Online String Manipulation Tools." Web. 18 February 2010. <[www.string-functions.com/string-hex.aspx](http://www.string-functions.com/string-hex.aspx)>.
- Way2Play. Web. 18 February 2010. <<http://www.way2play.com/games/tringo>>.
- White, Ron. *How Computers Work*. 7<sup>th</sup> ed. Indianapolis: QUE, 2004. Print.

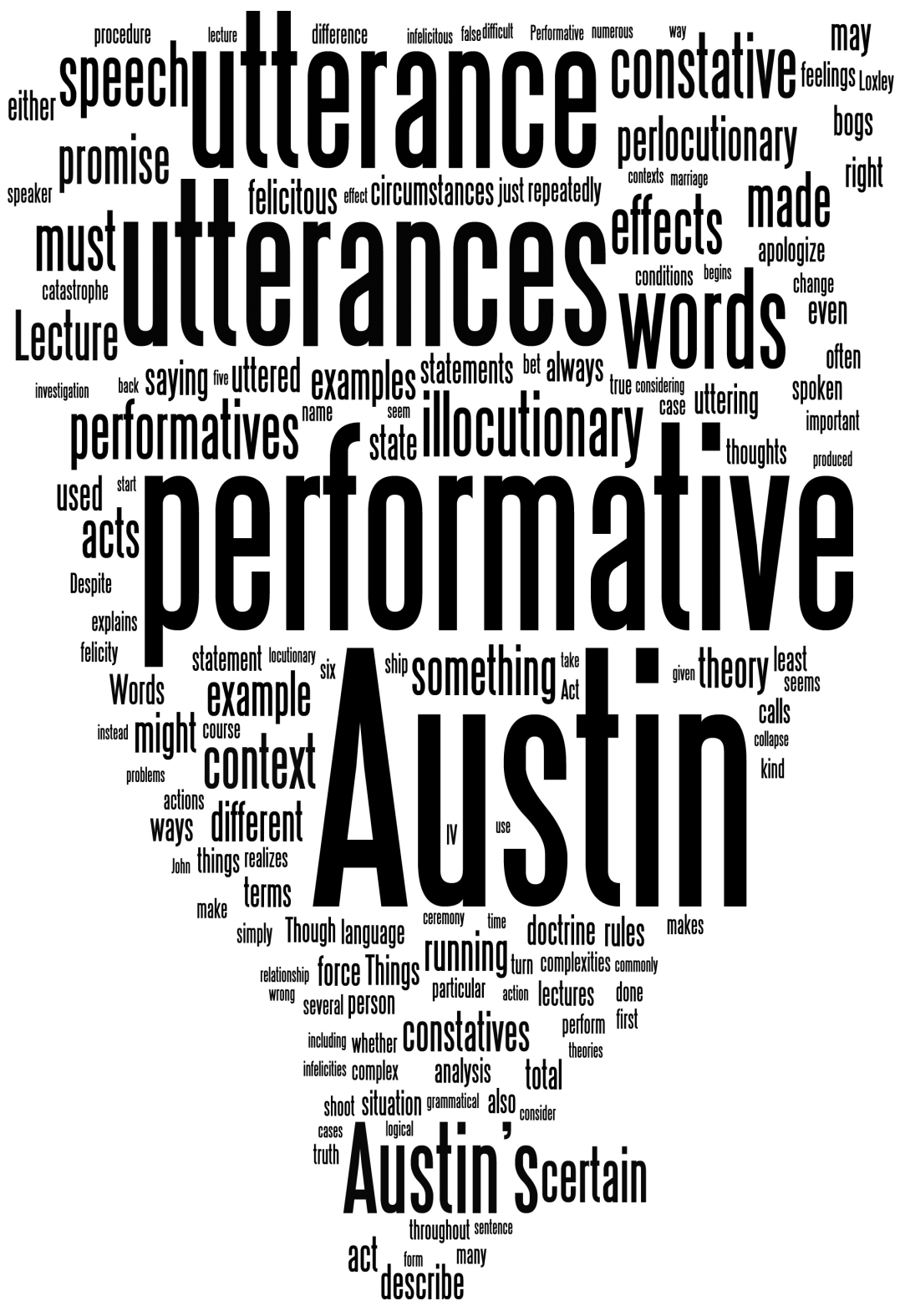
## Appendix One

Screen shot of “<HEAD>[FACE]<BODY>” as rendered by Mozilla Firefox:



Appendix Two

Wordle image of Chapter One:







Wordle image of Chapter Four:

