

**joyceMedia**

*James Joyce, Hypermedia & Textual Genetics*

edited by Louis Armand

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*Litteraria Pragensia*  
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## ABBREVIATIONS

*Finnegans Wake* has been cited following the standard form used by Joyce scholars, either by page number and line—viz. (278.13)—or, with reference to the accepted division of the text into four books with chapters, by Roman numeral (book) and Arabic numeral (chapter)—viz. (III.2). The following abbreviations are used throughout the text:

- D* *Dubliners*, ed. Robert Scholes with Richard Ellmann. New York: Viking Press, 1967.
- P* *A Portrait of the Artist as a Young Man*. The definitive text corrected from the Dublin Holograph by Chester G. Anderson and edited by Richard Ellmann. New York: Viking Press, 1966.
- U* *Ulysses*. New York: Random House, 1934, reset and corrected 1961.
- FW* *Finnegans Wake*. London: Faber and Faber, 1939.
- CW* *The Critical Writings of James Joyce*. Eds. Ellsworth Mason and Richard Ellmann. New York: Viking Press, 1959.
- L* *Letters of James Joyce*. Vol. I, ed. Stuart Gilbert. New York: Viking Press, 1957; re-issued with corrections 1966. Vols. II and III, ed. Richard Ellmann. New York: Viking Press, 1966.
- SL* *Selected Letters*, ed. Richard Ellmann. New York: Viking Press, 1975.
- Census* Adaline Glasheen, *A Census of Finnegans Wake*, III vols. Evanston: Northwestern University Press, 1952; 1963; 1977.
- JJI* Ellmann, Richard. *James Joyce*. London: Oxford University Press, 1959.
- JJII* Ellmann, Richard. *James Joyce*. Revised edition. London: Oxford University Press, 1982.
- AWD* *A Wake Digest*, eds. Clive Hart and Fritz Senn. Sydney: Sydney University Press, 1968.
- AWN* *A Wake Newsletter*
- FWC* *A Finnegans Wake Circular*
- JJLS* *James Joyce Literary Supplement*
- JJQ* *James Joyce Quarterly*
- JJR* *James Joyce Review*
- BM* *British Museum* + catalogue number (documents belonging to Joyce, including *Finnegans Wake* drafts, lodged with the British Museum by Harriet Shaw Weaver. Cf. *JJA*).
- JJA* *James Joyce Archive*, ed. Michael Groden, *et al.* New York and London: Garland Publishing, 1977-79. N.B. The correlation of the *Finnegans Wake* notebooks and drafts within the *James Joyce Archive* are as follows:
- JJA* 28 *Finnegans Wake*: Buffalo Notebooks VI.A
- JJA* 29 *Finnegans Wake*: Buffalo Notebooks VI.B.1-4
- JJA* 30 *Finnegans Wake*: Buffalo Notebooks VI.B.5-8
- JJA* 31 *Finnegans Wake*: Buffalo Notebooks VI.B.9-12

Mark Nunes

## GAPS AND CONVERGENCES IN THE JOYCEAN NETWORK

It has been some dozen years since George Landow's book, *Hypertext: The Convergence of Contemporary Critical Theory and Technology*, appeared in print. The book in many ways did mark a critical moment of convergences. By the start of the 1990s, the personal computer had become a fixture of everyday life in many households in America and Europe, and the number of individuals with access to email and the Internet had begun its phenomenal growth. A shift was underway, one initiated by the release of Tim Berners-Lee's WWW via the Internet in 1991, and NCSA's release of Mosaic, the first point-and-click hypertext navigation application, the following year. The machines changed in 1992, and with that change, hypertext increasingly became a matter of everyday life.

We are now very much in a second moment of "new media" studies. Much of the euphoria and dread surrounding the explosion of CMC into everyday life has faded, and we are now faced with the more arduous task of assessing how the uptake of network technology by both academia and popular culture has altered social space and social relations. Likewise, the broad claims that Landow and other first generation hypertext theorists made for the transformative, revolutionary potential of hypertext seem at best dated, and at worst naive. This first wave of hypertextual critical theory attempted to find parallels between the experiments of modernist literature and the narrative challenges of hypertextuality. Thus when Landow discusses Vannevar Bush, he is particularly interested in the challenge to reading and writing practices that the memex device would entail, not its significance as a cybernetic engine. In this convergence of technology and literary object, hypertext theorists of the mid 1990's found the promise of a form that "opened" a text to multiple lines of narration and positioned the reader as an active participant in the performance of the work.

Given this reading of hypertext as experimental fiction, perhaps it is not a surprise to find the works of James Joyce hailed in numerous texts as what Landow calls "implicit hypertexts in nonelectronic form."<sup>1</sup> Thus when Jay Bolter refers to *Ulysses* and *Finnegans Wake* as "hypertexts that have been flattened out to fit on the printed page," he is highlighting several features of Joyce's writing to establish hypertext's experimental form<sup>2</sup>: the invocation of a recursive and cross-referential reading practice; a compositional style of a palimpsest, involving overlaid networks of associations with each revision; and a narrative structure that functions as a web rather than a line.<sup>3</sup> In fact, whenever a discussion of hypertext or "network logic" comes up in Landow,

or Bolter, or Michael Heim, or Kevin Kelly, or Steven Johnson—and the list does go on—reference to Joyce's "implicit hypertext in nonelectronic form" seems not too far away. The reading practices that Joyce's novels already demand, such an argument suggests, become actualised as linkages on the screen, a textuality that calls into question the relation between "first" and "next," body and footnote, supplement and origin. This appropriation of Joyce by hypertext theorists speaks to a certain understanding of Joyce and modernist literature, one that privileges the openness of the text and a dynamic relationship between reader and work. Joyce, then, stands not so much for High Modernism per se, but rather for the all-encompassing, ever opening *text itself*, the text without *hors-text*. Thus while *The Waste Land* offers an intricately constructed network of cross-reference and allusion, it is Joyce and not Eliot, champion of the completed *author-ised* text, who serves as hypertext's patron saint.

But certainly this reading of Joyce is one of many within a genealogy of Joycean scholarship. In fact, in turning to Joyce to draw upon a convergence of critical theory and technology, Landow is also implicitly foregrounding a convergence in literary studies, marked by the growing dominance of a "post-structuralist Joyce" in the mid-1980s that distanced him from the Eliotic Modernism of the Master Artist. The confluence of these approaches led in the 80s and 90s to a vision of Joyce that emphasised permutations of the text over artistic organicism, proliferation of signal over classical correspondence.<sup>4</sup> Commenting specifically on this shift, Derek Attridge notes, for example, how Joyce's later texts function as a "network of possibilities," and how the "constantly renewed *possibility* of connection" distinguishes his texts from the more static, finished works of Eliotic modernism. Attridge sees Joyce as the engineer of a textual machine that provides for a flux of meaning.<sup>5</sup> Jean-Michel Rabaté makes similar use of "the machine" to describe the *poiesis* of meaning in the *Wake*. He describes the novel as: "a word machine, or a complex machination of meanings."<sup>6</sup> For Rabaté "which, rather than communicating *by way of* a given code, produce new *possibilities* of communication by challenging determined systems of signification."<sup>7</sup> In other words, the novel *performs* meaning, while at the same time marking a "lapsus," or a "misfiring" of meaning.<sup>8</sup>

These references to machines and networks mark an important convergence of critical theory and technology in their own right, one not cited in Landow's book, and one arising, I would argue, from the increasing penetration of cybernetics into everyday life in a "network society." As Joyce scholarship of the 1980s and 1990s became less interested in concordances and skeleton keys, exploring instead networks of intertextuality and semiotic

drift, “the network” itself came increasingly under a semantic coding associated with computer networks; the *différance* of the language machine found itself performing within the family resemblances of the “difference engine” of computers. As the machines changed, so too did our understanding of the network. Geoffrey Bennington notes that when Derrida turns to the computer to discuss Joyce, he does so not just as an image of the archive, but to imagine “the possibilities of folding a text back on itself, of discontinuous jumps establishing quasi-instantaneous links between sentences, words, or marks separated by hundreds of pages.”<sup>9</sup> Joyce’s books, therefore, serve for Derrida as supercomputers of textuality: machines of signification, interconnection, and associative leaps. In both of his essays “on” Joyce, Derrida makes reference to the *Wake* and *Ulysses* as “hypermnemonic machine[s]” that record, encode, and prefigure all languages, all associations, and all readings.<sup>10</sup> This “joyceware” encodes *wholes* into each part, but in doing so, it undermines the possibility of *ever* exhausting this network of signification, even from two words.<sup>11</sup> The Joycean text becomes a kind of machine itself: a *medium* for proliferation that doubles and short-circuits the “powerful reading machine” of Joycean scholarship.<sup>12</sup> Or as Andre Topia argues, Joycean networks constantly *determine* meaning while simultaneously suggesting a proliferation of alternate readings that pollute, destabilise, and infect each other.<sup>13</sup> This network of the text suggests that any node, as an overcoded textual unit, provides a potential “cybernetic key” that composes a matrix of signals for the text as a whole.<sup>14</sup> As a machinic system, any text is always, already a hyper-text.

By the mid-1990’s, one could begin to sketch an additional convergence in hypertext theory, critical theory, and Joyce studies. Now hypertext and the computer became foregrounded as both articulations of humanities computing and as a theoretical structuring of a post-structural reading of Joyce. The inauguration of *Hypermedia Joyce Studies (HJS)* in 1995, along with Rob Callahan’s *Work in Progress* and Allen Ruch’s *The Brazen Head* websites, mark moments not only of critical uptake, but of an embrace of hypertextuality in the production of scholarly work. In that first issue of *HJS*, Louis Armand’s essay, “Phoenix Ex Machina: Joyce’s Solicitation of Hypertext,” presents a convergence in its own right, weaving together Rabaté’s “perverse semic machine,” Deleuze and Guattari’s “desiring machines,” Attridge’s complexity machine, and Derrida’s “hypermnemonic machine” into what he calls the “hypertextual transverse.” In any grid arrangement of the text, he argues, “this grouping of signifiers reveals, if it reveals anything, the way a transverse marks out a network of discontinuities, of metaphor and metonymy, as they relate, not to a particular context, but to what opens a context at its frontiers to an

alterior discourse.” Likewise, in Darren Tofts’s contribution to the same issue, “hypertext” serves as a term that marks a cultural convergence of cybernetics, critical theory, and literary studies in the 20<sup>th</sup> century. Thus he can claim: “It is a mistake to think that with the *Wake* [Joyce] simply wrote a book that *looks like* hypertext. In fact he didn’t write a book at all. He provided a complex system of prompting, the primer node in an interface to be activated by the reader.”<sup>15</sup> As such, *this book—JoyceMedia*—marks a convergence as well, a coming together of Joyce scholarship and media theory, a trajectory that has been underway for a number of years. My own contribution began in Rome in 1998 at the Joyce Symposium, when I presented a paper that attempted to trace a genealogy of this convergence of hypertext theorists turning to Joyce, and of Joyceans who had discovered in hypertext a literal or figurative mapping of Joyce’s narrative experimentation. I discovered I was hardly alone, and many of the figures who were present at that conference are still at it, converging here in these pages.

Hypertext, of course, has its own genealogy, typically blessed by the trinity of Vannevar Bush, Tim Berners-Lee, and Ted Nelson. While it is important to think through the computer as material artefact—machine—in connection with hypertext, it is equally important to keep in mind the *cybernetic* underpinnings that provide a conceptual framework for early research into computer design and the foundation of information science. Bush’s memex stands as a precursor to hypertext precisely because it addresses a cybernetic concern: how does one navigate through a universe of information in pursuit of a pattern of signals? Hypertext (in proto- or actual form) provides a technological solution to the problem of command-and-control. Command-and-control are equally important for Berners-Lee, who describes the global reach of hypertext and the individual autonomy of the user as integral, inseparable elements of the Web as an information space. This apparent contradiction is a defining feature of the spatiality of hypertext: while it is a medium on a global scale, it is likewise mapped and enacted in the lived practice of individual users controlling these planetary flows. For example, in describing the future of the WWW as an emergent “Semantic Web,”<sup>16</sup> Berners-Lee writes:

Imagine what computers can understand when there is a vast tangle of interconnected terms and data that can automatically be followed. The power we will have at our fingertips will be awesome.<sup>17</sup>

There is a definite ideology at work in this conception of hypertext that on one hand foregrounds the catholic structures of a global information space, while at the same time privileging the agency of the individual, be that as

Enlightenment subject or as cybernetic operator with “awesome” powers in hand. This ideology is at work in Ted Nelson’s originary vision of hypertext, albeit in a somewhat different form, in his desire to create a system that will grant the user access to “a universal instantaneous publishing system and archive for the world.”<sup>18</sup> The structure of Nelson’s thoughts on hypertext, built around the slogan “everything is deeply intertwined,” suggests not only a network of interconnections, but the possibility of navigating a universe of information from any node in the network. While hypertext served as a shorthand in critical theory for the ever-opening text, in cybernetics and various branches of “information science,” it spoke to a desire to command-and-control a universal archive, to bring together disparate pieces of information into a convergence “at our fingertips” and on our screens.

In marking this intersection of networks, information, and literary theory, it is Eco’s semiotics, rather than the Saussurean variations taken up by Landow, that provides a final convergence of technology and critical theory in this essay. Eco’s discussion of the network of semiosis not only places the lexeme in a very different relation to other nodes of signification, it also speaks to a very different concept of “communication.” Eco’s understanding of information theory, through Shannon and Weaver, treats communication as a mode of conveyance. As Eco explains in *A Theory of Semiotics*, one can imagine semiotic linkages that are non-communicative, but never a communicative system that does not draw upon a network of semiotic relations. To the extent that a reader “takes up” a code, that reader is involved in a communicative system via the text. Of course, Eco’s *The Open Work* is a key text in establishing the fundamental feature of the 20<sup>th</sup> century avant-garde as the production of works that are multiple and involve the reader’s interaction with the work itself. Eco argues that Joyce and other Modernists create texts in which “suggestiveness” takes precedence over singular declaration.<sup>19</sup> Yet while foregrounding a post-Einsteinian ontology of “indeterminacy and discontinuity,” Eco is at pains to assure (along with Einstein) that God does not play with dice; the universe as a “field of relations” still obeys governing laws.<sup>20</sup> And it is here where Eco’s Peircean semiotics diverges from Saussure’s. The open work of art still offers up a virtual coding that patterns the whole. The reader’s function in completing the open text is, then, to trace or map the patterns within a work: “They are to be seen as the *actualisation* of a series of consequences whose premises are firmly rooted in the original data provided by the author.”<sup>21</sup> For Eco, the coding of semiotics provides the structures and redundancies that allow the text to communicate with the reader.<sup>22</sup>

The “open work” shrinks the space between reader and writer. Eco’s use of the network implies not only a communicative system, but also a reader

who performs as a receiver, commanding and controlling sign-functions through the operation of a code. Reading is active, an act of *navigation*. Eco’s semiotic networks, then, have perhaps more in common with Vannevar Bush’s memex linkages than with the unlimited drift of Saussurean signifiers. The semiotic network implies control, in that one activates or represses the linkage of sign-functions. That does not mean that these networks are not creative. In a chapter devoted to metaphor in *Finnegans Wake*, Eco writes:

Metaphor, in this sense, appears as a new semantic coupling not preceded by any stipulation of the code (but which generates a new stipulation of the code). In this sense, as we shall see, it assumes a value in regard to communication and, indirectly, to knowledge.<sup>23</sup>

The code of the text, while not predicting the metaphorical coupling, must support it. In this sense, the *actualisation* of the text amounts to a *determination* of linkages. So when exploring the metaphorical functionings that link a 2<sup>nd</sup> century Church Father and a 1930s cartoon character in a semiotic and semantic web, Eco explains:

In point of fact, the reader grasps the analogies between Minucius and Mandrake and does not depend upon the existence of a third term. However, it could be said that he depends upon an extremely long series of third terms that exist in the general context of the book [...] <sup>24</sup>

What justifies the linkages, then, is the fact that each pairing can trace its third term to a wider set of linkages in a network of semiotic production, a coding that allows the text to communicate to the reader. Reading becomes a kind of “bootstrapping” in which meaning becomes increasingly determinate through a process Eco calls *amalgamation*. In addressing any given node within a semiotic network (Mandrake, Minucius) “the reader does not know as yet which of these *virtual* properties must be *actualised*. This decision will be helped only by further amalgamation and by textual operators.”<sup>25</sup> This web of connections may become increasingly complex in its involutions, but ultimately it is inscribed in a globe of sorts. As a model of the network, then, Eco’s amalgamations describe and inscribe a process that moves from undetermined potential—a semiotic virtual—to communicative determination.

Eco’s semiotic networks provide, then, a final point of convergence by foregrounding a set of cybernetic principles in the context of literary studies, and more generally, meaning-making. These principles often went unnoticed in the euphoric uptake of hypertext theory in the early 1990’s. That is not to say that this rhetorical gap did not itself take part in mapping a convergence of

critical theory and technology. As we now find ourselves well underway in a second generation of humanities computing and media theory, I would argue that “hypertext” has become a marker in its own right, calling attention to a set of convergences in Joycean scholarship, critical theory, semiotics, and media studies. As such, “the Joycean network” maps points of contact as well as interstitial gaps in our understanding of meaning-making systems, both textual and hypertextual.

As an “opening” gesture, then, coming nearly a third of the way into this chapter, I would like to create a convergence—and gap—between two textual nodes in a Joycean network, in effect establishing a linkage between them. The first concerns an often repeated story involving Joyce’s relation to Samuel Beckett, and the drafting of *Finnegans Wake*. The story, as recounted in Ellman’s biography, runs as follows:

Once or twice, [Joyce] dictated a bit of *Finnegans Wake* to Beckett, though such dictation did not work very well for him; in the middle of one such session there was a knock at the door which Beckett didn’t hear. Joyce said “Come in,” and Beckett wrote it down. Afterwards he read back what he had written and Joyce said, “What’s that ‘Come in?’” “Yes, you said that,” said Beckett. Joyce thought for a moment, then said, “Let it stand.” He was quite willing to accept coincidence as his collaborator. Beckett was fascinated and thwarted by Joyce’s singular method. [VII 649]

The story has several morals to it, many contrasting Beckett’s and Joyce’s artistic style. The primary moral, however, seems a cautionary tale to the image of Joyce as a modernist artist whose “controlling hands” plan out each resonance in the text. Instead we have an image of Joyce incorporating error and collaborating with chance.

While the veracity of the “Come in” anecdote has been challenged on numerous fronts, it serves an important purpose in the context of this current paper, in that it calls attention to the understanding of convergences in the production of meaning, and the production of a text. If we are to understand the text of the *Wake* through a classical Joycean method—as a kind of network of references, activated for a reader by access to a “key” that reveals the systematic nature of that reference—then it is hard to understand how apparently random material could find a place in a signifying system. A random phrase should strike the reader as an intrusion: noise amidst the signals of the text. But one can also imagine, in that moment of pause—the gap between Beckett’s repetition of the text and Joyce’s recognition of the gap between input and output—that Joyce-as-reader found a coding and an

amalgamation that brought the random into coherence. The convergence, then, of the tale, is not merely a matter of Joyce incorporating randomness into his text; rather, it speaks to a certain understanding of error in its relation to the text-as-network and the program of the reader. In the transcription process, Joyce as transmitter sends a signal to Beckett the receiver, yet the channel contains noise, introducing error into the code. This “Come in,” however, is not meaningless, but rather *overcoded*, serving as a marker of both the gap between sign-functions that gives rise to unlimited semiosis and the convergences that give rise to the production of meaning. But in this interstitial space itself, how can one speak of an amalgamation of significations, or for that matter, a *determination of the text*?

I would like to link this anecdote to another often quoted invocation of Joyce’s method, perhaps not as well known as the Ellman story, but in contemporary Joyce studies (and indeed in this volume) rather well circulated. In a discussion of the indeterminacy of the text in Joyce’s literature—the “yeses” in *Ulysses* in this instance—Derrida fantasises about a future Joyce Foundation Computer that would serve as an adjunct to Joycean scholarship. He writes:

Supposing a department of Joycean studies decides, under the authority of an Elijah professor, Chairman or chairperson, to put my reading to the test and to institute a “program,” the first phase of which would consist of putting in table form a typology of all the *yeses* in *Ulysses*, before moving on to the *yeses* in *Finnegans Wake*. The chairperson agrees [...] to buy an *n*<sup>th</sup> generation computer that would be up to the task. The operation agreed to could go very far.<sup>26</sup>

In fact, a present-day computer is capable of much of the task that Derrida describes here. Electronic versions of *Ulysses* or *Finnegans Wake* exist online, and one could easily perform the appropriate key word searches, and then process that data with a grammatical or linguistic mark-up application. But in Derrida’s fantasy, this *n*<sup>th</sup> generation computer goes much further, performing “two tasks which would be impossible for any computer of which we possess the concept and control today.”<sup>27</sup> That first impossible task would be to generate an *exhaustive* typology of *yeses* in *Ulysses*. Derrida himself identifies ten modalities of “yes” in the novel, but this coding is always only partial and tentative, subject to doubling and indeterminacy. Derrida explains:

A computer cannot today enumerate these interlacings, in spite of all the many ways it can help us out. Only an as yet unheard-of computer could, by attempting to integrate with it, and therefore by adding to its own score, its other language and its other writing, *respond* to that in *Ulysses*.<sup>28</sup>

To mark, along with all those *yeses*, the program of reading itself, “*part of and not part of the analysed corpus*,” this *n*<sup>th</sup> generation computer would exceed its own “perilous counting” and “respond” to the text. In a word, this second task is impossible precisely because it commits a “system error” by annulling the operational and programmatic relation between reader and text that treats the text as a system of data, “outside” the reader.

Derrida’s essay presents a critique of a certain approach to literary criticism and does so by drawing upon the image of a semiotic super-computer, capable of exhaustive codings and decodings of a text. But in doing so, he also presents a version of cybernetics in which the reader/operator commands and controls the computer as a computational instrument. Simply put, the human provides input, the computer provides output. This operational relation should appear quite familiar, for it is one we enact with every database query or keyword search we perform on our own computers, at home and in the office. In this Derridean fantasy of a Joyce Foundation program, the computer is seen as a device that *determines* a text, a text that is always multiplying in its meaning. Derrida identifies a programmatic approach to literary criticism, one in which the computer as a cybernetic device for the command, control, and communication of information performs admirably—up to a point. But beyond that point, Derrida argues, the cybernetic device faces the impossible task of treating an indeterminate, open system as though it were a determinate system of data. In contrast to these data processing machines, Derrida gestures toward a textual machine, the text itself, that can never be fully programmed because it always exceeds its own code.

The textual convergence, on these pages, of the “Come in” anecdote and the Derridean *n*<sup>th</sup> generation computer calls attention to a gap of sorts in how we understand *control of the text*. Derrida’s critique of programmatic reading plays in well with a certain cybernetic vision of information management in that it imagines complete control as a desirable state. To control the code is to master the text. In contrast, the image of Joyce’s style invoked in the “Come in” anecdote suggests a very different relationship to aleatory information. “Error” disrupts a program as an aberration, as noise. The anecdote suggests that Joyce’s method constantly exceeded his own compositional program. It is a machine and a network that is *out of control*.<sup>29</sup> At its simplest, cybernetics provides a science for the control of information flow. As Norbert Wiener defines the field, the purpose of cybernetics as a discipline is “to attack the problem of control and communication in general.”<sup>30</sup> For Wiener, control is problematised by a universe (of information, matter, energy, etc.) that drifts toward disorder. Control provides a structure against what Wiener calls

“nature’s tendency to degrade the organised and to destroy the meaningful.”<sup>31</sup> From the chaos of virtuality, communication provides a “temporary and local reversal of [...] entropy” by actualising information.<sup>32</sup> A cybernetic approach to Joyce’s work would in effect attempt to control the language machine by placing the reader in an input/output relation with the text. The text, then, becomes a field of possible readings, and as such, command and control of the text necessitates an ability to predict how a cybernetic system will actualise a given reading as a communicative system.

Such an account of the relation between author, reader, and text is taken up by Eco’s Model Reader. He writes:

An author can foresee an “ideal reader affected by an ideal insomnia” (as happens with *Finnegans Wake*), able to master different codes and eager to deal with the text as with a maze of many issues. But in the last analysis what matters is not the various issues in themselves but the maze-like structure of the text. You cannot use the text as you want, but only as the text wants you to use it.<sup>33</sup>

The structure underlying this understanding of an ideal or Model reader, and reading in general, foregrounds an input-output relation to the text: the author (or author-function) who codes a text, and the reader who decodes it. The Model Reader for Eco is not an individual per se, but rather the articulation of coded “presuppositions” that allows for the optimal performance of the text: “the Model Reader is a textually established set of felicity conditions (Austin, [1975]) to be met in order to have a macro-speech act (such as a text is) fully actualised.”<sup>34</sup> At issue here is a form of semiotic control over the text. For Eco, the Peircean semiotic chain suggests a continual refining of meaning through the progressive activity of a community of inquirers.<sup>35</sup> One can speak, then, of a text, or of any semiotic system, as a virtuality continually moving toward a more perfect articulation of its system of codings: “When faced with a lexeme, the reader does not know which of its virtual properties (or semes, or semantic markers) has to be actualised so as to allow further amalgamations [...] All these properties are not to be *actually* present to the mind of the reader. They are *virtually* present in the encyclopaedia, that is, they are socially *stored*, and the reader picks them up from the semantic store only when required by the text.”<sup>36</sup> While a text may never be *fully* determined (in the sense that not even the author need occupy the lived position of Model Reader), a reading *advances* a semiotic process to the extent that it increases the determination of the text. Any misreading, then, is really a Austinean misfiring—aberrant presuppositions about the text.

As with Eco’s semiotics, Wiener describes cybernetics as a control system

for increasing determination. Indeterminacy provides a resistance to communication, the process that actualises information. In fact, Wiener explicitly associates the resistance of entropy with a principle of evil.<sup>37</sup> Cybernetics dispels, if only locally and temporarily, the curse of indetermination. And this is an important point worth stressing: in a cybernetic account of communication, the operator stands in an antagonistic relation to this field of entropy that resists good and orderly control. In this context, Derrida's comments on computers, reading, and the irreducibility of the text provide an illuminating point of contrast. For Wiener, indeterminacy is a problem, a resistance, an antagonism. Likewise, the Joycean program in Derrida's fantasy attempts to determine the text within an exhaustive coding, albeit a coding of a single word. Whatever escapes determination marks a failure in the program, a failure to achieve ideal performance. For Derrida, the indeterminacy of the text always exceeds its coding, precisely because reading responds to the text as "*part of and not part of the analysed corpus.*" Cybernetics defines a field of givens that are in principle entirely knowable, calculable, and therefore predictable. This concept of predictability is perhaps most clear in a section of *The Human Use of Human Beings* where Wiener gives a cybernetic reading of legal systems based on precedence. He writes: "The technique of the interpretation of past judgments must be such that a lawyer should know, not only what a court has said, but even with high probability what the court is going to say."<sup>38</sup> In this same passage, Wiener describes a legal situation in which precedent has not yet been determined, when justice, in other words, has not yet been performed. He writes:

There are vast fields of law where there is no satisfactory semantic agreement between what the law intends to say, and the actual situation that it contemplates. Whenever such a theoretical agreement fails to exist, we shall have the same sort of no-man's land that faces us when we have two currency systems without an accepted basis of exchange. In the zone of unconformity between one court and another or one coinage and another, there is always a refuge for the dishonest middleman, who will accept payment neither financially nor morally except in the system most favourable to him, and will give it only in the system in which he sacrifices least. The greatest opportunity of the criminal in the modern community lies in this position as a dishonest broker in the interstices of the law.<sup>39</sup>

I am intrigued by this position between two systems, in "the interstices of the law," and the threat it poses to systems of order. Cybernetics as a science of command and control seems to suggest that justice is served only when order has been established, when the system has performed according to a system of

laws. The "interstices of the law" is a place of the criminal, error, and the forces of entropy.

In contrast, Derrida locates the aporetic program of reading within this interstitial gap. The language machine that is the text differs from the cybernetic language machine in that the text is irreducible to the code it communicates. This relationship between reader, determinacy, and the text plays an important part in understanding how a certain mode of (cybernetic) thinking has had an influence on literary theory, and more specifically how it relates to Joyce studies. In a period in which the computer has come to bear all the more forcefully on literary studies, and often with very fruitful results through various forms of "humanities computing," an understanding of the influence of operational thinking on literary studies is quite relevant. In a cybernetic approach to the literary object, the goal of reading would be, ultimately, to put the text to rest—to reach (or approximate) a point in which the text has been "fully" determined. The computer, then, would serve as a tool to aid in determinations of the text, in a fashion that places the user in the position of operator/controller, in an input/output relationship with the work at hand. One can further imagine, under the authority of a Humanities Computing professor, Chairman or chairperson, hypertext used as just such a tool, generating spaces of control for its users: searchable databases, an "infinite" library of scholars, a network of multiple editions, audio-visual tools, and supplementary texts all "at our fingertips." We need not wait for an *n*<sup>th</sup> generation computer to find this program well underway; already we can find versions of a Joycean hypertext on the WWW that promise greater control over the text through cybernetic interventions in and of the network.<sup>40</sup>

To return to the issue of Joyce's/Beckett's "Come in" in the *Wake*: might we, through principles of cybernetic control, *determine* the location of this spurious moment in the text? According to John Harty's article, "Is Beckett's 'Come In' in *Finnegans Wake*," Joyce did *not* incorporate the phrase into the text. The anecdote, which was told to Ellman by Beckett, is of questionable accuracy for Harty: "If this event did take place, then Joyce had second thoughts about the 'Come in' and deleted it. As scrambled as *Finnegans Wake* is, this random, needless 'Come in' would damage the book's integrity" (*JJII* 52). As Harty's language implies, the complexity of the *Wake* is a matter of "scrambled" code, not "random, needless" interference. This distinction, while not stated in explicitly cybernetic terms, is very much the distinction that Claude Shannon makes between signal and noise. In his own version of information theory, Claude Shannon differs from Wiener in understanding entropy in a communicative system, establishing a direct, rather than inverse relation between information and entropy. As Warren Weaver explains in his

comments on Shannon's work:

Information is [...] a measure of one's freedom of choice in selecting a message. The greater the freedom of choice, and hence the greater the information, the greater is the uncertainty that the message actually selected is some particular one. Thus greater freedom of choice, greater uncertainty, greater information go hand in hand.<sup>41</sup>

Weaver goes on to explain that the only difference between noise and signal in Shannon's cybernetics is selection; noise is "spurious" information. But ultimately, we still have a system of control at work in Shannon's cybernetics: the controlled selection of desired signal from spurious noise. We are still within an input/output relation that places the operator in a position of command and control. As a program of literary study, we are also treating the text itself as a channel (either two-way or one-way, depending on its brand) between authorial coding and reader-response. Hence, Joyce's removal of this phrase, according to Harty, emphasises that no matter how "scrambled" the code, it still takes part in the conveyance of information, as long as it was "sent" from author-source to reader-receiver.

Harty continues his analysis by consulting Clive Hart's *Concordance*, where he discovers 150 occurrences of the word "come," while only four occurrences of "come in" (excluding a fifth, in the form of "Come Inn" *FW* 512.32).<sup>42</sup> Harty's argument follows primarily from a logic of plot. The first instance, "Take off thatch whitehat (lo, Kersse come in back bespoking of loungeon" (*FW* 322.1-2), occurs as part of what Harty describes as Joyce's transmogrification of a tale he heard of a hunchback sea captain and a tailor who fails to fit him properly. The tailor Kersse is asked to enter a pub, thus "the 'Come in' is integral to Kersse's entrance and is not the result of a random accident."<sup>43</sup> Likewise, for Harty, the other "white hat" instance, "Remember to take off your white hat, ech? When we come in the presence" (*FW* 623.9-10), denies the accidental because the pun (sexual/religious) holds a place of privilege in Joyce's writing. The argument becomes more tenuous in his reading of the third instance, "come in, come on, you lazy loaf!" (*FW* 393.27), which is again justified by a reading of plot: "The 'come in' here seems to be Matt's directing the cat into the kitchen and can't be accidental."<sup>44</sup> In Harty's reading, however, the "Four Old Men" in this section are variants on (among other things) the four evangelists; one might just as easily connect the passage with an earlier instance of the loaf's appearance, "so now pass the loaf for Christ sake. Amen" (*FW* 393.2-3), in the context of a transubstantiation of bread into body and blood. The fourth passage, "Then the court to come in to full morning (*FW* 566.23-24) reads again for Harty as a

sexual pun, but by this point the indeterminability of the text has all but won: "Exactly what happens in the above section and the meaning are debatable. Yet the 'come in' is clearly an integral part of the citation and hardly a random phrase."<sup>45</sup>

Of course, I am far more interested in the *program of criticism* cited here than in the specifics of interpretation. Harty's reading of the passages cited are clearly motivated by a desire to get it right—to determine the status of the errant phrase "come in." Here plot and an interpretative framework function as a coding of information. Interestingly, with each additional potential site/cite, Harty's reading becomes all the more tenuous, and his control over the text—what he can "clearly" declare—becomes more a matter of selecting signal from noise than textual plan. In effect, such a program of mastery treats textual gaps as puzzles; whatever conundrums exist are matters of complexity or a lack of a proper code, not markings of interstitial openings of indeterminacy. In cybernetic terms, it expresses itself in the balance between redundancy and entropy's freedom of choice. A system's redundancy measures the amount of signal that can be obscured or effaced without effecting communication. Redundancy makes word puzzles possible, Shannon argues, and according to his calculations, English is 50% redundant; a higher degree of redundancy would in effect make the puzzle less puzzling, and hence unsatisfactory, whereas lower degrees of redundancy approach the limit case in which any random array of letters would solve the riddle.<sup>46</sup> In this analysis, we might argue from a cybernetic standpoint that Joyce has lowered the redundancy of the English language, but to a level where the puzzle still plays—the equivalent of Shannon's speculation that a 30% redundant English would allow us to construct satisfying 3-D crossword puzzles.<sup>47</sup> In fact, Shannon uses the *Wake* to make just such a point about the relationship between redundancy and entropy:

Two extremes of redundancy in English prose are represented by Basic English and by James Joyce's book *Finnegans Wake*. The Basic English vocabulary is limited to 850 words and the redundancy is very high [...] Joyce on the other hand enlarges the vocabulary and is alleged to achieve a compression of semantic content.<sup>48</sup>

Implicit in both Harty's and Shannon's reading of the *Wake* is the assumption that "each word in the *Wake* serves a purpose, difficult though it may be at times to ascertain."<sup>49</sup> Such an argument claims that any given word stands as a node in a network of signification and is therefore capable of enacting a range of textual linkages that encode the text in a structure of meaning.

The "Come in" puzzle, then, assumes that one can speak of the textual

network in cybernetic terms: as signal/noise, entropy/redundancy, communication/interference. Such an account defines indeterminacy as a gap in actualisation, but never as an interstitial space. Mastering the network of the text, then, would involve control over as many nodes as possible. As such, one can indeed imagine a hypertextual tooling of “come in”: an electronic concordance of links to passages that in turn link to each other, attempting to distinguish semiotic amalgamations from the non-communicative gaps of noise. One can imagine supplementary material brought to bear as well, such as the latest Archive dates for various passages in the *Wake*,<sup>50</sup> correlated with the dates of Beckett’s most likely collaboration with Joyce (1932-1935). Such a network of convergences, navigated by a Model Joco-Cybernetician, perhaps, would yield one *signal passage* in which Beckett’s hand could have penned the errant “Come in”:

—Take off thatch whitehat (lo, Kersse come in back bespoking of loungeon off the Boildawl stuumpheats for rushirishis Irush-Irish, dangieling his old Conan over his top gallant shouldier so was, lao yiu shao, he’s like more look a novicer on the nevay).

—Tick off that whilehot, you scum of a botch, (of Kersse who, as he turned out, alas, hwen ching hwan chang, had been mocking his hollaballoon a sample of the costume of the country).

—Tape oaf that saw foull and sew wrong, welsher, you suck of a thick, stock and the udder, and ðonfiteor yourself (for bekersse he had cuttered up and misfutthered in the most multipllest manner for that poor old bridge’s masthard slouch a shook of cloakses the wise, hou he pouly hung hoang tseu, his own fittter couldn’t nose him). [FW 322.1-13]

In the triple alterations of the text, the parentheticals are not commented to Kersse directly, but in amplification of the command Take off/Tick off/Tape oaf. As such, one could argue that the presence of “come in” in the first instance is a cybernetic redundancy, since “Kersse [...] back bespoking of loungeon off the Boildawl stuumpheats for rushirishis Irush-Irish” has no less of a claim as a complete message than the passage as it appears in print. But such a program of reading spirals out of control in the *Wake*, particularly in a passage of triple redundancy. In what sense can we say that “come in” does or does not signify in a way that would be *demand*ed by the network of the text—or even an intertextual network (Beckett’s hermetic coding of assent in his own “tailor tale” in *Endgame*, told by Nagg, who summons his audience with a knock on Nell’s ashbin)?

The ideal of mastery of a text speaks to a certain understanding of textuality—an understanding that places either author or reader in a position

of engineering a text. The approach suggests that not all textual linkages are valid—or rather, that one could in effect distinguish between what is justified by a reading of the text and what is idiosyncratic to the reader. The convergence of Beckett’s “Come in” and Derrida’s computer, then, also suggests a gap in signification, a gap between Peircean and Saussurean semiotics, between semeiosis and semiosis, between two articulations of drift. And marking this gap, as interstitial text, is the *Wake* itself. Consider, for example, Eco’s oft-cited discussion of a single Wakean word: “meandertale.”<sup>51</sup> He attempts to explain how the web or networked structure of signification in the *Wake* justifies some readings while excluding others. Eco argues that *Finnegans Wake* produces a textual network of associations that makes the work’s cultural and psychological context legible. The lexeme “meandertale” produces three other lexemes, all interconnected by a network of associations, each reinforcing the other, at the expense of other possible associative links: “The interconnections show, moreover, the way in which every lexeme can in turn become the archetype of an associative series which would amalgamate sooner or later, with the associative terminals of another lexeme.”<sup>52</sup>

While Eco emphasises that these semiotic networks place sign-functions in a temporary arrangement via a code, the *articulation* of a semiotic network by way of that code gives rise to a structure of increasing determination—assuming that this semiotic system also performs as a communicative system (such as a literary object). Nodes, while temporary in their arrangement, are reinforced by the actual activation of a semiotic relation—in the instance of a literary object, by the act of reading. As a network then, what determines signification is the *potential to communicate via a code*. “Meandertale” resonates because of its nodal relationship with other nodes in the same semiotic amalgamation. One can *determine*, then, according to Eco, the semiotic value of a given Wakean word not by claims to authorial intent, but by the felicity conditions that allow this network to “fire.” The network, then, specifically becomes an expression of interconnected codings. But in reading *Finnegans Wake*, one is caught up in an interstitial space, a “zone of unconformity” between two systems of reading. The first treats the word as an interminable opening onto a play of signifiers. The second marks each word with a code that potentially unlocks the “entire” text. At issue are the networks of the text itself. To quote the *Wake*:

It is told in sounds in utter that, in signs so adds to, in universal, in polygluttural, in each auxiliary neutral idiom, sordomutics, florilingua, sheltafocal, flayflutter, a con’s cubane, a pro’s tutute, strassarab, ereperse and anythongue athall. [FW 117.12-16]

Not only do phrases like “in utter that” and “so adds to” open to multiple interpretation, but networks of resonance start to develop in clusters and repetitions of morphemes and phonemes that reinforce one another. To take a polygluttral phrase such as “anythongue athall”: from the standpoint of Eco’s semiotics: the unlimited semiosis of reading would entail a process of increasing determination of a sign series through greater control over a semiotic network. The Model Reader would enact the nodes “completely,” or rather, would amalgamate these virtualities into an actual reading that optimises this network of resonances: “Anything at all/Any tongue at all.”

This asymptotic semiosis would converge with other lexemes in the sequence in which tongues and plenitude resonate (polygluttral, florilingua). Although the phrase is never fully determined, it approaches such a point. This sort of reading stands in contradistinction to Derrida’s reading of a single word in the *Wake*, in which complete determination of the text is not only impossible, but through a chain of signification (Eco’s Hermetic drift), the process is always open toward *increasing* indetermination. Reading, Derrida suggests, enacts a set of *dissipative* connections, such that any convergence (anything/any tongue) increases the virtuality of a semiotic network, rather than amalgamating actual links.

One finds a similar “zone of unconformity” between systematic treatments of hypertext—as either cybernetic vehicle or post-structural writing space. Do we, for example, understand the WWW as a network of interconnecting determinate nodes, defined by URLs (minus the “noise” of dead links), or as an indeterminate opening, an interstitial gap marked by a user’s hand hovering over mouse and keyboard? The Web is presented in the mass media as the great leveller by providing individuals access to a global medium of production, distribution, and consumption. In addition to providing a material form for a “worldwide” network, hypertext also enacts conceptual structures that foreground the user as an autonomous controller/operator of global resources. Browsing, then, as a lived practice, articulates a space in which the network situates the user in an operational relation with “the world.” This representation of a network of linkages treats the connections between pages of a hypertextual field as a reified structure: a network of nodes. Of course, there is no link between two pages in a material sense, only the *potential* for one (every “dead” link attests to this fact). As such, the materiality of the *link* is not on the screen in glowing blue lettering, but rather in the embodied experience of the user whose eye is trained on a screen, and whose hand deftly types, scrolls, and clicks. In fact, there is no reason to treat the link that occurs by way of clicking on the screen as more or less direct than the link that occurs when a user “points” the browser to another page by typing in a URL. This

vision of hypertext as a space of cybernetic control represents a dominant ideology of the Web, but one could also argue that each web page presents an opening, the potential to enact an indeterminate network of connections. Thus browsing the WWW does indeed provide users with access to a range of sources, distributed both geographically and topically, but the “connections” that link them are always potential, not *actual*, until they are articulated through lived practice.

Thinking of the space of hypertext as an event rather than a state of affairs, I would suggest that the user enacts a space by calling specific pages into an experienced relation. In this regard, hypertext is a relational space that is actualised in lived practice. As an event, it suggests both virtual structures of potential and actual enacted networks of convergence. In the network produced by the user pointing and clicking her way through various sites, the very possibility for errant or “perverse” connections is inseparable and indistinguishable from its global, “universal” potential. From the perspective of an information space, then, there can be no real distinction between appropriate or inappropriate linkages or sites. Such a vision of the spatiality of hypertext, of course, runs contrary to the ideology of the information superhighway, where connectivity equates with efficiency and productivity. As a cybernetic vehicle, then, hypertext suggests that the greater the degree of control over this virtual structure, the better the sense that the user is mapping a useful and meaningful information space. Yet gaps and fissures will always exist as indisciplines, minor practices, and deterritorialisations.

As of 11:18 AM (EST) on 28 January 2004, the search engine website for AltaVista responds to my query:

“finnegans wake”

by producing 12,517 links to sites with this key phrase. While information-rich, such a field is unwieldy. By narrowing my search to “finnegans wake” and Joyce and Beckett and “come in” AltaVista provides me with 44 links, most of which refer to the anecdote in question, but some in which the phrase “come in” occurs as spurious information, a random phrase dropped into the text as it were, and not foreseen in the input-output relationship of controller, database, and field of potential information. Other links bring up “404 Not Found” errors. Of the links relevant to the anecdote, I encounter an article by Dan Weiss on Allen Ruch’s *Brazen Head* website. The article quotes the anecdote for the purpose of explaining how Joyce introduced “the effects of textual drift and plain chance into his works.” (24B). Coincidentally enough,

the Weiss article is also interested in networks, writing, and Joyce, with significant reference to Eco's *Open Work*. The network of scholars invoked by *this* anecdote of convergences in a Joycean Hypertext suggests something similar to a Peircean "community of inquirers" in which like-minded searches and like-minded pursuits are brought together. While I had not encountered Weiss's work prior to writing this article, the ability of the search engine to generate a controlling structure over thousands (in this instance) of potential pages suggests a meaningful amalgamation of scholarship. *But that's not what I was after.* We are not any closer to "nailing down" Beckett's "Come in" than we were at 11:17 AM. It slips through the gap. The convergence that *did* take place—on networks, Eco, and *Finnegans Wake*—occurred precisely in this interstitial space between input and output programs.

I am working on my computer, with windows open to two websites: The Trent University *Finnegans Web* and the Grand Teton *Joyce Omnicordia*. By correlating one with the other, I can perform key word searches and extract textual passages. My generation of "come" produces 156 occurrences. The limits of the current concordance search do not allow me to type "come in" and search the particular phrase. In typing phrases, however, I do manage to enter "comein," requesting partial and whole word search. I receive the following response: "thou who agnites! Dah! Arcthuris comeing! Be! Verb umprincipiant through the transitive spaces! Kilt by kelt shell kithagain" (*FW* 594.2). Rather than pinning down the passage, or completing my impossible task, the network converges on another slippage, an error, one that for a moment, seems to resonate in the aleatory occurrence of "transitive spaces." Isn't that what I've been trying to map on these pages? But can it be said that I activated a code, or in any other way executed a program that commands and controls this network of convergences and meaning-making? Or am I merely caught up in the delirious, hermetic convergences of a drifting similitude? In this interstitial gap between two programs, this transitive space, something still comes together. Might we define this moment, as with hypertext, as a dynamic event in a relational space of signification?

If we think of the networks of convergence in *Finnegans Wake* as dynamic events, we are forced to think in terms of the generative function of networks. We might now rethink the "meandertale" example as a *stabilisation* of the text through the articulation of a semiotic network, rather than the activation of a series of semiotic nodes. In such a reading, "anythongue athall" does indeed map a virtuality of signification, but that virtuality does not precede the event of reading; *it is articulated in the immanent practice of reading itself*. How does the node "anythongue athall" respond to a semiotic convergence that actualises "thong" as a semantic rheme, set against "con's cubane," "pro's tutute?" Such

a reading, aberrant and abhorrent to Eco's semiotic, calls attention to the dynamic, relational event of reading. If we can conceive of a semiotic immanent to the dynamics of convergence, then we will need to account for the production of meaning at these very moments of interstitial slippage: not as aporetic escapes, but as relational spaces of emergent meaning-making.

This text itself is a monstrous convergence of sorts, to the extent that its composition straddles a number of years, a number of productions, a number of iterations. The process of condensation that eliminates some material while highlighting others is not so much a matter of separating that which signifies from that which amounts to noise. Instead, the very dynamics of combination gives rise to its own meaning-making. The question, then, of the convergence of textual passages is no more significant than the question of the textual gaps and interstitial spaces that are exploited by the reader, and that articulate the text itself as a communicative system.

## NOTES

- 1 George Landow, *Hypertext: The Convergence of Contemporary Critical Theory and Technology* (Baltimore: Johns Hopkins University Press, 1992) 10.
- 2 Landow, *Hypertext*, 24.
- 3 Landow, *Hypertext*, 135-137.
- 4 For an overview of this shift in Joyce scholarship, see Leonard Orr, "Recent Reformations of Joyce," *SubStance* 65 (1991): 89-100.
- 5 Derek Attridge, "The Postmodernity of Joyce: Chance, Coincidence, and the Reader," *Joyce Studies Annual* 6 (1995): 12-14.
- 6 Jean-Michel Rabaté, "Lapsus Ex Machina," trans. Elizabeth Guild, *Post-Structuralist Joyce: Essays From the French*, eds. Derek Attridge and Daniel Ferrer (Cambridge: Cambridge University Press, 1984) 79.
- 7 Umberto Eco, *The Open Work* (Cambridge: Harvard University Press, 1989) 219-221.
- 8 Rabaté, "Lapsus Ex Machina," 91.
- 9 Geoffrey Bennington. "Derridabase," *Jacques Derrida* (Chicago: University of Chicago Press, 1993) 314.
- 10 Jacques Derrida, "Two Words For Joyce," trans. Geoffrey Bennington, *Post-Structuralist Joyce*, 147.
- 11 Derrida, "Two Words For Joyce," 155.
- 12 Jacques Derrida, "Ulysses Gramophone," trans. Tina Kendall, *Acts of Literature*, ed. Derek Attridge (London: Routledge, 1992) 286.
- 13 Derrida, "Ulysses Gramophone," 104-106.
- 14 Topia, André, "The Matrix and the Echo: Intertextuality in *Ulysses*," trans. Elizabeth Bell, *Post-Structuralist Joyce*, 109.
- 15 For an earlier example of this convergence between Joycean scholarship and media theory, via Marshall McLuhan, see Donald Theall, "Beyond the Orality/Literacy Dichotomy: James Joyce and the Pre-History of Cyberspace," *Postmodern Culture* 2.3 (May 1992). <<http://www.iath.virginia.edu/pmc/text-only/issue.592/theall.592>>.
- 16 As the Semantic Web learns significance through hypercomplex linkages between sites, Berners-Lee believes, an organic structure begins to emerge from the Web as a whole, with the potential for ideas—and social forms—to evolve out of its structures of connectivity.
- 17 Berners-Lee, *Weaving the Web*, 187.
- 18 Ted Nelson, *Literary Machines*, edition 87.1. (published by the author, 1987) 2.4.
- 19 Eco, *The Open Work*, 9.
- 20 Eco, *The Open Work*, 18-19.
- 21 Eco, *The Open Work*, 19.
- 22 But Eco also acknowledges that which escapes coding: the multiplicity of other unactualised expressions. While information occurs through a selection of signal and a decrease in possible choices, the "openness" of poetics correlates to its virtual multiplicities. Poetics, rather than intentionally coding information, seeks a "dis-ordering" that moves expression away from the actual and toward this virtuality. See Umberto Eco, *The Open Work* (Cambridge: Harvard University Press, 1989) 66-67.
- 23 Umberto Eco, *The Role of the Reader* (Bloomington: Indiana University Press, 1984) 69.
- 24 Eco, *The Role of the Reader*, 72.
- 25 Eco, *The Role of the Reader*, 18.
- 26 Derrida, "Ulysses Gramophone," 305.
- 27 Derrida, "Ulysses Gramophone," 306.
- 28 Derrida, "Ulysses Gramophone," 308.

- 29 For a play on the same pun to describe hypertext, with explicit reference (once again) to Joyce, see Kevin Kelly, *Out of Control* (Reading, MA: Addison-Wesley, 1994) 450-467.
- 30 Norbert Wiener, *The Human Use of Human Beings* (Garden City, NY: Anchor, 1954) 17.
- 31 Wiener, *The Human Use of Human Beings*, 17.
- 32 Wiener, *The Human Use of Human Beings*, 25.
- 33 Eco, *The Role of the Reader*, 9.
- 34 Eco, *The Role of the Reader*, 11.
- 35 See for example Umberto Eco, "Unlimited Semeiosis and Drift: Pragmatism vs. 'Pragmatism,'" in *Peirce and Contemporary Thought*, ed. Kenneth Laine Ketner (New York: Fordham University Press, 1995) 196-221.
- 36 Eco, *The Role of the Reader*, 23.
- 37 In most information systems, this is an Augustinian evil, a *lack* of perfect order—in contrast to the Manichaeian evil that actively works *against* the forces of order in the world. See Wiener, *The Human Use of Human Beings*, 35.
- 38 Wiener, *The Human Use of Human Beings*, 110.
- 39 Wiener, *The Human Use of Human Beings*, 110-111.
- 40 This is the explicit philosophy behind Jorn Barger's *IQ Infinity* Joyce site, for example, where he describes his ambition to use artificial intelligence "ultimately to find the underlying structure of *Finnegans Wake*, which I think will supply a precise analysis of human motivations, that can serve as a 'Yahoo' category-hierarchy for complex psychological content." See *IQ Infinity: The Unknown James Joyce* <<http://www.robotwisdom.com/jaj/>>.
- 41 Claude Shannon and Warren Weaver, *The Mathematical Theory of Communication* (Urbana: University of Illinois Press, 1949) 18-19.
- 42 John Harty, "Is Beckett's 'Come in' in *Finnegans Wake*?" *Notes on Modern Irish Literature* 5 (1993): 52.
- 43 Harty, "Is Beckett's 'Come in' in *Finnegans Wake*?" 54.
- 44 Harty, "Is Beckett's 'Come in' in *Finnegans Wake*?" 55.
- 45 Harty, "Is Beckett's 'Come in' in *Finnegans Wake*?" 56.
- 46 Shannon and Weaver, *The Mathematical Theory of Communication*, 55-6.
- 47 Shannon and Weaver, *The Mathematical Theory of Communication*, 57.
- 48 Shannon and Weaver, *The Mathematical Theory of Communication*, 56.
- 49 Harty, "Is Beckett's 'Come in' in *Finnegans Wake*?" 52.
- 50 Available at Antwerp James Joyce Centre, *Dates and Drafts*, 2002, <<http://www.antwerpjamesjoycecenter.com/GJS/DraftsandDates17May2002.htm>>.
- 51 "The meandertale, aloss and again, of our old Heidenburgh in the days when Head-in-Clouds walked the earth" (FW 18.22-24). For a complete discussion, see Umberto Eco, *The Role of the Reader* (Bloomington: Indiana University Press, 1984) 67-89.
- 52 Umberto Eco, *The Limits of Interpretation* (Bloomington: Indiana University Press, 1990) 142.