2 STORING

Print and Etext
4 Translating Media

From Print to Electronic Texts

In “The Don Quixote of Pierre Menard,” Borges uses his technique of re-viewing nonexistent books to explain Pierre Menard’s fantastic project of re-creating Don Quixote in the twentieth century. Although Menard’s creation reproduces Cervantes’ masterpiece word for word, Borges explains that it is an utterly different work, for the changed cultural context makes thoughts that were banal for Cervantes virtually unthinkable for a twentieth-century intellectual. Borges’s mock-serious fantasy recalls more mundane operations carried out every day around the globe. Suppose Don Quixote is transported not into a new time but a new medium, and that the word sequences on the computer screen are identical to Cervantes’ original print edition. Is this electronic version the same work? Subversive as Borges’s fiction, the question threatens to expose major fault lines running through our contemporary ideas of textuality.

To explore these complexities, I propose to regard the transformation of a print document into an electronic text as a form of translation—“media translation”—which is inevitably also an act of interpretation. In invoking the trope of translation, I follow the lead of Dene Grigar. As she observes, the adage that something is gained as well as lost in translation applies with special force to print documents that are imported to the Web. The challenge is to specify, rigorously and precisely, what these gains and losses entail and especially what they reveal about presuppositions underlying reading and writing. My claim is that they show that our notions of textuality are shot through with assumptions specific to print, although they have not been generally recognized as such. The advent of electronic textuality presents us with an unparalleled opportunity to reformulate fundamental ideas about texts and, in the process, to see print as well as electronic texts with fresh
eyes. For theory, this is the “something gained” that media translation can offer. It is a gift we cannot afford to refuse.

The issues can be illustrated by the William Blake Archive, a magnificent Web site designed by three of our most distinguished Blake scholars and editors. It is no exaggeration to say that the William Blake Archive establishes the gold standard for literary Web sites. The site is informed throughout by an enlightened editorial policy, for the editors state that they take the “work” to be the book considered as a unique physical object. They thus declare implicitly their allegiance to an idea that Jerome McGann, among others, has been championing; the physical characteristics of a text—page size, font, gutters, leading, and so on—are “bibliographic codes,” signifying components that should be considered along with linguistic codes. The editors make canny use of the computer’s simulation powers to render the screen display as much like the printed book as possible. They provide a calibration applet that lets users set screen resolution so the original page dimensions can be reproduced. They include a graphical help section that uses illustrations of pages to indicate the site’s functionalities and capabilities. Clearly an enormous amount of thought, time, and money has gone into the construction of this site.

The editors of the archive are meticulous in insisting that even small differences in materiality potentially affect meaning, so they have gone to a great deal of trouble to compile not only different works but extant copies of the same work. Yet these copies are visually rendered on screen with a technology that differs far more in its materiality from print than the print copies do from one another. The computer accurately simulates print documents precisely because it is completely unlike print in its architecture and functioning. The simulation of visual accuracy, which joins facsimile and other editions in rescuing Blake from text-only versions that suppress the crucial visual dimensions of his work, is nevertheless achieved at the cost of cybernetic difference. Consider, for example, the navigation functionality that allows the user to juxtapose many images on screen to compare different copies and versions of a work. To achieve a comparable (though not identical) effect with print—if it could be done at all—would require access to rare books rooms, a great deal of page turning, and constant shifting of physical artifacts. A moment’s thought suffices to show that changing the navigational apparatus of a work changes the work. Translating the words on a scroll into a codex book, for example, radically alters how a reader encounters the work; by changing how the work means, such a move alters what it means. One of the insights electronic textuality makes inescapably clear is that navigational functionalities are not merely ways to access the work but
part of a work’s signifying structure. An encyclopedia signifies differently than does a realistic novel in part because its navigational functionalities anticipate and structure different reading patterns (a clash of conventions that Milorad Pavić has great fun exploiting in *Dictionary of the Khazars: A Lexicon Novel*).

In terms of the William Blake Archive, we might reasonably ask: if slight color variations affect meaning, how much more does the reader’s navigation of the complex functionalities of this site affect what the texts signify? Of course, the editors recognize that what they are doing is simulating, not reproducing, print texts. One can imagine the countless editorial meetings they must have attended to create the site’s sophisticated design and functionalities; surely they know better than anyone the extensive differences between the print and electronic Blake. Nevertheless, they make the rhetorical choice to downplay these differences. For example, there is a section explaining that dynamic data arrays are used to generate the screen displays, but there is little or no theoretical exploration of what it means to read an electronic text produced in this fashion rather than the print original. Great attention is paid to the relation of meaning to linguistic and bibliographic codes and almost none to the relation of meaning to digital codes. Matthew Kirschenbaum’s call for a thorough rethinking of the “materiality of first generation objects” in electronic media is very much to the point. Calling for a closer relationship between electronic textuality (focusing on digital work) and textual studies (traditionally focused on print), he lays out a framework for discussing electronic texts in bibliographic terms, including the nomenclature “layer, version, and release,” “object,” “state,” “instance,” and “copy.” As his argument makes clear, electronic texts often have complex bibliographic histories that materially affect meaning, to say nothing of differences between print and electronic instantiations of a work. Concentrating only on how the material differences of *print* texts affect meaning, as does the William Blake Archive, is like feeling slight texture differences on an elephant’s tail while ignoring the ways in which the tail differs from the rest of the elephant.

**What Is a Text?**

Tackling the whole elephant requires rethinking the nature of textuality, starting with a basic question: what is a text? In “Forming the Text, Performing the Work,” Anna Gunder, in an effort to clarify the relations between electronic and print media, has undertaken a meticulous survey of textual criticism to determine how editors employ the foundational terminology of “work,” “text,” and “document” in the context of print biblio-
graphic studies. A work is an “abstract artistic entity,” the ideal construction toward which textual editors move by collating different editions and copies to arrive at their best guess for what the artistic creation should be (86). It is important to note that the work is ideal not in a Platonic sense, however, for it is understood to be the result of editorial assumptions that are subject to negotiation, challenge, community norms, and cultural presuppositions. (Jerome McGann’s attacks on the principle of defining the work through an author’s “final intentions” is a case in point.) Next down the scale comes the text. Gunders points out that the “work as such can never be accessed but through some kind of text, that is, through the specific sign system designated to manifest a particular work” (86). Texts, then, are abstract entities from which editors strive to excavate the work. In this respect, she notes, texts of poems are unlike paintings. Whereas no one would claim it makes sense to talk about a painting separate from the substrate in which it is embodied, editors presume that it does make sense to talk about a text as something separate from its physical embodiment in an artifact. Only when we arrive at the lowest level of the textual hierarchy, the document, is the physical artifact seen as merging with the sign system as an abstract representation.

Gunders’s analysis is consistent with the terminological practices of Peter Shillingsburg, one of the editors she surveys. In Scholarly Editing in the Computer Age, Shillingsburg defines a text as “the actual order of words and punctuation as contained in any one physical form, such as a manuscript, proof or book.” To forestall misunderstanding, he clarifies that “a text (the order of words and punctuation) has no substantial or material existence, since it is not restricted by time and space . . . . The text is contained and stabilized by the physical form but is not the physical form itself” (46). Driving the nail farther into this terminological coffin, he insists “it is possible for the same text to be stored in a set of alphabetic signs, a set of Braille signs, a set of electronic signals on a computer tape, and a set of magnetic impulses on a tape recorder. Therefore, it is not accurate to say that the text and the signs or storage medium are the same. If the text is stored accurately on a second storage medium, the text remains the same though the signs for it are different. Each accurate copy contains the same text; inaccurate or otherwise variant copies contain new texts” (47, emphasis added). Some hundred pages later, he admits that “proponents of the bibliographic orientation have demonstrated beyond argument, I believe, that the appearance of books signifies a range of important meanings to their users” (150); but apparently he does not think this imbrication of physical form with meaning requires a different notion of textuality. To be fair to Shillingsburg, he has since defined
"text" as a compound of matter, concept, and action. Nevertheless, there are no doubt many editors and literary scholars—I dare say the majority—who assume much the same definitions of "work," "text," and "document" that he formulates. Moreover, Shillingsburg's more nuanced explanations of "text" and "work" in his recent analysis result in an alarming proliferation of terms, so that "work," "text," and "version" all split into multiple subcategories. This scheme is reminiscent of the Ptolemaic model of the universe as it piled epicycles upon cycles in an effort to keep the earth at the center of the universe. The problem with the Ptolemaic universe was not that it could not account for celestial motion; rather, it was the cost of increasing complexity required for its earth-centric view. Perhaps it is time for a Copernican revolution in our thinking about textuality, a revolution achieved by going back and rethinking fundamental assumptions.

We can begin this reassessment by noticing how Shillingsburg's definitions are perfectly crafted to trivialize differences between print and electronic media and to insulate "text" and even more so "work" from being significantly affected by the specificities of media. To return to his examples, he claims that a Braille version of a novel is the same text as a print version, yet the sensory input of the two forms is entirely different. Moreover, it is clear that one medium—print—provides the baseline for the definitions, even though they are postulated as including other media as well. Thinking of the text as "the order of words and punctuations" is as print-centric a definition as I can imagine, for it comes straight out of the printer's shop and the lineation of type as the means of production for the book. We can see how Shillingsburg imports this print-centric notion into electronic media when he refers to "computer tape" in the quotation above, for this construction unconsciously carries over the notion that the text resides at one physical location, even though it is at the same time alleged to be "not restricted by time and space." When a text is generated in an electronic environment, the data files may reside on a server hundreds of miles distant from the user's local computer. Moreover, in cases where text is dynamically assembled on the fly, the text as "the actual order of words and punctuation" does not exist as such in these data files. Indeed, it does not exist as an artifact at all. Rather, it comes into existence as a process that includes the data files, the programs that call these files, and the hardware on which the programs run, as well as the optical fibers, connections, switching algorithms, and other devices necessary to route the text from one networked computer to another.

An even more serious objection to Shillingsburg's definition is its implicit assumption that "text" does not include such qualities as color, font size and shape, and page placement, not to mention such electronic-specific
effects as animation, mouseovers, instantaneous linking, and so on. In most contemporary electronic literature, screen design, graphics, multiple layers, color, and animation, among other signifying components, are essential to the work’s effects. Focusing only on “the actual order of words and punctuation” would be as inadequate as insisting that painting consists only of shapes, ruling out of bounds such things as color, texture, composition, and perspective. The largely unexamined assumption here is that ideas about textuality forged in a print environment can be carried over wholesale to the screen without rethinking how things change with electronic text, as if “text” were an inert, nonreactive substance that can be poured from container to container without affecting its essential nature.

Moreover, the comparison with electronic text reveals by implication how limited this definition of “text” is even for print media. Although Shillingsburg gives a nod to those of the “bibliographic orientation,” he does not begin to deal in a serious way with Jerome McGann’s brilliant readings of poets ranging from Lord Byron to Wallace Stevens and with his repeated demonstrations that bibliographic effects are crucial in setting up meaning play within the texts. To exclude these effects from the meaning of “text” is to impoverish criticism by cutting it off from resources used to create artistic works. How can one find these effects in a text if “text” has been defined so as to exclude them? Although Shillingsburg’s definition of “work” may not be Platonic in an ideal sense, there is nevertheless a Platonic yearning on display in his definitions, for he seeks to protect the “work” from the noisiness of an embodied world—but this very noise may be the froth from which artistic effects emerge.

The desire to suppress unruliness and multiplicity in order to converge on an ideal “work” is deeply embedded in textual criticism. However the criteria facilitating this convergence are defined, textual editors have largely agreed that convergence is the ideal. Hans Zeller, arguing in 1975 for a shift of the editorial perspective from the author’s “final intentions” to a broader historical viewpoint, observes that “the editor searches in the transmitted text for the one authentic text, in comparison with which all else will be a textual corruption.” Not arriving at a single authoritative text, editors argue, risks plumping the reader into a rat’s nest of complexly interrelated variants, thus foisting onto her the Sisyphean labor of sorting through the mess and arriving at a sensible text that most readers would prefer to have handed to them. In this view, readers want a text they can take more or less at face value so that they can get on with the work of interpreting its meaning and explicating its artistic strategies. Here the comparison of editing with translation is especially apt, for the editor, like the translator, makes innu-
merable decisions that can never be fully covered by an explicit statement of principles. As McGann points out, these decisions inevitably function as interpretations, for they literally construct the text in ways that foreground some interpretive possibilities and suppress others.

When texts are translated into electronic environments, the attempt to define a work as an immaterial verbal construct, already problematic for print, opens a Pandora's box of additional complexities and contradictions, which can be illustrated by debates within the community formulating the Text Encoding Initiative (TEI). The idea of TEI was to arrive at principles for coding print documents into electronic form that would preserve their essential features and, moreover, allow them to appear more or less the same in complex networked environments, regardless of platform, browser, and so on. To this end, the community (or rather, an influential contingent) arrived at the well-known principle of OHCO, the idea that a text can be encoded as an ordered hierarchy of content objects. As Allen Renear points out in his seminal analysis of this process, the importation of print into digital media requires implicit decisions about what a text is.\textsuperscript{10} Expanding on this point, Mats Dahlström, following Michael Sperberg-McQueen, observes that the markup of a text is "a theory of this text, and a general markup language is a general theory or conception of text."\textsuperscript{11}

With respect to the general theory of OHCO, Renear identifies three distinct positions within the text encoding community, which correspond roughly to three historical stages. The first stage held that a text consists of a hierarchical set of content objects such as chapters, sections, subsections, paragraphs, and sentences. This view asserted that the hierarchy is essential to the production of the text and so must occupy center stage in transforming print text into digital code. This belief in hierarchy informed how the community used SGML (Standard Generalized Markup Language) to create protocols and standards that would ensure that the content objects were reproduced in digital media, and moreover reproduced in the same hierarchy as print.\textsuperscript{12} Although most of these researchers thought of themselves as practitioners rather than theorists, their decisions, as Renear points out, constituted a de facto theory of textuality that was reinforced by their tacit assumption that the "Platonic reality" of a text really is its existence as an ordered hierarchy of content objects.

The next stage, which Renear identifies as pluralism, was propelled by the realization that many texts consist of not just one hierarchy but several interpenetrating hierarchies; the standard example is a verse drama, which can be parsed as sentences and metrical lines. Epistemologically, this realization led to a view of texts as systems of ordered hierarchies, and refinements such as
Document Type Definitions (DTDs) were designed to introduce more flexibility into the system. The third stage, which Rennar calls antirealism, draws the conclusion that the text does not preexist encoding as a stable ontological object but is brought into existence through implicit assumptions actualized through encoding procedures. Rennar quotes Alois Pichler as exemplifying this approach: “Our aim in transcription is not to represent as accurately as possible the originals, but rather to prepare from the original another text so as to serve as accurately as possible certain interests in the text.”

Rennar, who identifies himself as a pluralist, astutely points out the tautologies and ambiguities in the antirealist position—for example, indeterminacies in identifying which “certain interests in the text” are to be served.

My interest in this controversy points in a different direction, for what strikes me is the extent to which all three positions—Platonist, pluralist, and antirealist—focus almost exclusively on linguistic codes, a focus that allows them to leave the document as a physical artifact out of consideration. I can illustrate the implications of this era by returning to the William Blake Archive. The editors of the archive, as we have seen, take into account the book as a physical object. Their encoding practices make clear, however, that they implicitly understand the bibliographic almost exclusively in terms of the visual. Other aspects of the text as physical object, such as the lovely feeling of a leather binding or the musty smell of old paper, are not reproduced in digital codes. To undertake the complete bibliographic coding of a book into digital media would be to imagine the digital equivalent of Borges’s Library of Babel, for it would have to include an unimaginable number of codes accounting for the staggering multiplicity of ways in which we process books as sensory phenomena. To reduce this impossible endeavor to manageable proportions, editors must identify some features of particular interest, and it makes excellent sense to emphasize the visual aspect of Blake’s works. But we lose important insights if we naturalize this process and allow ourselves the illusion that Blake’s books—or any books, for that matter—have been faithfully reproduced within digital media. Rather, choices have been made about which aspects of the book to encode, and these choices are heavily weighted toward the linguistic rather than the bibliographic. Moreover, the choices have further implications in the correlations they establish between linguistic, bibliographic, and digital codes. Thus in his rigorous analysis of how markup languages such as SGML relate to the Hjelsmlevian distinction between content and expression (the physical instantiation of a text), Dino Buzzetti shows that these languages do not solve the problems raised by thinking of the text as an abstract entity; rather, they amplify implicit problems and further complicate the situation. Only if we attend to
the interrelations of linguistic, bibliographic, and digital codes can we grasp the full implications of the transformations books undergo when they are translated into a digital medium.

The debates about encoding assume implicitly that there is some textual essence that can be transported from print to digital media. Even the anti-realism position assumes an essence, although now it is an essence created by an editor. All three positions elide from electronic texts the materiality of books and their physical differences. A more accurate perception would focus on the editorial process of choice, which is always contextual and driven by “certain interests,” although these reside not exclusively in the text but in the conjunction of text, editorial process, and cultural context. In my view, the ontology card is not worth playing. There is no Platonic reality of texts. There are only physical objects such as books and computers, foci of attention, and codes that entrain attention and organize material operations. Since no print books can be completely encoded into digital media, we should think about correspondences rather than ontologies, entraining processes rather than isolated objects, and codes moving in coordinated fashion across representational media rather than mapping one object onto another.

The issue goes to the heart of what we think a text is, and at the heart of the heart is the belief that “work” and “text” are immaterial constructions independent of the substrates in which they are instantiated. We urgently need to rethink this assumption, for as long as it remains intact, efforts to account for the specificities of print and electronic media will be hamstrung. Without nuanced analyses of the differences and similarities of print and electronic media, we will fail to grasp the fuller significance of the momentous changes underway as the Age of Print draws to a close and print—as robust, versatile, and complex as ever—takes its place in the dynamic media ecology of the twenty-first century. For an appreciation of these changes we will require a more workable sense of materiality than has traditionally accompanied theories of textuality, which invoke it only to dismiss it as something to be left behind through the labor of creating the ideal work.

**Physicality, Materiality, and Embodied Textuality**

There are, of course, good reasons why editors have sought to separate the idea of the work from its physical instantiation. If the “work” is instantiated in its physical form, then every edition would produce, by definition, another “work,” and textual form would never be stable. Whether textual form should be stabilized is a question at the center of Jerome McGann’s “experiments in failure,” which he discusses in *Radiant Textuality*. As both Mats Dahlström and McGann point out, the two imperatives guiding most
textual criticism are, if not contradictory, at least in tension with one another: editors want to converge on the ideal work and at the same time provide readers as much information as possible about textual variants. The Web promises to allow these dual imperatives to be more successfully integrated than ever before, as the William Blake Archive and McGann’s work on the D. G. Rossetti Hypermedia Archive demonstrate. At the same time, perhaps ironically, the Web’s remarkable flexibility and radically different instantiation of textuality also draw into question whether it is possible or desirable to converge on an ideal “work” at all. Educated by his work with the D. G. Rossetti Hypermedia Archive, McGann argues against convergence as a critical and theoretical principle, attempting to show through cognate readings of poetic works and other strategies that a text is never identical with itself.

Instead he argues for the practice of what he calls “deformation,” a mode of reading that seeks to liberate from the text the strategies by which it goes in search of meaning. Following the ideas of Galvano della Volpa, an Italian critic writing in the 1960s, McGann argues that meaning is not the goal of critical explication but a residue left over after critical interrogation is finished. Meaning itself cannot be the goal of critical explication, for “this would run the risk of suggesting that interpretation can be adequate to poiesis. It cannot” (Radiant Textuality, 130). Indeed, explication cannot be adequate even to its own understanding of itself, which can be accomplished only through an explication of the explication, which in turn requires another explication to try to get at the residue left over when these two explications are compared, and so on to infinity or to the exhaustion of the critical will. Underlying this argument is an implicit analogy. Just as textual criticism has traditionally tried to converge on an ideal work, so hermeneutical criticism has tried to converge on an ideal meaning. Echoing deconstructive theory more than he acknowledges, McGann asks what would happen if both kinds of enterprise were to abandon the movement toward convergence and were to try instead to liberate the multiplicities of texts through a series of deformations. Thus he is more interested (at least theoretically) in what deformations of Rossetti’s images in Photoshop reveal about their composition than in the accomplishments of the William Blake Archive in simulating the color tones and sizes of the paper documents.

This kind of argument opens the way for a disciplined inquiry into the differences in materiality between print and electronic textuality. As editor of the D. G. Rossetti Hypermedia Archive, McGann has had ample—one might almost say, painful—opportunity to appreciate the differences between the print and electronic text. Indeed, it is precisely this gap that leads
him to think that John Unsworth's essay “The Importance of Failure” is so important. McGann’s project is to convert the failure to make electronic textuality perform as an exact duplicate of print into a strength by using “deformation” as a tool for critical insight. He emphasizes the importance of doing and making, suggesting that practical experience in electronic textuality is a crucial prerequisite for theorizing about it. In this sense, his work represents an important advance over the rhetoric of the William Blake Archive (though not necessarily over its technical accomplishments), for he sees that electronic textuality can be used as something other than a simulacrum of print. Rather, he understands that it can provide a standpoint from which to rethink the resources of the print medium.

The impact of his experience is readily apparent in his redescriptions of print texts in terms that make them appear fully comparable to electronic texts. He argues, for example, that all texts are marked; he regards paragraph indentations and punctuation as forms of marking equivalent to HTML, the Hypertext Markup Language used to format documents for electronic environments. Moreover, he proposes that all texts are algorithmic, containing within themselves instructions to generate themselves as displays (the display form of the document here being considered distinct from the data and algorithms used to create it). So extensive and detailed are his redescriptions that one wonders if electronic text has any distinctive features of its own. The burden of his argument would suggest that it does not, an implication strengthened by his overly casual dismissal of the cases made by Janet Murray and Espen Aarseth for the specificities of electronic textuality.

When push comes to pixel, it is clear that McGann’s primary allegiance is to print rather than electronic textuality. He repeatedly asserts that the resources of the electronic medium pale in comparison to print. Speaking specifically of fiction, he argues in Radiant Textuality that “there is no comparison . . . between the complexity and richness of paper-based fictional works, on the one hand, and their digital counterparts—hypermedia fiction—on the other” (130). Although he is too astute a critic to make comparisons directly, by juxtaposing in the next sentence Stuart Moulthrop with Italo Calvino, McGann implies that Moulthrop, a contemporary pioneer in electronic hypertext, is not as good a writer as Calvino, or at any rate does not produce literature of the same quality. Like many arguments McGann mounts to prove the superiority of print, the implied comparison here between print and electronic literature is seriously flawed. It is obviously inappropriate to compare a literary medium that has been in existence for fifteen years with print forms that have developed over half a millennium. A fairer comparison would be print literature produced from 1550 to 1565, when the
conventions of print literature were still in their nascent stages, with the electronic literature produced from 1985 to 2000. I believe that anyone familiar with both canons would be forced to agree it is by no means obvious that the print canon demonstrates conclusively the superiority of print as a medium for literary creation and expression. Given five hundred years in which to develop—if we can possibly stretch our imaginations this far—electronic literature may indeed prove itself equal or superior to print. If, as Mrs. Malaprop observes, comparisons are odorous (i.e., odious), this one is especially so. As McGann acknowledges, it should not be a question of pitting one medium against the other but of understanding the specificities of each. By using electronic textuality to better understand print, McGann opens the way for important insights into its possibilities. Unfortunately, he is not as successful in using print to understand the specificities of electronic textuality. When problems crop up in his arguments, they almost always stem from this source. He asserts, for example, that print text differs from itself, and he uses close readings to argue the point. But his argument confuses what happens in the mind of the reader with the stability of print in a given document. To demonstrate that print is unstable even at the level of a document, he scans a document with an optical character reader and reports that the machine gives different readings on different scans. However, this experiment does not demonstrate that print is not self-identical, but only that the translation between print and electronic text is unstable.

In other arguments, he conflates the instability of a text—for example, variations in different copies of an edition or between different editions—with the instability of a print document, again to argue that print, like electronic text, is fluid and unstable. The stubborn fact remains, however, that once ink is impressed on paper, it remains relatively stable and immovable. The few exceptions that might be invoked—for example, an artist's book created with thermochromic ink that changes color when heated by a hand touch, or print impressed on cutouts that move—should not be allowed to obscure the general observation that the print of a given document is stable for (more or less) long periods of time, in dramatic contrast to the constant refreshing of a computer screen many times each second. Moreover, print does not normally move once impressed onto the paper fiber, again in contrast to the animations, rollover, and other such features that increasingly characterize electronic literature. No print document can be reprogrammed once the ink has been impressed onto the paper, whereas electronic texts routinely can. These differences do not mean, of course, that print is inferior to electronic text, only that it is different. Admitting these differences does not diminish the complexity and flexibility of print books, which have
resources different than those of electronic texts; but it does pave the way for understanding the specificities of electronic textuality and, thereby, coming to a fuller appreciation of its resources.

What, then, are these differences, and what are their implications for theories of textuality? Mats Dahlström tackles this question in his exploration of how notions of a scholarly edition might change with electronic textuality. He makes the important point, also noted by Anna Gundersen in “Forming the Text, Performing the Work,” that with electronic texts there is a conceptual distinction—and often an actualized one—between storage and delivery vehicles, whereas with print the storage and delivery vehicles are one and the same. With electronic texts, the data files may be on one server and the machine creating the display may be in another location entirely, which means that electronic text exists as a distributed phenomenon. The dispersion introduces many possible sources of variation into the production of electronic text that do not exist in the same way with print, for example, when a user’s browser displays a text with different colors than those the writer saw on her machine when she was creating it. More fundamental is the fact that the text exists in dispersed fashion even when it is confined to a single machine. There are data files, programs that call and process the files, hardware functionalities that interpret or compile the programs, and so on. It takes all of these together to produce the electronic text. Omit any one of them, and the text literally cannot be produced. For this reason it would be more accurate to call an electronic text a process than an object. Certainly it cannot be identified with, say, a diskette or a CD-ROM, for these alone can never produce a text unless they are performed by the appropriate software running on the appropriate hardware.

Let me emphasize that this processing is necessarily prior to whatever cognitive processing the user performs to read and interpret the text. Although print readers perform sophisticated cognitive operations when they read a book, the printed lines exist as such before the book is opened, read, or understood. An electronic text does not have this kind of prior existence. It does not exist anywhere in the computer, or in the networked system, in the form it acquires when displayed on screen. After it is displayed, of course, readerly processing may occur, as with print. But we should not indulge in the logical confusion that results when it is assumed that the creation of the display—a process that happens only when the programs that create the text are activated—entails the same operations as a reader’s cognitive processing. In this sense, electronic text is more processual than print; it is performative by its very nature—indeed, independent of whatever imaginations and processes the user brings to it, and regardless of variations between editions and copies.
Acknowledging these differences, Mats Dahlström argues that electronic text should be understood as consisting, at bottom, of binary code, the sequences of ones and zeros that underlie all the languages built on top of them. But defining electronic text in this way, a move reminiscent of Friedrich Kittler’s argument in “There Is No Software,” inexplicably privileges binary code over all the other things necessary to produce the text as a document a user can read. In insisting further that electronic text is above all a pattern, Dahlström risks reinscribing the dematerialization so prominently on display in Shillingsburg’s definition of “text” as a sequence of words and pauses. If the idea of print text as a dematerialized entity is already a fiction (however convenient), how much more fictional is the idea of an electronic text as binary code, when how that code is stored, processed, and displayed is utterly dependent on the nature of the hardware and software? Perhaps it is time to think the unthinkable—to posit a notion of “text” that is not dematerialized and that does depend on the substrate in which it is instantiated. Rather than stretch the fiction of dematerialization thinner and thinner, why not explore the possibilities of texts that thrive on the entwinement of physicality with informational structure?

This is where I think McGann is trying to go with his argument that texts are never self-identical, an insight he is developing further in his present work on the quantum nature of textuality (i.e., textuality that is irresolvably ambiguous until a reader interacts with it in a specific way). As we have seen, if one accepts the physicality of the text, then the door opens to an array of infinite difference, with no text identical to any others because there are always differences between any two physical objects, however minute. Although McGann does not fully develop the point with regard to electronic textuality, his argument that a text is not physically self-identical (which he applies mostly to print) is mere common sense with electronic texts. Consider, for example, the time it takes images to appear on screen when they are being drawn from a remote server. Certainly the time lag is an important component of the electronic text, for it determines in what order the user will view the material. Indeed, as anyone who has grown impatient with long load times knows, in many instances it determines whether the user will see the image at all. These times are difficult to predict precisely because they depend on the individual computer’s processing speed, traffic on the Web, efficiency of data distribution on the hard drive, and other imponderables. This aspect of electronic textuality—along with many others—cannot be separated from the delivery vehicles that produce it as a process with which the user can interact. Moreover, for networked texts, these vehicles are never
the same twice, for they exist in momentary configurations as data packets are switched quickly from one node to another, depending on traffic at the instant of transfer. In this respect and many others, electronic texts are indeed not self-identical. As processes they exhibit sensitive dependence on temporal and spatial contexts, to say nothing of their absolute dependence on specific hardware and software configurations. Rita Raley points to this aspect of electronic textuality in her emphasis on performance. Seeking to locate the differences between print and electronic texts, she remarks, “The operative difference of hypertext can only be revealed in the performing and tracing of itself, in its own instantiation.”

What are the consequences of the idea that textuality is instantiated rather than dematerialized, dispersed rather than unitary, processural rather than object-like, flickering rather than durably imprinted? The specter haunting textual criticism is the nightmare that one cannot then define a “text” at all, for every manifestation will qualify as a different text. Pervasive with electronic texts, the problem troubles notions of print texts as well, for as physical objects they also differ from one another. But this need not be a catastrophe if we refine and revise our notion of materiality.

Let us begin rethinking materiality by noting that it is impossible to specify precisely what a book—or any other text—is as a physical object, for there are an infinite number of ways its physical characteristics can be described. Speaking of an electronic text, for example, we could focus on the polymers used to make the plastic case or the palladium used in the power cord. The physical instantiation of a text will in this sense always be indeterminate. What matters for understanding literature, however, is how the text creates possibilities for meaning by mobilizing certain aspects of its physicality. These will necessarily be a small subset of all possible characteristics. For some texts, such as Edwin Schlossberg’s artist’s book Wordsw ordsw ords, the activated physical characteristics may include the paper on which the words are impressed. For other texts, the paper’s contribution may be negligible.

The following definition provides a way to think about texts as embodied entities without falling into the chaos of infinite difference: The materiality of an embodied text is the interaction of its physical characteristics with its signifying strategies. Centered in the artifact, this notion of materiality extends beyond the individual object, for its physical characteristics are the result of the social, cultural, and technological processes that brought it into being. As D. F. McKenzie has argued in the context of the editorial theory of “social texts,” social processes too are part of a text’s materiality, which leads
to the conclusion that it is impossible to draw a firm distinction between bibliographic and interpretive concerns. In *Bibliography and the Sociology of Texts*, his influential Panizzi lectures, McKenzie comments, “My own view is that no such border exists” (23). Because materiality in this view is bound up with the text’s content, it cannot be specified in advance, as if it existed independent of content. Rather, it is an *emergent* property. What constitutes the materiality of a given text will always be a matter of interpretation and critical debate, what some readers see as physical properties brought into play may not appear so to other readers. But this is not the end of the world as textual criticism has known it. Indeed, it is normal procedure for literary scholars to consider a “text” as something negotiated among a community of readers, infinitely interpretable and debatable. McKenzie’s definition of “text” includes “verbal, visual, oral and numeric data, in the form of maps, prints, and music, of archives of recorded sound, of films, videos, and any computer-stored information” (5). Moreover, he emphasizes that the recognized negotiations that occur with print works should be extended to electronic works.

**Work as Assemblage**

The specter of never being able to claim that different documents constitute the same text now appears much less threatening. Critical debate will explore whether there are sufficient differences in materiality (which in this definition cannot simply be collapsed into physicality) between two documents to warrant considering them different texts. If strong cases can be made for differences in how the materialities of the two documents are mobilized, then perhaps they should be considered different texts. Common sense is not violated by supposing that a penny broadside bound in a handsome red cover and signed for with due ceremony in the Rare Book Room of the British Museum is a different text than the same broadside snatched from the gutter and quickly scanned in Shakespeare’s London. Indeed, it would strain credulity to suppose that the different physical instantiations of these two documents has no effect on how and what they signify (I speak here only of the physical differences, not the inevitable differences also introduced by culture, language, etc., though these too obviously play a role in how materiality will emerge). In this account of embodied textuality, texts would spread out along a spectrum of similarity and difference, and clusters would emerge. Texts that differed only slightly would occupy adjacent points (say, different editions that closely matched each other in physical characteristics), whereas outlying members of the cluster might include texts in different media (Braille rather than print, an electronic version of a print text,
a film version of a novel, etc.). These clusters could usefully be considered to constitute a “work,” without implying that “work” is a single convergent object. Editors might argue, for example, that a given edition should be privileged because it is positioned at the center of a cluster, or they might discuss an edition in terms of some notion of a weighted average. In a sense, of course, editors already work in this way. What would change is not so much editorial practice as the conceptual framework and vocabulary invoked to explain and justify an edition.

Perhaps the most important consequence to emerge from this new framework would be preventing the text from being thinned out of existence as a physical object. Texts would be routinely discussed in terms of both their conceptual content and their physical embodiments. In some instances, a text would remain relatively constant over many documents, assuming that debate led to agreement that the physical differences between the documents were not important as signifying components. In other instances, there could be as many texts as there are documents. Neither document, text, nor work would be considered immaterial; all would be invested with nuanced senses of their materialities, a viewpoint that would further energize and foreground discussions of how physical characteristics, verbal content, and nonverbal signifying strategies work together to produce the object called “text.”

These changed senses of work, text, and document make it possible to see phenomena that are now obscured or made invisible by the reigning ideologies. For example, with the advent of the Web, communication pathways are established through which texts cycle in dynamic intermediation with one another, which leads to what might be called Work as Assemblage, a cluster of related texts that quote, comment upon, amplify, and otherwise intermediate one another. One form of such an assemblage is illustrated by L. J. Winson’s Dark Lethe, a science-fiction Web site at which collaborators contribute stories loosely related to one another. Another example, suggested by David Silver, is the cluster of texts associated with Myst. This cluster includes, in addition to the computer game and its companion game Riven, Web sites populated by devotees of the games, as well as the associated print novels that expand upon the narratives in the games and that supply backstories and other plot details missing from the games.26

Yet another example is the cluster of texts around House of Leaves, Mark Danielewski’s brilliant contemporary print novel. House of Leaves was published on the Web before being instantiated in print. The print novel itself exists in four different editions, each significantly different from the others. Also in the cluster is a Web site devoted to the novel, on which hundreds
of readers make postings exploring details of the print novels. Still other examples include the now common practice of setting up Web sites to go along with the release of new films. Although most of these sites are merely publicity vehicles, a new genre is emerging in which the site is an independent aesthetic production initiating media-specific strategies to transform, subvert, and play with the film's material. The fascinating site for Requiem for a Dream includes pseudo-advertisements, graphic mutations of scenes and characters from the film, and reinscriptions of scraps of dialogue recontextualized visually and verbally to interrogate their meanings—an assemblage that constitutes a new art form, according to Jack Post's compelling argument.27

Going along with the idea of Work as Assemblage are changed constructions of subjectivity. The notion of the literary work as an ideal immaterial construction has been deeply influenced by a unitary view of the subject, particularly in the decades when editors sought to arrive at the work by determining an author’s “final intentions.” The work as it was formulated using this principle in turn reinforced a certain view of the author as a literary figure. As the discussion in chapter 6 on the history of copyright will make clear (in a different context), the unitary work and the unified subject mutually reinforced and determined each other. As the rest of critical theory and cultural studies deconstructed the unified subject and exposed the problematic ideological bases on which it rested, editorial criticism underwent similar revisionist movements, particularly in Jerome McGann’s arguments for the “social text.”28 Perhaps now it is time to think about what kinds of textuality a dispersed, fragmented, and heterogeneous view of the subject might imply.

An appropriate model may present itself in Gilles Deleuze and Félix Guattari’s rhizomatic Body without Organs (BwO), a construction that in its constant deterritorialization and reterritorialization has no unified essence or identifiable center, only planes of consistency and lines of flight along which elements move according to the charged vectors of desire.29 The rather esoteric vocabulary invoked here is part of Deleuze and Guattari’s project to change the emphasis from objects to processes, and from hierarchical structures to rhizomatic ones. The examples given above of the Work as Assemblage (which by analogy can be abbreviated as the WaAssemblage) illustrate clusters of texts that take the distinctive form of rhizomatic tendrils branching out from one another in patterns of fractal complexity. WaA in this view is not an aberration but a paradigmatic configuration that writes large the dynamics of intermediation and media specificity at work in all embodied texts. Rather than being bound into the straitjacket of a work possessing an
immaterial essence that textual criticism strives to identify and stabilize, the WaA derives its energy from its ability to mutate and transform as it grows and shrinks, converges and disperses according to the desires of the loosely formed collectives that create it. Moving fluidly among and across media, its components take forms distinctive to the media in which they flourish, so the specificities of media are essential to understanding its morphing configurations.

To see such possibilities—to bring the Work as Assemblage into sight at all—requires a fundamentally different view of authorship than that which undergirds the idea of the work as an immaterial verbal construction. The subjectivity implied by the WaA cannot by any stretch of the imagination be considered unified, a point that Deleuze and Guattari make in another context by replacing a coherent subject with the flows of desire associated with the Body without Organs. Similarly, the subjects producing the WaA are multiple in many senses, both because they are collectivities in and among themselves, and also because they include nonhuman as well as human actors, a dynamic I will explore in chapter 6 by considering the monstrously fragmented and dispersed narrator of Shelley Jackson’s Patchwork Girl. As this work emphasizes, with an electronic text the computer is also a writer, and the software programs it runs to produce the text as process and display also have complex and multiple authorship (not to mention the authoring done by hardware engineers in configuring the logic gates that create the bit stream). A robust account of materiality focusing on the recursive loops between physicality and textuality is essential to understanding the dynamics of the WaA. Once we let go of the assumption that the literary work must be an expression of an immaterial essence—a line of thought dominant in literary criticism at least since the eighteenth century—we see the new forms of textuality that, racing ahead of textual theory, are already cycling through diverse media in exuberant and playful performances that defy the old verities even as they give rise to the new.

The present moment presents us with a rare opportunity to break out of assumptions that have congealed around the technology of print, rendered transparent by centuries of continuing development, refinement, and use. This opportunity is powerfully present in the implicit juxtaposition of print and electronic textuality. The game is to understand both print and electronic textuality more deeply through their similarities and differences. McGann’s project of revitalizing our understanding of print by redescribing it in terms usually used for electronic text is a seminal contribution. The very comprehensiveness that makes his redescriptions so valuable, however, also works to obscure differences between the two media. But a nuanced
understanding of the differences is as important to the project as a deep appreciation for the similarities.

The primary difference is the fact that an electronic text is generated through multiple layers of code processed by an intelligent machine before a human reader decodes the information. McGann argues that print texts are also coded, but this point relies on slippage between the narrow sense of code as it applies to computers and a more general sense of code as Roland Barthes envisions it, including codes of social decorum, fashion, polite conversation, and so on. In the narrow sense in which code operates in computers, code can be defined as a system of correspondences that relate the elements of one symbol set to another symbol set, for example, when Morse code associates dots and dashes with alphabetic letters. Unlike Morse code, however, code within the computer is active, for it functions as instructions that initiate changes in the system's behavior.

Working with these instructions, writers develop a nuanced sense of code as a form of writing with its own stylistic elegance and formal possibilities. Increasingly, writers of electronic literature view code as a resource for signifying practices. Reviewing some of this work, Loss Pequeño Glazier, a distinguished writer of electronic poetry as well as a critic, observes that programming is writing (a point also made by John Cayley). In Digital Poet(s), Glazier argues that users who want to understand how an electronic text works cannot afford simply to stay at the surface level of the screenic text, any more than a writer can afford to know nothing about how screenic text is generated and displayed. Agreeing with McGann that the defining characteristic of literary language is the impulse to investigate its conditions of possibility, Glazier names literary writing as “writing that, whether or not it serves other ends, has an engagement with its own formal qualities.” He sees print and electronic text on a continuum, arguing that “innovative literature” in both media “has explored the conditions that determine the procedure, processes, and crossed paths of meaning-making, meaning-making as constituting the ‘meaning’” As Glazier points out, print writers have also explored the materiality of the medium, from the typewriter poems of Ian Hamilton Finlay to the Mime movement and concrete poetry. The specificity of electronic media, he implies, lies in its distinctive materiality: “materiality is key to understanding innovative practice.”

These useful insights are somewhat offset by Glazier’s tendency to elevate his preferred genre—poetry—and his preferred set of literary strategies at the expense of narrative and “non-innovative literature,” a back formation that certainly does not do justice to the complexity of other literary strate-
gies. Although he has a remarkable sense of the possibilities for electronic poetry, his remarks on non-innovative literature are flat to the point of unintentional parody. "Non-innovative literature," he writes, "can be said to possess a number of distinguishing textual features. These can include narrative, plot, anecdotal re-telling of human experiences, logical descriptions, chronological sequence of events, a reliance on factual information, a view of language as a transparent (at most, tinted) bearer of meaning, and an attachment to a Modernist aesthetic" (47). The underlying culprit in his view is "the position of the 'I,'" which non-innovative literature constructs by asserting "forms of authority" and creating "a nonpermeable (or semipermeable) filter between the ego and the world" (48). Although Glazier tends to identify these qualities with narrative, which apparently for him is virtually synonymous with bad literature, I suspect that non-innovative literature as he characterizes it is an empty set. Does there exist any important Modernist text for which a convincing critical argument could not be made that it destabilizes language, subjectivity, and consciousness? As Johanna Drucker comments in her review of Glazier's book, "The traditions of innovation from which Glazier draws for support are often broader in their scope and of much more complex development than his taking up them within late twentieth century references would imply."32

These caveats notwithstanding, Glazier makes an important point when he says that innovative literature tends to interrogate its materiality, an observation that returns us to our starting place with renewed urgency. If literature and materiality are indeed closely entwined, what happens when a text is translated into a different medium than that in which it was originally created? I began this chapter with a reference to Borges's "The Don Quixote of Pierre Menard," which suggests slyly that the same words in the same order can nevertheless mean something utterly different when transported into a new context. In this sense Pierre Menard's project is analogous to the translation of a literary text into a new medium, for the same words appear in the same order, yet like Menard's "Don Quixote," they may mean something very different than in the original. Indeed, I use the term "media translation" to suggest that recreating a text in another medium is so significant a change that it is analogous to translating from one language to another. Unlike Pierre Menard's project, language translation changes both the words and their order, and in this sense is unlike (most) media translation. Nevertheless, the analogy with language translation can offer useful insights into the problems and possibilities that haunt media translation. I turn now to explore in more depth the resonances evoked by this imperfect and yet provocative analogy.

Translating Media 109
Intermediating between Language Translation and Media Translation: Implications for Textuality

As we saw in chapter 2, the performative power of networked and programmable media that enables them to simulate print texts so successfully is deeply related to what Rita Raley calls the “tower of programming languages,” a point John Cayley explicates when he refers to “machine code, tokenized code, low-level languages, high-level languages, scripting languages, macro languages, markup languages, Operating Systems and their scripting language,” and so on, all stacked in different levels. Raley’s phrase alludes, of course, to the Tower of Babel, a mythic origin story that was also important to Warren Weaver’s seminal memorandum of July 15, 1949, subsequently published as an essay. In “The New Tower,” a foreword to the volume in which his essay appeared, Weaver suggested that machine translation should be seen as a “Tower of Anti-Babel,” since in his optimistic expectation it promised to allow “men to communicate freely” despite differences in language. In the essay he relates an incident in World War II in which a cryptographer successfully decrypted a message in Turkish, although he did not know that the source text was written in Turkish and did not himself read Turkish. Weaver recounts sending a letter to Norbert Wiener in which he suggested that machine translation should be treated as a problem in cryptography: “It is very tempting to say that a book written in Chinese is simply a book written in English which was coded into the ‘Chinese code.’ If we have useful methods for solving almost any cryptographic problem, may it not be that with proper interpretation we already have useful methods for translation?” Raley rightly criticizes the hegemonic implication here that all languages are in some sense already English. Additionally, there is a fallacy, as W. J. Hutchins points out in his critique of the memorandum, that stems from Weaver’s equation of decryption and translation. Whereas a successful decryption can render a message exactly as it was before it was encrypted, no translation, no matter how successful, ever renders the original exactly the same as it was in the source language. The problem, of course, lies in the fact that languages and cultures are inextricably entwined; words resonate with connotations that drift like fragrances on a breeze, impossible to duplicate in all their subtleties and complexities in another language.

To be fair to Weaver, he acknowledged that literary language constituted a special case. His proposal was aimed at utilitarian texts where only the information is important, such as when a plane would take off or how to install a carburetor. Nevertheless, even this much more modest project had a theory of language undergirding it, and it is here that his project recalls contemporary claims that the computer is the ultimate medium capable of dissolving...
all other media in itself. Returning to the Tower of Babel metaphor, he asks us to “think, by analogy, of individuals living in a series of tall closed towers, all erected over a common foundation. When they try to communicate with one another, they shout back and forth, each from his own closed tower. It is difficult to make the sound penetrate even the nearest towers, and communication proceeds very poorly indeed. But, when an individual goes down his tower, he finds himself in a great open basement, common to all towers. Here he establishes easy and useful communication with the persons who have also descended from their towers” (23). In context, Weaver believed that the “great open basement” would be a universal substratum common to all languages. His hope finds a different instantiation in the coding of many different kinds of documents—not only words but also sounds, images, films, etc.—in the binary code that operates in the “basement” of the tower of languages. Not a universal grammar, then, but a universal machine that has its own grammar of code.

Today, code and linguistic translation come together in machine translation, which normally consists of a dictionary that matches terms in one language with those in another, plus a context interpreter. Although great strides have been made in machine translation—a highly technical field that has expanded far beyond Weaver’s ideas—many instances remain where human translators are necessary. Even here, however, computers have dramatically changed how translations are done. Jules van Lieshout, co-owner of a translation company in the Netherlands, has writes compellingly in “The New Alchemists” about his experiences translating documentation for the automobile industry. He notes that the practices of the software industry are rapidly becoming the accepted business model for companies that, in Nicholas Negroponte’s phrase, “manufacture atoms rather than distribute bits.” Van Lieshout observes, “You do not buy software, you rent a first draft, [in a] beta society that markets patches rather than engineer [s] innovation. There may be failures, but no product recalls. In a genuine marketing triumph, the buyer has turned into an unpaid beta tester with the software automatically reporting errors to the developer” (1). Taking its cue from the software industry, the manufacturing sector dreams of documentation that flows frictionlessly between media and languages, that is produced at a speed comparable to the short life span of documentation itself, and that is driven by the relentless cycles of innovation and obsolescence characteristic of capitalist practices.

To minimize costs, manufacturers now use software such as Content Management Systems and Workflow Systems, which control and regulate the authoring and production of documentation. When a new version of a
document is needed, they use software such as Translation Memory Systems and Machine Translation Systems to identify and extract all the required changes, recycling everything that has not changed directly into the new version from the old. This practice in itself impacts language use, for manufacturers instruct their technical writers not to correct or change anything that is not absolutely necessary (e.g., punctuation errors or stylistic infelicities), because every change, no matter how trivial, will be routed to the human translators, and so cost them money. Thus language is driven to the lowest common denominator even before the translators receive it.

Moreover, what the translators receive are now only snippets, often phrases or parts of phrases and sometimes only single words. Rarely is the full context available to them, making it impossible for them to translate accurately words or phrases that change meaning according to context. Presumably they could look up the context in earlier versions of the documentation, but this would cost time and money that the manufacturers are not willing to pay. “Ensuring that only the new information is translated,” van Lieshout writes, “documentation and translation tools help manufacturers meet their cost-efficiency and time-to-market requirements. The underlying idea is: translate once, never look back” (2). As a result, he concludes, “documentation has become a continuous flow of information. Documentation is an ongoing process where the lack of time and money dictate that information be reused as many times as possible for as many different audiences as possible. In the process, the atom of documentation has been reduced to what may be called an Information Entity, Information Unit, or Information Block. . . . It is the documentation equivalent of component carry-over from one model to the next, component interchangeability between models, and nameplates sharing platforms” (2). Here the fragmentation of code that in programmable media translates into high-level flexibility operates, directly and indirectly, to fragment language and reduce its complexities to small pieces. Slightly modifying van Lieshout’s nomenclature, we might call these pieces TIB (The Information Block), mirror image of the BIT (Binary Digit). Cramping language into the Procrustean bed of TIB would have disastrous effects, were it not for the fact that documentation is increasingly written to fulfill legal requirements rather than to produce something buyers can use to understand the products they have purchased.

Faced with these relentless practices that aim to produce only instrumental prose (at best), I can almost sympathize with the tack taken by Walter Benjamin in his famous essay, “The Task of the Translator.” He begins by ruling out of court the utilitarian considerations that were paramount
for Weaver. “What does a literary work ‘say’? What does it communicate? It ‘tells’ very little to those who understand it. Its essential quality is not statement or the imparting of information” (69). He asserts that only bad translations “perform a transmitting function” of relaying information (69). Rather, he proposes that all languages necessarily embody perspectives that are historically and culturally specific; if they were somehow all to contribute their perspectives to make up a totality, this impossible and elusive entity would be language itself, “pure language” (79). The translator, in Benjamin’s view, aims to find the echo or reflection of pure language in the source text and highlight it, bringing it from its hidden implicitness into the light by activating within the historical specificity of the target language a comparable resonance. “It is the task of the translator to release in his own language that pure language which is under the spell of another, to liberate the language imprisoned in a work in his re-creation of that work” (80). In this way, translation contributes uniquely to the literary enterprise, Benjamin suggests, by creating an emergence, a glimpse of the pure language that could not be seen as clearly without the conjunction of the source and target languages that the translation performs.

Compare this vision, and the metaphors Benjamin mobilizes to express it, with Weaver’s metaphor of separate towers connected by a subterranean basement. Whereas Weaver wants to go down to find the common elements—down to universal grammar, code elements, or in contemporary usage, BITS and TIBS—Benjamin consistently uses metaphors suggesting that the appropriate action is to go up, asserting that “the ultimate purpose toward which all single functions tend is sought not in its own sphere but in a higher one” (72). In translation, he insists, “the original rises into a higher and purer linguistic air” (75). Whereas Weaver focuses on fragmentation and the benefits it can bestow, Benjamin envisions fitting together the fragments into larger wholes. “Languages are not strangers to one another, but are, a priori and apart from all historical relationships, interrelated in what they want to express,” he writes (72). This interrelation he imagines as the gluing together of a broken vessel, whose fragments “must match one another in the smallest details, although they need not be like one another. In the same way a translation, instead of resembling the meaning of the original, must lovingly and in detail incorporate the original’s mode of signification, thus making both the original and the translation recognizable as fragments of a greater language, just as fragments are part of a vessel” (78).

The problem with this idealistic view, as I see it, is its insistent evocation of “pure language,” a transcendental mode of signification so “pure” that it “no longer means or expresses anything but is, as expressionless and
creative Word, that which is meant in all languages” (80). Whereas Weaver proposes to overcome Babel by going into the basement, Benjamin evokes the Tower of Babel as a subtext and seems to imply that we can return to the “pure language” spoken before languages differentiated or, even better, before the language of “man” separated from the Word of God. It is scarcely surprising, then, that he ends his essay by evoking the “Holy Writ,” where “language and revelation are one without any tension” (82). At that ideal point, media would cease to matter, for language would have escaped from historical specificity, cultural perspective, and material instantiation to become the pure and perfect Word, impervious to the operations of reference and signification. So mystical a vision can have its justification only in an intense desire to rescue literature, translation, and language itself from base and instrumental purposes. However understandable the desire, this is not a theory that describes language as it actually works and as it is instantiated and performed in media.

Positioned somewhere between Weaver and Benjamin is Jorge Luis Borges. Here we may refer profitably to the brilliant work Efrain Kristal has done on Borges’s idea of translation. Kristal shows compellingly that Borges thought of all writing as translation, not in the strong sense that Octavio Paz employs of writing as a translation of experience, but in the sense of all writing as a stab in the dark at articulating meanings that always remain to some extent elusive. Rather than hoping for a common substratum that would provide the key to universal translation or evoking a “pure language” indistinguishable from the Word of God, Borges delighted in thinking of all writings as drafts in progress, imperfect instantiations never fully one with the significations toward which they gesture. In this view, texts are provocations to go in search of meaning (echoing McGann); when they become instantiated in a given set of words (and we may add, a given medium and performance in that medium), they necessarily miss some possibilities even as they realize others. Hence for Borges it is entirely possible for an original text to be unfaithful to its translation (in the sense of being inferior to its successor), for the translation may realize more fully possibilities that were only nascent in the original. Indeed, this view draws into question the very idea of an “original,” for temporal priority does not signify ontological priority when the original is regarded as simply one draft among many. Kristal comments, “Depending on the specific case, [Borges] at times favored a translation over its original, other times an original over its translation, and he was often interested in weighing their relative merits, aesthetic and otherwise.”

Borges’s idea of “originals” as provocations to go in search of meaning...
fits well with the idea of Work as Assemblage, for like the restless workings of desire and lines of flight that trace territorializations and deterritorializations of the Body without Organs, texts in an assemblage intermediate one another without necessarily bestowing on any one text the privileged status of the “original.” Everything is simultaneously a translation of everything else, each united to the others in a rhizomatic network without a clear beginning or end. That Borges arrived at this view while working exclusively in print should caution us not to overstate the fluidity of electronic texts compared to print. The advantages of programmable media notwithstanding, there is a long history of using the resources of print to achieve fluidity and indeterminacy, as Johanna Drucker, among others, has argued powerfully in her critical writing and demonstrated in her creative work. It remains the case, however, that the resources of print are different than the resources of electronic textuality, and that each medium interacts with and influences the others.

How might Borges’s perspective apply to media translations? Let us return to consider the works of William Blake in this light. Van Lieshout, a Blake scholar as well as a professional translator, comments that Blake, in running off his books on his own printing press, used the freedom “to recreate every single work over and over again, and he did so consciously and deliberately. . . . Blake would have loved the flexibility and possibility that computers give artists. . . . Basically he was Photoshopping in the early nineteenth century.” In this sense, the William Blake Archive, rather than being judged solely on the basis of providing a faithful reenactment of Blake’s print works, might be regarded as also providing an opportunity to go freshly in search of meanings highlighted in new ways by electronic media. My UCLA colleague Anne Mellor, a specialist in the Romantic period, observes that the William Blake Archive brings out an aspect of Blake’s works that tends to be somewhat obscured by the print medium, namely, its hypertextual links and connections. Like van Lieshout, she suspects that if Blake were alive today, he would find authoring and production systems in programmable media entirely congenial to his vision.

Another example of this kind of intermediation is provided by Raymond Queneau’s Cent mille milliards de poèmes. One might argue that this work is an attempt to do in a print medium what can be done more easily and naturally in programmable media. In the latter, instead of cutting the page into strips and juxtaposing the lines in new combinations that generate a virtually endless variety of sonnets—the operation Queneau suggests in his print version—the entire corpus of possible poems can be generated electronically and presented to the user as a random series of novel productions.
as Nicholas Gessler has done in his C++ simulation. A program similar to Gessler’s was written by Andrew J. Lurie, who adapted it from the “Chomskybot” program created by John Lawler (and others), which generates new paragraphs using a randomizing program that splices together phrases from Noam Chomsky’s writings. This program in turn was adapted from a still earlier program called “foggy,” created by one of Lawler’s former students and popular around IBM.

Like Borges’s idea of translations as drafts circulating along with the original in a stream of provisional attempts, so here programs circulate as patchwork productions building on earlier ones and recycling code. John Lawler’s comments are interesting in this regard. He writes, “What I find interesting about [the program] is how it just hovers at the edge of understandability, a sort of semantic mumbling, a fog for the mind’s eye. . . . Foggy’s most interesting effects are in the mind of the beholder.” Rather than aiming at a pure language, code here recycles “original” language in random patterns that cross and recross the threshold of intelligibility, inviting the reader’s projection into the echoic effects, as if infecting language with the random access memory of computer storage.

Through the feedback loops in which electronic text recycles print and the programs generating electronic text recycle code, we glimpse the complex dynamics by which intermediation connects print and electronic text, language and code, “original” and translation, the specificities of particular instantiations and the endless novelty of recombinations. These dynamics open out onto fundamental questions about the nature of texts, the relation of materiality to content, and the specificities of media. We already know that language matters. Media translation and the conjunctions it performs with print and electronic textualities can give us a deeper appreciation for the corollary propositions that media and materiality also matter.
The previous chapter explored the theoretical implications for textuality of translating print literature into digital media. This chapter looks at a work that remains in print but nevertheless bears within its body marks of its electronic composition. With the exception of a handful of fine letterpress books, every book produced in the United States and Europe this year will have been an electronic document in at least one and probably many stages of its existence. Given present modes of book production, it is more accurate to view print as a particular form of output for electronic text than it is to regard print as a realm separate from digital media. Florian Cramer, in thinking about the significance of digital code for literary texts, remarks that “juxtapositions of ‘the book’ and ‘the computer’ are quite misleading, because they confuse the storage and analog output media (paper versus a variety of optical, magnetical, and electronical technologies) with the information (alphabetical text versus binary code).”¹ Moreover, Cramer points out that “text and literature are highly privileged symbolic systems in these translation processes because a) they are already coded and b) computers run on code.”² These comments point to the interpenetration of print with electronic textuality, language with code, even when the focus is on a print book that appears entirely conventional in appearance.

In the contemporary period, print books evolve through the interplay between two different vectors, one rooted in the past and the other arching toward the future, as they negotiate between the centuries-long traditions of bookmaking art and the new possibilities opened by digital media. Tensions between past and future are particularly acute at the present moment when the narrative conventions of the novel, rooted in the seventeenth century, are inscribed with writing technologies profoundly different from the mecha-
ical printing presses with which the history of the novel is deeply entwined. Through what pathways and by what means does the influence of an informatic writing technology, with its complex trading zones in which language and code mutually put pressure on one another, penetrate into a book that on the surface appears as ink marks on paper? Assuming these subterranean perturbations exist, what critical strategies might be used to excavate them?

To explore these questions, I take as my tutor text Neal Stephenson's *Cryptonomicon*. As its name indicates, code is at the center of its thematic concerns, both as cryptological system and computer algorithm. Its material form took shape through the interpenetration of code and language, for Stephenson's compositional habits are typical in combining old with new media. According to his comments in interviews, he writes first drafts with a fountain pen and paper, revising two or three times on paper, and then types the revised version into a computer, revising yet again as he does so.

With an impressive background as a computer programmer, Stephenson does not employ the ubiquitous Windows or even Macintosh but interfaces with the computer through a Unix-based operating system. As his nonfiction work *In the Beginning Was the Command Line* testifies, he shifted from Macintosh to Unix when a crisis erupted in his compositional practices. He regarded this shift as so significant that he wrote a book explaining why Unix is far superior to any other operating system and exhorting his readers to experience similar enlightenment. The crisis that led to his conversion came when he lost a large file that was corrupted so badly it could not be recovered in its entirety. *Cryptonomicon*, published in the same year as *Command Line* and thus in some sense its sibling text, was almost certainly marked by his conversion to Unix, since he switched in 1995 and the book was written from 1995 to 1998. Following this line of thought, we can assume that the clash of operating systems—including all that it implies about the nefarious corporate practices of Microsoft, the capitalistic greed that underlies its ruthless business practices, and the resistance to these practices by open source communities, particularly Unix and the related Linux—penetrated deeply into the electronic structure of this text in physical and material ways. Are there connections between these material manifestations of coding practices and the linguistic surface of the text? Through what means do they mark the work when it is manifested as a print book, that is, when the flickering signifiers of the electronic text have been converted to durable impressions on paper?

To ask these questions is to regard the book not as a fixed and static artifact but as the trace of complex technological, conceptual, linguistic, and cryptological negotiations. In this chapter I argue that in *Cryptonomicon*...
a series of systematic transformations bears witness to these negotiations. These transformations involve dialectical attempts to mitigate the tensions inherent in the clashes of materiality and abstraction, code and language, hackers and corporate moguls, good profit and evil greed. Cycling through a series of dialectic juxtapositions, the narrative is unable to achieve a final resting point, a resolution stable enough to permit it to effect a rising action that would lead to a satisfying climax and clear denouement. The failure of the text to conform to these expectations signals that despite its traditional physical appearance and conventional narrative techniques, the literary corpus is riven by the writing technologies that produced it. Wrenched from the context of mechanical printing presses and embedded within informational technologies, this novel tries its best to remain a conventional narrative, but the differences between durable marks and flickering signifiers, natural language and computer code, de-form the form and unsettle its dynamics. Finally the text is forced into oxymoronic knots that bring together opposites and entwine them so closely that they cannot be separated. Only through such devices can the text articulate its contradictory enunciations of code/language and the conflicting historical vectors of mechanical past/informatic future.

Math and Lizards: The Dialectic’s First Terms

The basic problem for Lawrence was that he was lazy. He had figured out that everything was much simpler if, like Superman with his X-ray vision, you just stared through the cosmetic distractions and saw the underlying mathematical skeleton. Once you found the math in a thing, you knew everything about it and you could manipulate it to your heart’s content with nothing more than a pencil and a napkin. (8)

Sand erupts into the air, like smoke from the burning tires of a racer, and the lizard is rocketing across the beach. It covers the distance to the Imperial Marine in one, two, three seconds, takes him in the backs of the knees, takes him down hard into the surf. Then the lizard is dragging the dead Nip back up onto the land. It stretches him out there among the dead Americans, walks around him a couple of times, flicking its tongue, and finally starts to eat him. (326)

A mathematician coolly controlling the world with a pencil and a napkin, and a primeval lizard so ferocious it erupts into Bobby Shaftoe’s nightmares for years to come—these are contraries generating the first dialectical interaction. Cryptonomicon testifies eloquently to the importance of code in the contemporary world. Yet when the text pushes to the extreme of seeing the world as only code, a counter-resistance begins to build, becoming fiercer as more faith is placed in code. Although this resistance can take multiple...
forms, its most violent manifestation is animal appetite. As we shall see, the resulting clashes between abstract form and violent appetite remain largely unresolved in the text, leading to further transformations in the dialectic.

An important assumption underlying code's supremacy is the idea that information can be extracted from its material substrate. Once the information is secured, the substrate can be safely discarded. Peering through the window of Bletchley Park's “Ultra”-secret cryptographic decoding facility, Lawrence Pritchard Waterhouse sees a tape running through a machine so fast it smokes and catches fire. Surmising he is witnessing a Turing machine, Lawrence realizes that the “men in the room accept the burning of the tape so calmly” because the tape itself is not important. “That strip of paper, a technology as old as the pyramids, is merely a vessel for a stream of information. When it passes through the machine, the information is abstracted from it, transfigured into a pattern of pure binary data. That the mere vessel burns is of no consequence. Ashes to ashes, dust to dust—the data has passed out of the physical plane and into the mathematical, a higher and purer universe where different laws apply” (195). From here it is a small step to seeing information as immaterial; although information must necessarily be embodied to exist in the world, these embodiments can easily be seen as contingent and dispensable, of no more consequence than the burning tape.

Yet no sooner does someone make this assumption than the text offers a counterexample, an instance where physical instantiation is no mere triviality but essential to the system's operation. One such moment occurs when Lawrence's grandson Randy Waterhouse and his colleagues at their startup Epiphyte Corporation meet with the Sultan of Kinakuta about their scheme to create a data haven in the tiny Sultanate. At first, the Sultan mouths the conventional wisdom that “physical space no longer matters in a digitized, networked world. Cyberspace knows no boundaries” (316). But when he displays a world map with cables depicted between countries and continents, it is “not weblike at all,” with only a few intercontinental cables running through “a small number of chokepoints” (317). Geography matters, it seems, even if it is invoked here in the interest of creating “a free, sovereign, location-independent cyberspace” (317). If the dream of a sovereign realm where information can flow freely is to be realized, it cannot be divorced from the real world of geographical specificities, material constraints, and political realities.

As this example illustrates, controlling the flow of information becomes much more problematic when the complexities of coupling it with physical actions are taken into account. The don explains to Lawrence at a high-
level strategy meeting after the Allies have broken the Enigma codes that “the Germans have not broken our important cyphers. But they can observe our actions—the routing of our convoys in the North Atlantic, the deployment of our air forces. If the convoys always avoid the U-boats, if the air forces always go straight to the German convoys, then it is clear to the Germans . . . that there is not randomness here. . . . In other words, there is a certain point at which information begins to flow from us back to the Germans” (124). Unlike secret codes, physical actions do not require privileged knowledge to access them, and this tie with the physical world makes every action initiated by the possession of secret information potentially a two-way channel of communication.

Controlling information evolves quickly, then, into a problem of simulating randomness. Indeed, as the don’s remarks imply, cryptology can be understood as the art of hiding pattern in randomness, an understanding implicit in the Latin root for “crypt,” meaning “hidden, secret.” Of course, “crypt” also denotes a burial place, historically often an underground chamber whose location is privileged knowledge. The convergence of the two plots—one focusing on cryptology in World War II, the second a contemporary quest for the recovery of an incredible gold stash buried by the Japanese when they realized the Empire was doomed—is overdetermined not only by the lineages that connect Lawrence Waterhouse, friend and contemporary of Alan Turing, to his nerdy grandson Randy Waterhouse, but also by the secrecy that unites the crypt of gold with the coded information revealing its location, information that is buried in the fiendishly complex Arethusa cryptographic code invented for Göring by Rudolf von Hacklheber, prewar friend and lover of Alan Turing. The mathematical battle of cryptographic codes that stretches across half a century is punctuated by the realities of the physical actions with which codes are correlated. Far from leaving physicality behind, the struggle to control the world through mathematical and cryptological manipulation must contend with the wild, chaotic, and often violent unpredictabilities of a reality too vibrant, alive, and hungry to ignore.

When cryptography is used not only for secrecy but also for deception, material specificities become even more important. Echoing an actual British Secret Service maneuver labeled Operation Mincemeat, the text narrates the story of tricking up a body as a secret agent, planting it with false information, and throwing it into the ocean at a point where it is certain to be recovered by the Germans. 7 Participating in the operation is Bobby Shaftoe, the World War II haiku-writing marine whose granddaughter America (Amy) is predestined to hook up with Randy half a century later. Bobby stars
in the physically oriented plot that entwines with the cryptological one; he is as adroit at accomplishing the near-impossible in the material world as Lawrence and Alan Turing are in the cryptological realm. In converting the dead butcher’s body into a supposed secret agent and therefore into a sign to be read and misunderstood by the Germans, everything depends upon the body’s specificities—planted with the magnificent chronometer that must be Swiss rather than English, massaged with the German talcum powder used to ease on the European wet suit, and decorated with the tattoo that happens to read “Griselda” and not, say, “Amy.” When he hears the German name, Lieutenant Ethridge tells Bobby, “Battles have hinged on lesser strokes of luck than this one, Sergeant!” Bobby (inappropriately from the lieutenant’s point of view but apropos for this argument) uses the comment as an excuse to bring up the rampaging lizard from Guadalcanal that haunts his imagination the way the abject haunts the pure realm of mathematics in the text’s Imaginary (152).

The abject is everywhere in this text, smelly, slimy, loathsome, and inescapable.8 Detachment 2702, dedicated to creating deceptions designed to keep the Germans from realizing that the Allies have broken the Enigma codes, tries to convert the material world into signs, but the abject resists this implicit dematerialization, insisting on its own repugnant physicality. Sent to a bivouac in Italy meant to simulate a secret observation post, Bobby orders his men to dollop barrels of G. I. shit into privy holes, carefully inter-leaving Italian toilet paper to make it look as though they had occupied the site for months. Shit appears repeatedly in conjunction with secret writing and cryptological codes: in the “old-fashioned two-holer mounted above deep shafts that must descend all the way to hell,” where Bobby reads the secret note in which his true love, Glory, arranges their first assignation (46); in the “equatorial miasma” that pervades the tropical climes in which much of the action takes place, so intimately related to diarrhea that as soon as Bobby smells it he “feels his bowels loosening up already” (613); in the vernacular of hacker culture that advocates strong cryptography, where “Randy was forever telling people, without rancor, that they were full of shit” (80); in the exasperation of Doug Shaftoe, Bobby’s son, when he exclaims to Randy, “Can’t you recognize bullshit? Don’t you think it would be a useful item to add to your intellectual toolkits to be capable of saying, when a ton of wet steaming bullshit lands on your head, ‘My goodness, this appears to be bullshit?’” (729), a remark that significantly refers to a plot to find the gold’s location, which is concealed in the Arethusa code intercepts. Shit even becomes a pseudocode of its own when Detachment 2702 begins to use “shit”
instead of “ship” to refer to the “pathetic heap of a freighter” that they use in one of their ruses: “let’s get this cabin shit-shape! Where in the hell does the shit’s master think he’s taking us? And so on” (272). Surely one of the most significant instances occurs when Bobby and his comrades, attempting to rescue crucial Enigma code books from a sinking German submarine, wade through a cabin awash in coded documents and feces, a conjunction that brings the abject into intimate proximity with the secret writing that is supposed to operate in a realm of pure abstraction. Threatening to burst through the sphincters (bodily, social, military, and metaphorical) that seek to contain it, shit refuses to be reduced to only a sign. Expelled in involuntary reaction to intense fear, seeping out in uncontrollable diarrhea, dripping from jungle foliage in brutal marches by the Japanese and Americans in the South Pacific, shit has a material reality that cannot be contained solely within the algorithmic and cryptological.

Next to shit, perhaps the most conspicuous instance of the extent to which the world resists algorithmization is sexuality. Lawrence hypothesizes an inverse relation between his level of sexual frustration and his ability to work, but just when he thinks he can graph the relationship effectively, he discovers that sexual satisfaction is a more complex function than he imagined, depending not only on the time passed since his last ejaculation but also on how the ejaculation was accomplished—by a “manual override,” a prostitute, or someone with whom he is emotionally involved. “In other words, the post-ejaculatory horniness level was not always equal to zero, as the naive theory propounded above assumes, but to some other quantity dependent upon whether the ejaculation was induced by Self or Other” (545)

“His life,” he concludes, “which used to be a straightforward set of basically linear equations, has become a differential equation” (548).

Even the computer, site of digital code abstracted into ones and zeros, has a physical presence so violent it cannot be ignored. When Lawrence demonstrates to his superior officer, Earl Comstock, the computer he has built from mercury vibrating in tubes, it is a violently physical experience: “Hot sonic tongs are rummaging through his viscera, beads of sweat being vibrated loose from his scalp, his nuts are hopping around like Mexican jumping beans” (599). In the fictional world of Cryptonomicon, Lawrence gets the idea for his first digital computer from an equally violent encounter with a dusty organ in his beloved Mary’s church. The encounter is depicted in a passage reminiscent of his resolve to clear out his own clotted sexual machinery: “Gouts of dust and salvos of mouse droppings explode from the pipes as Waterhouse invokes whole ranks that have not been used in
decades” (575). Joining the physical with the abstract, this experience allows Lawrence to see “the entire machine in his mind, as if in an exploded draftsman’s view. Then it transforms itself into a slightly different machine—an organ that runs on electricity, with ranks of vacuum tubes here, and a grid of relays there. He has the answer, now, to Turing’s question, the question of how to take a pattern of binary data and bury it in the circuitry of a thinking machine so that it can later be disinterred” (576). The odd terminology used here to describe the operations of electric memory—bury and disinter—further unites the cryptological operations of the computer, as it works to break the Japanese code, with the hidden crypt of gold revealed within the Arethusa code. Neither will be recovered with “nothing more than a pencil and a napkin”; both will require engagement with a physical world that cannot be reduced to mathematical abstraction.

The tension between abstraction and violent physicality is, however, itself a verbal construction and in this sense already takes place in an abstract realm. From this contradiction emerges the next phase of the dialectical transformation, as abstract code and animal appetite merge to create a third term: performative code. Unlike the abstract algorithms Lawrence uses to express mathematical ideas (a practice not uncommon among mathematicians in the 1930s, before digital computers were invented), performative code operates as instructions to the machine and therefore initiates action in the world. In this sense, it combines the active vitality connoted by animal appetite with the conceptual power of abstract code. With the collapse of these terms into performative code, signaled in the text by Lawrence’s fictional discovery of the digital computer, another term comes into focus as the dialectical complement of performative code, namely, “figurative language.”

Stephenson hints at the importance of this conjunction in an interview he gave shortly after Cryptonomicon was published. He comments that “it’s become evident to me when I looked into the history of computers that they had this intimate relationship with cryptography going back a long way. You could say that writing books about it is a way to explore that relationship.” Then he adds, “I could try to get really profound here and say that it has something to do with the process of writing books in general, which is a matter of encoding ideas in words and symbols, but that’s sort of a level of navel gazing I will leave to much more sophisticated literary critics.”

9 Command Line, which as we have seen can be considered the nonfictional companion to Cryptonomicon, offers valuable insights into the conjunction between writing novels and writing code—insights that are essential to explicating the next phase of the dialectical transformation.
Commanding Cryptography

Abstract Code + Animal Appetite

Performative Code + Figurative Language

Stephenson's attitude toward computer code is clear in his quixotic jeremiad, *In the Beginning Was the Command Line*, published first online and later as a short print book. Working through analogy, personal anecdote, and technical exposition, Stephenson tries to persuade the educated public that Unix is a far superior operating system to either Macintosh or Windows. This superiority lies not only in Unix's efficiency and power, nor solely in its economy (it is available for little or nothing over the Web). Equally important is the fact that it allows the user to understand exactly what is happening as typed commands are compiled and executed by the machine. Windows, if not exactly evil, is profoundly misleading because it hides the operations of the machine behind an interface that discourages the user from understanding how the actions of a mouse, for example, get translated into binary code—or even that they do get so translated. To make the point, Stephenson recounts his first experience with computers while in high school, in which he communicated with a mainframe through a teletype machine. Clunky as that interface was, it had the virtue of making clear that the symbol strings he typed in were being converted into binary code through the ASCII conventions of encoding each symbol with eight bits.

Why *should* the user know what is going on in the guts of machine? Or to put it another way, what is wrong with the user staying at the surface, as long as the interface is robust and functional? One problem is that the interface may not really be that robust. To illustrate, Stephenson tells of the day his Macintosh PowerBook "broke my heart," destroying a large document so thoroughly that not even a powerful utilities program could recover it. Since the document was too large to put on a single floppy, Stephenson had stored the only complete copy on the hard drive, so the loss was traumatic. That very day he encountered Unix and became an instant convert. Tested and refined by thousands of hackers, Unix would never make this kind of error, Stephenson maintains, contrasting the open Unix error file with the covert information about errors that corporations like Microsoft bury in their private files. As a result, the information can be obtained only through their professional help line, which Microsoft charges the user to access.

Beyond the issue of robustness lies another reason, more difficult to quantify but perhaps even more important emotionally. The *real* individual, Stephenson implies repeatedly, would not want to put himself at the
mercy of large corporations that in effect tell him what to think, deciding what he wants and what is good for him. Such folks are “Eloi,” Stephenson suggests, in an allusion to H. G. Wells classic story The Time Machine. In Wells’s story, the Eloi are small-statured folk apparently living gentle lives in harmony with nature. Yet, as the time traveler Hillyer discovers, their lives are forfeit to the brutal and ugly Morlocks, who live below the surface with their superior technology and apparently regard the Eloi as food animals. Stephenson suggests that nowadays the Morlocks are on the surface running things, while the Eloi stampede stupidly into whatever operating system (or other technology) the Morlocks tell them they should want. At issue is pride, expertise, and, most importantly, control. Those who fail to understand the technology will inevitably be at the mercy of those who do. The implication is that those who choose Unix, even though it is more demanding technically, can escape from the category of the Eloi and transcend to Morlock status where the real power is.

Among the weirder resonances between Command Line and Cryptonomicon is the former’s allusion to the cannibalistic Morlocks, which echoes the many references to animal appetite in Cryptonomicon, including the jungle cannibals who devour an unfortunate Filipino as Goto Deng looks on from his hiding place, so ravenous himself he eats the starch the cannibals leave behind. In a startling reversal, however, Command Line reconfigures the Morlocks so that their relevant characteristic is technological prowess. Is their cannibalism merely beside the point in this extended analogy, which has no choice but to drag it along in the same way that analogies always include inappropriate elements if pushed far enough? Or is some covert line of thought connecting the two texts that makes the Morlock/Eloi analogy appropriate in a deeper sense? Is it coincidence that yokes the cannibals’ coming-of-age ritual in which an adolescent boy achieves his manhood by killing the intended victim, that is to say, a ritual in which he becomes a real individual, with Stephenson’s imagining his Unix conversion as becoming a Morlock?

As the risk of acting out the role of the ironically evoked “much more sophisticated literary critic,” I want now to explore the subterranean connections between the fictional world of Cryptonomicon and the nonfictional conversion narrative in Command Line. To write a command line is be in command, that is, to use an operating system that does not disguise the working of the machine, to prefer an interface that makes clear the connection between typing alphabetic symbols and the encoding of these symbols into ones and zeros. Yet in constructing this argument, Stephenson continually uses extended analogies. For example, in addition to the Morlock/Eloi
an analogy, he imagines a scene of car dealers hawking inferior products that cost a lot (Windows and the Mac OS) while across the street someone is giving away for free beautifully made hefty tanks that get one hundred miles per gallon (Unix). Are these analogies just so much window dressing covering over the guts of the argument, like a Windows interface covering over the real workings of the machine? If the technological elite is distinguished by knowing what is actually going on, why dress the argument up in fancy clothes that pander to the weak-minded who cannot take their facts straight up? Who does the text construct as its audience, Eloi or Morlock, and how can one achieve Morlock status if one is treated by the text as an Eloi who needs analogies to understand what is, after all, a fairly simple and straightforward point?

To entertain these questions is, of course, to suggest that figurative language is to cultural understanding as Windows is to code, a pernicious covering that conceals the truth of things. This is the ancient charge brought by philosophers against rhetoricians, the suspicion of scientists that if humanists really knew what they were talking about they would use equations rather than metaphors, the ideological program of the Royal Society to use plain unadorned language rather than fancy analogies. It is beside my purpose here to rehearse the thousand answers that have been made to these objections to literary language, from Philip Sydney to Gertrude Stein, John Milton to Gillian Beer, Alexander Pope to Arkady Plotnitsky. Rather, I want to highlight the tension between Stephenson's figurative language and performative code. Performative code makes machines do things, and we should be in control of our machines. But figurative language makes people do things, and to be persuasive, to be effective, the writer must craft for his readers images that stick in the mind, narratives that compel through memorable scenes and psychological complexities, including paradox, contradiction, irony, and all the rest of the tricks that constitute a writer's trade. 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.

Stephenson's own explicit justification for figurative language focuses on myths rather than metaphors, or more accurately, myths as analogies. In several of his works, he has characters voice the view that mythic stories conceal profound technological insights, which simply need to be decoded to apply to present-day understandings of natural and artificial cognition. In *Snow Crash*, this device takes the form of an elaborate exposition by the Librarian, an artificial intelligence that summarizes Sumerian myths and explicates their relation to the Snow Crash virus. In *Cryptonomicon*, it occurs when Enoch Root explains to Randy that behind seemingly contradictory
myths is a truth on which they converge. Suppose, he says, in an analogy meant to explain analogical thinking, that different people were to present different versions of him. Nevertheless, someone who knew him could see that behind these different representations was a “Root Representation” (800), a play on his name that connects him with the root directory of the computer. Because messing with the root directory can have catastrophic consequences, in large systems it is protected from most users and can be accessed only by the person responsible for the system, the SysOp or Systems Operator. When Enoch Root first sends an e-mail to Randy, Randy pays it special heed because it includes the surname “root,” which Randy mistakes as an indication that the sender is a Systems Operator and therefore a knowledgeable and powerful computer expert. In another sense, Root does play this role, although his special expertise stems from his association with the Societas Eruditorium, a shadowy organization that pursues its mysterious ends independent of the national interests at stake in the world war. Although these ends are never made explicit, the implication is that Root, a priest, answers to a higher ethical power than national sovereignty, an ethical imperative that gives special emphasis to Root’s explanation about the mythic relation between technology and war. Technology, Root argues, can be used for good or evil ends, and this difference is encoded in the distinction between Athena, goddess of technology and war used for ethical ends, and Ares, the god of violent warfare used simply for destruction and self-gain. As with Snow Crash, connecting mythic figures with the contemporary action aims to bring about an ethical understanding of technology, with the result that principled action follows.

These explications of myth do not, however, resolve the deeper contradiction between the up-front nature of code and the devious nature of figurative language. The tension between performative code and figurative language runs through many of Stephenson’s books; indeed, it is no exaggeration to say that it is central to his creation of fictive worlds. In Snow Crash, he imagines a virus that crashes the operating system of humans, rendering them into automata that can be controlled through a monosyllabic language dubbed “falabala” after the way it sounds. Here language collapses into a kind of code capable of making humans act like computers, forced to run whatever commands the code inputs. At issue are the same concerns evident in Cryptonomicon and Command Line—control versus being controlled, autonomy versus loss of agency, individualism versus the masses. In Cryptonomicon, the same concerns prevail but in a different configuration. Instead of language becoming like code, code becomes like figurative language, creating a deceptive surface that misleads the masses while the
cognoscenti penetrate this screen of symbols to extract the meaningful messages hidden within. Cryptanalysis thus becomes like mathematics, revealing the essential information hidden in “cosmetic distractions” such as those Lawrence sees through with his X-ray mathematical vision.

A good illustration of this dynamic occurs in the scene where Randy is thrown into prison on a trumped-up drug charge. To his surprise, his captors return his confiscated laptop, which is protected by the strong cryptography he has installed and hence worthless to his jailers unless they can trick him into voluntarily revealing the encryption key. He suspects, correctly, that his jailers have set up a Van Eck shadowing computer in the adjacent cell so that they will be able to see whatever appears on his screen. A superb hacker, Randy sets a program running in the background that will decode the crucial Arethusa intercepts, but he protects the screen surface by having it run a random display. The results of the background program, rather than appearing on screen, are transmitted by LEDs on the number and cap keys blinking Morse code. This clever ruse recalls the teletype machine through which Stephenson communicated with the mainframe in his high school days and that he likened to a telegraph. Now the computer-as-telegraph connotes not a transparent coupling but precisely the opposite, the triumph of cryptography over political surveillance carried out with malicious intent. These results are consistent with the logic of *Command Line*, for Randy can escape surveillance only because he understands what is really going on inside the machine, whereas his captors are demoted from Morlocks to Eloi because they can see only the deceptive surface he creates.

The configuration in the prison is significant. On one side of the wall are Randy’s captors, carrying out covert surveillance under the guise of legitimate political purposes but actually because General Wing wants to find out the gold for personal gain. On the other side is Enoch Root, a cross-cutting character that connects the two generations of conspirators, communicating with Randy using a cryptographic code implemented by manipulating a deck of playing cards. Strong cryptography does more than distinguish the Morlocks from the Eloi; it also allows a freedom-loving band of like-minded hackers to cohere in the midst of the Morlocks who use their power illegitimately. Through this means the hackers are distinguished from the cannibals in a purgative separation that amounts to a distinction between technology used for evil purposes and technology adopted for noble ends.

Just as the active vitality of animal appetite and the conceptual power of abstract code merged in performative code, so the jail scene with Randy signals the merging of performative code and figurative language in the work of the Good Hacker. The Good Hacker reconciles the tensions between a
code that honestly testifies to the interior operations of the machine and the deceptive power of metaphoric interfaces (and by implication, figurative language in general). Randy, using his deep understanding of code to create deceptive surfaces, nevertheless uses his expertise for good ends. The conflation prepares for the next dialectical turn, which pits good hackers against evil deceivers.

The Brotherhood of Code

Abstract Code + Animal Appetite

↓

Performative Code + Figurative Language

↓

Good Hackers + Evil Deceivers

Being technically proficient with code obviously does not assure that technicians will use their expertise to enhance individual autonomy. Microsoft employs talented programmers who work to create the very interfaces that, in Stephenson’s view, seduce and disempower users. Stephenson is well aware of this fact, of course, and frequently constructs plots that pit spirited individualistic hackers against soulless technicians and their evil masters. So strong is Stephenson’s sympathy with the hacker versus the large organization that alliances among hackers frequently provide the motive power for his fiction. In Snow Crash, for example, the major plot reaches its climax when Hiro Protagonist saves a virtual stadium full of hackers by defeating the software that would crash their neural operating systems, infect them with the Snow Crash virus, and turn them into Bob Rife’s minions. In Cryptonomicon, much of the action takes place against the canvas of World War II, a military conflict in which national loyalties served to organize immense amounts of manpower and material—a situation ripe for exploitation by the powerful few. Against this volatile backdrop, Stephenson imagines cross-cutting dynamics that organize energies differently, creating small pockets of resistance, subversion, and conspiracy.

We have already considered one of these dynamics, the tension between mathematical abstraction and violent physicality that constituted the first phase of the dialectic. Significantly, the carnivorous lizard with a violent appetite disrupts this stereotypical scene of beachhead warfare when it attacks the Japanese, indicating that the dialectic has the power to intervene and redirect the military conflicts inscribed on the text’s surface. Disruption occurs again in the next phase of the dialectic when good hackers are put in conflict with evil deceivers. The good hackers come together to form
what might be called the Brotherhood of Code, an alliance that has as its core their expertise in decoding encrypted messages. Although most of the explicit criticism of national agendas is directed against America's enemies (hardly surprising, given the author's nationality), evil deceivers are at work transnationally, including in America. Large organizations are shown to be susceptible to corruption when powerful men subvert their resources to pursue private agendas dictated by greed and arrogance. General Wing pursues the Japanese war gold under the guise of Chinese nationalistic goals; Earl Comstock does the same with the newly formed National Security Agency; his son, Attorney General Paul Comstock, collaborates with the Dentist and his minions in attacking the Epiphyte Corporation's server.

These are the forces against which the Brotherhood of Code struggles, in an unlikely cross-generational conspiracy that includes, during the World War II era: Goto Denago (a Japanese Imperial soldier), Bobby Shaftoe (an American marine), Oscar Bischoff (a German submarine commander), Rudy von Hackdheber (a high-level German cryptanalyst), Lawrence Pritchard Waterhouse (an American cryptologist working for the British), and Enoch Root (of Societas Eruditorium fame, nominally a Catholic priest and chaplain for the Marine Corps). Almost all of these characters betray organizational loyalties in favor of personal bonds, with cryptography and secret writing at the conspiracy's center.

The Brotherhood of Code injects into the World War II era the same kind of bonding through cryptological expertise that Stephenson in Command Line identifies with the open source community. Significantly, the one member of the conspiracy who does not overtly betray his national loyalty is Bobby Shaftoe, killed in a suicide mission on which he is personally dispatched by General MacArthur. And it is Shaftoe, of course, who stars in the physical action in the same way that Rudy and Lawrence dominate in the cryptological arena. Although Bobby participates in the conspiracy, his character is anomalous in that he is not directly involved with decrypting documents, as are the others. Instead, his character illustrates how earlier tensions get integrated into the later dialectical configurations. These tensions are not so much left behind as shifted in their narrative functions when the next phase of the dialectical interaction starts to drive the action.

The conflict between physical action and abstract language, for example, is reiterated in Bobby Shaftoe's meditation on two categories of men, one oriented toward language, the other toward physical action. "Men who believe that they are accomplishing something by speaking speak in a different way from men who believe that speaking is a waste of time..." For them, trying to do anything by talking is like trying to pound in a nail with...
a screwdriver. Sometimes you can even see the desperation spread over such a man's face as he listens to himself speak." Listening to Enoch Root and Lawrence, Bobby begins "to suspect that there might be a third category of man, a kind so rare that Shaftoe never met any of them until now" (373). Lawrence speaks, Bobby surmises, "not as a way of telling you a bunch of stuff he's already figured out, but as a way of making up a bunch of new shit as he goes along. And he always seems to be hoping that you'll join in. Which no one ever does, except for Enoch Root" (374). Slowly dawning on Bobby is the realization that language might be used not just as a tool for expression but also as a method of exploration. The realization points toward the next phase of the dialectic, which juxtaposes performative code with figurative language. In contrast to the relatively weak rationale that interprets myth as veiled history, Bobby has just discovered a much stronger justification for figurative language. Metaphors and analogies not only express existing ideas; they also lead to new thoughts and possibilities. It is surely no accident that in addition to being a superlative physical specimen, Bobby writes haiku, a poetic form that makes extensive use of metaphor and image.

Like the other configurations before it, the good hackers/evil deceivers configuration becomes unstable, initiating another turn of the dialectical cycle. This time, however, its instability leads to a significantly different outcome. The problem with the configuration becomes apparent in the generation following World War II, when the hackers get together to form the start-up Epiphyte Corporation. As the Internet matured and began to become a commercial enterprise, visionaries saw their utopian dreams being co-opted by mercenary corporate interests. What ensures that Randy, Avi, and their colleagues in Epiphyte will not be similarly co-opted, forced to kowtow to someone like the Dentist, who plots to gain a controlling interest in their fledgling corporation? In its last phase, the dialectic attempts to purge contamination from the Good Hacker and separate it out into a figure of pure evil, whose banishment from the plot can then signal the triumph of the good technology of Athena over the bad technology of Ares. This purgative impulse is, of course, precisely contrary to the dialectic's normal operation of combining contraries. At this point, the dialectic can go no further. The figure of pure evil is indeed produced and expelled, but the dialectic's exhaustion is expressed through oxymoronic knots—life and death, a killing machine and a rescue mechanism, disaster and triumph, greed and altruism—that can be neither untied nor merged into a new synthetic term. Rather than work through these dense oxymoronic knots, the text achieves a muted resolution, such as it is, by working with them.
Knotty Oxymorons: The Dialectic Exhausted

Abstract Code + Animal Appetite
↓
Performative Code + Figurative Language
↓
Good Hackers + Evil Deceivers
↓
Oxymoronic Knots + (Pure Evil)

The tendency toward oxymoronic entanglement is concentrated around events with life and death consequences, becoming particularly important in the entwining plots of Lawrence's invention of the first digital computer and the burying and disinterment of the Japanese war gold. As we have already seen, both plots involve crypts, the gold because it is buried in an underground installation, the computer because it is linked with cryptology and later with the Epiphyte data haven called "The Crypt." Both plots evolve until they become so knotted into oxymoronic configurations they can go no further.

With the crypt of gold, the oxymorons cluster around the secret intention to make it also a human crypt. In a conversation with Lieutenant Mori (whose name connotes death), Goto understands the truth concealed beneath the lieutenant's riddling discourse (639). The lieutenant promises Goto a reward for work well done, a prize he would presumably want to earn, but Goto realizes this "reward" will in fact be his own death, that which he presumably most fears. The tunnels he has engineered to conceal the Japanese war gold are intended to hold his murdered body once the work is finished. Knowing that Golgotha, "the place of the skull," is associated in the Christian tradition with Christ's betrayal and crucifixion, Goto had privately given this name to the crypt. But when he mutters it and Captain Noda overhears, he dissembles by answering that it is a Tagalog word meaning "hidden glade" (639); sign and signified are further muddled when the captain calls it "Gargotta." As the chain of linguistic signifiers drifts toward nonsense, it resembles a cryptographic code whose hidden meaning can be decoded only by the cognoscenti.

Similar obfuscation takes shape within the physical structure Goto has engineered. He builds into the design certain idiosyncrasies that are highly significant to him but meaningless to his superiors. When the installation is complete and the treasure concealed, the final slaughter is about to begin, but Goto gets "so excited he forgets to die" (734). As he prepares to swim to
freedom using the breathing chambers he has designed, the place intended as his burial chamber flips into its opposite: the architecture that will save him. He reflects that "he is an engineer, trapped inside one of his own machines. The machine was designed to keep him alive, and he will never know whether it worked unless it works. After he has achieved that satisfaction, he supposes, he can always kill himself at leisure" (734), a hypothetical outcome that flips again from triumph to presumed despair. The conflation of life and death, presented here as a matter of memory ("he forgets to die"), is deeply bound up with ethical complexities. Earlier, Goto had ordered his soldiers to jump ship rather than go down with the troop carrier, and so had labeled himself unworthy because he chose to live despite the shameful outcome of an American victory (323). Accepting that he is a "bad soldier" because he shuns the senseless loss of life, he resolves to save as many men as he can at Golgotha, which finally amounts to a pitiful few. He hopes the gift of life will be enough for them and is shamed when one stops to pick up treasure along the way. "He himself has saved no treasure except these men's lives. But that's not why he feels so bad. He had hoped that being thus saved they would all be noble, and not think of the treasure. But maybe that was too much to hope for" (734).

As future developments make clear, it was indeed too much to hope for. Goto's act of altruism is inextricably entwined with the greed that drives the final portion of the plot. The chief competitor for the gold in the contemporary plot is General Wing, the same Wing who takes off after the escape from Golgotha without bothering to thank Goto for saving his life. Goto continues to believe, as he tells Randy and Avi when they approach him for help in recovering the gold, that gold is the "corpus of value" (858). The real treasure, he explains, is in the head—"the intelligence of the people"—and in the hands—"the work they do" (858). Now a fabulously wealthy and powerful contractor, his success testifies to the wisdom of his view. Only when Avi tells Goto that he wants the gold to attempt to end wars by developing HEAP—the Holocaust Education and Avoidance Pod—does Goto agree to cooperate in the effort.

The scene where Avi and Goto make their pact is awkwardly written in a telling way. When Goto suggests that Avi wants the gold to become rich, Avi's "face turns red, the muscles of his head bulge as he clenches his teeth together, and he breathes heavily through his nose for a while. The Gotos both seem to be rather impressed by this, and so no one says anything for a long time, giving Avi a chance to regain his cool" (858). This heavy-handed indication of moral outrage indicates how desperately Stephenson wants to protect the Good Hacker against the greed that characterizes the evil
deceivers, even at the cost of bad writing. Greed sits cheek by jowl with entrepreneurial success, co-optation with individual initiative. Stephenson knows too well the fate of successful dot-coms—sold for fabulous sums to large corporations before the Internet bubble burst—to be sanguine about the prospects for purity in the corporate world or the realm of the Internet, which is increasingly under corporate control. Stephenson’s anxiety about protecting the Good Hacker from corruption finds its most extreme expression in the creation of a figure of pure evil, as if by isolating all impurities here he can ensure that they will not contaminate the good characters. This function is fulfilled by the character of Andrew Loeb. Loeb’s final attack on Amy has no financial, and indeed no rational, basis at all. “Why does he want to hurt you?” Root asks, to which Randy replies, “Because he’s evil.” When they finally succeed in killing the madman, “an insect lands on his thumb and starts to eat it” (893) in an ironic assertion of amoral appetite triumphant even over ultimate evil.

In sharp contrast to the unequivocal judgment Randy passes on Loeb are the complexities of the oxymoronic clusters, which bring together opposites so closely entwined that they cannot be separated. Like the gold plot, the cryptology plot enacts these oxymorons by tangling together life and death so that they paradoxically signify each other. The difficult problem that Lawrence must solve before he can invent the first digital computer is how to create machine memory, or in the odd formulation noted earlier, how to “bury and disinter” information. One of the problems he will attack once he has solved this difficulty is decrypting the Arethusa intercepts, which have encoded into them the gold’s location. Coincidentally, he also solves the encrypted messages by which the conspirators are communicating with one another. As the conspirators radio messages about meeting at Bobby Shaftoe’s memorial service, the crucial word that allows Lawrence to break the code is “funeral.” He follows the conspirators to their jungle meeting place, where they have gathered to tap into a small portion of the gold, whose location Goto, now a member of the group, of course knows. When Lawrence reveals himself to Rudy, Rudy “heaves a big sigh. ‘So. You win,’ he says. ‘Where is the cavalry?’” Lawrence jokes, “Cavalry, or calvary?” linking the cliché of cavalry rushing to the rescue with the site of Christ’s death. “I know where Calvary is,’ Rudy replies. ‘Not far from Golgotha.’” (883). As Avi will do half a century later with Goto, Rudy assures Lawrence that “most of [the gold] is going to help victims of war, in one way or another,” even though they intend to take enough to make themselves rich. Convinced to help the conspirators, in part because they loyalty chose to attend Bobby’s funeral despite the risks, Lawrence protects them by destroying the Arethusa
intercepts and substituting random numbers. Although he fails to save his friends—Comstock decrypts a message that betrays the location of the conspirators’ submarine—Lawrence’s substitution of randomness will occupy Comstock for many years as he ruthlessly drives his NSA team to discover a code that is not there.

As these scenes suggest, the oxymoronic clusters are knotted most tightly around gold, not coincidentally the focus for the text’s deepest anxieties. The principal gold sites are Golgotha, about which we have already heard; the submarine carrying the conspirators that Comstock sinks and that Douglas Shaftoe, Bobby’s son, disinters half a century later; and a mysterious mound of gold bars hidden in the jungle that anticipates and reflects the problems and possibilities of the gold at Golgotha. All three sites provide episodes in which oxymoronic knots express the final perplexities of the dialectic’s operation.

In addition to Rudy and Bischoff, the submarine carries some of the gold bars from the Golgotha site and five crates of gold foil plates that Rudy has stashed abroad. The plates Rudy identifies as “cultural treasures,” scoffing when Bischoff suggests that they may be encoded with Göring’s pornography (851). Careful reading suggests that the plates are in fact the “Leibniz archive” that Rudy had earlier asked Göring to gather for him from Europe’s great libraries (503), precious research materials that Rudy has encoded via perforations onto gold foil because he knows the foil will be impervious to salt water. When Bischoff jokes that they should be exporting gold from the Philippines rather than importing it, Rudy explains, “When I export those sheets, I’ll do it on wires,” suggesting a scene analogous to the burning tape that Lawrence witnesses; the gold foil will be worthless once the information it holds has been extracted. But Bischoff, trying to visualize this scene, imagines it as “wires strung from here to Los Angeles, and sheets of gold foil sliding down them. It doesn’t really work” (852).

The fact that the sheets are gold puts them in a different category than the cheap paper tape. When the submarine is discovered decades later by Doug and his crew, they see the gold foil sheets as valuable in themselves, and Randy, although intrigued by the perforations, is apparently never able to decode the information they contain (458–59). Along with the sheets—ambiguously positioned between their material value as gold and their informational value as mathematical archives—are the gold bars from Golgotha, entombed along with those who died in the submarine. The death scene is rich with ironies. Rudy remembers that he has written the Golgotha coordinates on a sheet of paper in his briefcase, and he and Bischoff presciently anticipate that the sunken submarine may eventually be found. Trapped in
an oxygen-rich air bubble at the stern of the broken boat, in a scene reminiscent of Goto and his men in the breathing chambers of Golgotha, Rudy and Bischoff realize that if they strike a match to burn the paper, they will be immolated in the resulting flash. Rudy swims to the hatch and opens it, with enough air to make it back to the bubble but not enough to escape. In a knot that ties together life and death, he then tells Bischoff to escape, lighting the match that at once burns the paper, kills him, and provides the illumination Bischoff needs to make it out of the sub.

Decades later, when Doug, Amy, and Randy discover the submerged wreck, they find inside Rudy’s briefcase a slip of paper on which is written “WATERHOUSE LAVENDER ROSE” (462), the wedding china pattern that Lawrence had mentioned to Rudy when declining to join the conspirators in favor of becoming a mathematics professor at a small college where he will settle down with his bride, Mary Smith. Randy later confirms that this is indeed his grandmother’s pattern, thus enabling him to rediscover the link between the submarine, the conspirators, and his grandfather. When Doug realizes that the hatch is open and presumes that someone was able to escape from the doomed ship, he lights a cigar to mark the occasion, telling Randy, “This is one of the most important moments in your life. Nothing will ever be the same. We might get rich. We might get killed. We might just have an adventure, or learn something. But we have been changed. We are standing close to the Heraclitean fire, feeling its heat on our faces” (442). Far removed from Doug’s usual rhetoric, the melodramatic tone underscores the threads knotted together here—the fire that kills Rudy and saves Bischoff reflected in the “flaring safety match” that Doug produces “like a magician,” with Randy “staring into the flame”; the solemn toast to “whomever got out,” honoring the moment of self-sacrifice that marks a crucial difference between the Brotherhood of Hackers and the greedy bureaucrats who oppose them.

Nevertheless, it remains to be seen whether the gold of Golgotha can be situated so that it can be coded good instead of evil, Athena rather than Ares. Also at issue is the tension between materiality and information, enacted in the submarine scenes in the coexistence of the gold bars and gold foil sheets, but not really resolved. The tension between information and materiality is also performed in a different sense in the ruminations in the text over the nature of money. The opening scene—set in Shanghai, with coolies rushing to redeem notes printed by individual banks as the Marines fight their way to the waterfront and the Japanese attack the city—underscores the fragility of currency. Currency is, Lawrence reflects an ocean away, valuable only as long as people believe it so. Feeling that he knows how the Japanese think, having

Performatve Code and Figurative Language: Neal Stephenson’s Cryptonomicon
read their decrypted messages every day, he is sure that “the Nipponese must have given thought to this problem of backing their imperial currency—not just for Australia but New Zealand, New Guinea, the Philippines, Hong Kong, China, Indochina, Korea, Manchuria. . . . How much gold and silver would you need in order to convince that many human beings that your paper currency was actually worth something? Where would you put it?” (812). The answer, of course, is Golgotha. But once the gold is buried and booby-trapped, it will take a major engineering project to unearth it. At one point Randy and Avi wonder whether it needs to be unearthed. Why can’t they use the gold to secure the electronic money they are in the process of establishing without needing to dig up the treasure? Isn’t it enough that it exists and that they know where it is, even if it is not accessible?

The debate is foreshadowed by the mysterious mound of gold bars they discover in a nearly inaccessible jungle site. A Philippine woman gives the latitude and longitude coordinates to Randy under the guise of a social dance, asking him “What is the value of the following information?” (485). After Doug, Randy, and their crew fight their way to the location, negotiating fierce jungle terrain and rebel roadblocks, they realize that although the unguarded gold appears to be theirs for the taking, there is no way they can actually remove it, given the unstable political and geographical situation. Without possession, access has no meaning.

Does the inverse also hold, that without access, possession has no meaning? When the tremors of underground explosions wake them from their dream of letting the Golgotha gold simply remain underground, they realize that General Wing has marshaled men and material to tunnel diagonally into the stash from the side. The gold cannot be secure, and thus cannot function as a basis for their new virtual currency, unless they physically possess it. Like the Sultan’s geography lesson, Wing’s run for Golgotha makes clear that even in a world where electronic cash promises to be the currency of the future, the materiality implied by physical possession cannot be ignored. They solve their problem by literally liquefying their assets, setting off enough fuel oil in the Golgotha chambers so that the gold turns to liquid and runs out into the river bed on its own.

The scene provides the narrative’s muted climax and abrupt ending, leaving unresolved questions about how the gold will be spent, whether it will go to the HEAP project, the Societas Eruditorium, the Catholic Church, or the Brotherhood of Hackers—all of which are mentioned at one point or another as possible beneficiaries. Like the liquid gold poised between the solid materiality of appetite and the airy vapor of information, the text does not finally answer these questions, perhaps because they cannot be resolved.
within the parameters of a realistic novel. Apparently the gold has been purified enough to make its moral recovery possible, but not enough to allow a denouement to be written. Even when the plot threads are reassembled into a coherent story, the knots that signify how the action should be valued remain entangled.

The Interpenetration of Technology and Text

Let me now return to consider how the material technology that produced the book enters into its narrative construction. All the terms involved in the dialectical transformations are concerned with situating code in relation to the human world of signs and artifacts, language and objects. More than an abstraction, code has a material efficacy that demands it be recognized as a player in the world. Transparent to the technological elite who understand it, code can also be made deviously obscure; it can be put to socially desirable ends in the hands of idealistic hackers but remains vulnerable to the machinations of evil corporations. Since there is finally no way to ensure that code will not be co-opted, the text signs it with the oxymoronic knots that express the irreducible complexities of its entry into the world. This subterranean narrative, emerging from the operations of the dialectic, is not identical with the surface content and indeed in some ways contradicts it. Rather, this narrative functions as a deep structure within the text, setting up a surface/depth dynamic that mimesically re-creates within the text the surface/depth relation between the scenario text displayed on the computer screen and the coding languages producing the text as a display the reader can access. Thus the narrative implicit in the dialectic reproduces the structural dynamics of the trading zones between code and natural language that digital technologies have made a pervasive feature of contemporary culture.

Further marks of the digital technologies that produced the text can be seen in the way the surface narrative is assembled. As the cryptological and gold plots begin to weave together, it becomes increasingly clear that the novel is functioning as a kind of machine assembling a coherent story out of plot lines that have been fragmented and spliced into one another. Until the final pages, the multiple plots proceed largely independently of one another, with jump cuts across scenes separated by many decades and several continents. One effect of digital text editing has been to change the writing habits of people generally, making cut-and-paste practices much more prevalent than was previously the case with typewriters, when the process was much more laborious. Of course, as a host of literary narratives testify, writers working on typewriters also created cut-and-paste narratives, including such luminaries as Virginia Woolf and John Dos Passos. Never-
theless, in *Cryptomicon* this technique acquires special significance, for it resonates with the emphasis on burying and disinterring information as the specific technological challenge that led to the invention of the digital computer. In this context, the reader's activity is implicitly imagined as burying the memory of one section in order to cope with new information offered by the next plot thread; later, when the first thread resurfaces again, the reader must disinter that information and link it with the new developments. In effect, then, the reader functions like a digital computer, assembling coherent narratives out of fragmentary strings dispersed throughout the memory space. Like Goto desperately swimming from air pocket to air pocket inside a machine that he himself has built, the reader is trapped inside a machine constructed jointly from the reader's memory and the text's words, at the mercy of a novel that "forgets to die" as it rambles on for hundreds of pages before reaching an inconclusive ending that leaves much undecided.

Further complexities arise when we consider the relation of the Linux operating system to the Macintosh system that Stephenson presumably used when he was drafting the first part of *Cryptomicon*. As he explains in *Command Line*, Linux operates by giving the user direct access to the commands that control the computer's behavior, whereas the Macintosh operating system offers the user metaphors for these commands (e.g., desktop, files, trash bin, etc.) and conceals the actual commands within its hidden coding structures. The fact that the operating system seals off access to the command core has everything to do with the fact it is proprietary software controlled by corporate interests. By contrast, within the Linux system the user can type commands that call up a Windows-like interface, but this metaphoric shell operates as a special functionality within Linux, and it is always possible for the user to regain direct control of the machine by returning to inner core of Linux commands.

In *Cryptomicon*, this nesting of an inner core within an outer metaphoric shell is reproduced through the fictional compendium of cryptology called the Cryptonomicon, which functions as a *mise en abyme* for Stephenson's novel (to distinguish the two, I will indicate the novel in italics and the compendium without italics). Supposedly, the Cryptonomicon was begun by John Wilkins, not coincidentally the proponent of an analytical language designed to rescue language from a morass of illogical forms and tame its wild metaphoricity by fitting it into a rationally constructed system of roots, prefixes, and suffixes. Since Wilkins, generations of cryptologists have added to the Cryptonomicon, including, in the twentieth century, the cryptological genius William Friedman and the fictional Lawrence Pritchard Waterhouse, second only to Alan Turing in his deep understanding of computers.
and code. Thus the Cryptonomicon has become a kind of Kabala created by a Brotherhood of Code that stretches across centuries. To know its contents is to qualify as a Morlock among the Eloi, and the elite among the elite are those gifted enough actually to contribute to it.

Containing the Cryptonomicon within itself, Stephenson's novel can be understood as a long footnote to this Kabala, as an explanation in figurative language of the significance of code that the novel posits as the dialectical opposite to the deceptive surfaces and fancy analogies in which it, as a literary work, necessarily indulges. Thus the novel at once contains within its own novelistic body the Cryptonomicon and postulates this fiction as a linguistic Other existing in a space exterior to itself. Elizabeth Weise quotes Stephenson as saying that "language...is the reverse of cryptography," because, as she explains, language "is about conveying information, not hiding it." In another sense, however, figurative language hides within linguistic formulations what code reveals. It is significant in this regard that the novel contains an appendix by expert cryptographer Bruce Schneier, explaining the Solitaire encryption algorithm Enoch Root uses to communicate with Randy in jail. This encryption scheme is sufficiently strong that it is possible the National Security Agency would prohibit its exportation in electronic form, the only textual form it monitors. In Cryptonomicon, Stephenson included an e-mail from Enoch Root to Randy in which Enoch gives him the Perl script for the Solitaire algorithm (480), leading to the delicious irony that this print book can be exported legally, whereas the code it inscribes with durable marks, if translated into electronic voltages, may not be legally exported. In a literal sense, the text's natural language here operates as a metaphoric shell encapsulating a hidden core of code. Moreover, if Schneier's appendix is sufficiently astute, it could aspire to be included in the Cryptonomicon as a main entry, whereas the best the novel could hope for, as a writing practice linguistic and metaphorical rather than coded and algorithmic, would be to make it into an appendix. In this playfully speculative scenario, Cryptonomicon is turned inside out to reveal the Cryptonomicon as the powerful core that can access command lines directly, whereas the novel resembles the Windows or Macintosh operating system that conceals the real command structures from the reader. The oxymoronic knots can now be understood as sites where the reader becomes aware of slips that transform something into its opposite, as here the appendix becomes the core and the novel becomes the appendix. The point of entangling the opposites so that they cannot be separated now emerges as a covert justification for figurative language, for effective communication in the digital realm requires an understanding both of machine-executable code and human-oriented metaphors.
On multiple levels and in diverse ways, then, *Cryptonomicon* bears witness to the digital technologies that created it. In its structure, dialectical dynamics, and subterranean narrative, it incorporates in linguistic form the crisis in writing practices that materially marked its electronic body, understood simultaneously as a clash of operating systems, a struggle of open source utopianism against capitalistic greed, and an opposition between the command structures of code and the analogical surfaces of figurative language. To probe these complexities, we require critical strategies that are attentive to the technologies producing texts as well as to the texts as linguistic/conceptual structures—that is to say, we require material ways of reading that recognize texts as more than sequences of words and spaces.\textsuperscript{18} Rather, they are artifacts whose materialities emerge from negotiations between their signifying structures and the technologies that produce them. Whereas the New Criticism of the mid-twentieth century isolated texts from political contexts and technological productions, the New Materialism I am advocating in this book and practicing in this chapter insists that technologies and texts be understood as mutually interpenetrating and constituting one another.
6 Flickering Connectivities in Shelley Jackson’s Patchwork Girl

So far in part 2 we have explored intermediation between print and electronic texts in two ways: first, by considering the media translation that occurs when print documents are transformed into an electronic medium like the Web, and second, by exploring a case where a print document in the form of a book nevertheless bears the marks of code within its body. What remains is the instance of a text conceived as a digital artwork from the beginning, a “first generation electronic object,” in Matthew Kirschenbaum’s apt phrase. Shelley Jackson’s brilliantly realized hypertext Patchwork Girl is an electronic fiction that manages to be at once highly original and intensely parasitic on its print predecessors. I have chosen Patchwork Girl for my tutor text because I think it remains one of the most interesting of electronic fictions and because it is deeply concerned with how digital media enact and express new kinds of subjectivity. To measure the difference between the subjectivity envisioned by Patchwork Girl and that associated with the late eighteenth-century and nineteenth-century texts it parasitizes, I will begin by returning to the eighteenth century, when a constellation of economic, class, and literary interests clashed over defining the nature of literary property. Although the decisions that emerged from the ensuing legal battles were no sooner formulated than they were again contested in legal and literary arenas, the debate is nevertheless useful as a foil to Jackson’s work, which positions itself against the subjectivity associated with this moment in the print tradition.

Subjectivity and the Legal Fictions of Copyright

In his important book Authors and Owners, Mark Rose shows that copyright did more than provide a legal basis for intellectual property. The discussions
that swirled around copyright also solidified ideas about what counted as creativity, authorship, and proper literature. One of the important assumptions that emerged out of this debate was the assertion that the literary work does not consist of paper, binding, or ink. Rather, the work was seen as an immaterial mental construct. Here is Justice Blackstone’s assessment: “Style and sentiment are the essentials of a literary composition. These alone constitute its identity. The paper and print are merely accidents, which serve as vehicles to convey that style and sentiment to a distance” (quoted in Rose, 80). The abstraction of the literary work from its physical basis, discussed in chapter 4 in terms of editing practices, had the effect of obscuring the work’s relation to the economic network of booksellers who purchased shares in the work and used their economic capital to produce books. The more abstract the work became, the further removed it was from the commodification inherent in book sales, and consequently the more exalted the cultural status that could be claimed for it. Cultural capital was maximized by suppressing the relation between cultural and economic capital, although it was primarily the profit motive that stimulated the booksellers’ interest in promoting literary works as immaterial works of art. As a result of these representations, literary works operated somewhat like the ideal work discussed in chapter 4, in that they were not to be sullied by the noise of embodiment.

Although Rose does not develop the gender implications of an evaluation that places abstraction above embodiment, his examples reveal that the men producing these discourses had in mind the male writer, whose creative masculine spirit gave rise to works of genius that soared above their material instantiations in books. Thus a hierarchy of values emerged that placed at the ascendant end of the scale the disembodied, the creative, the masculine, and the writer who worked for glory; at the lower end of the scale were the embodied, the repetitive, the feminine, and the writer who worked for money.

Rose traces a series of developments that progressively abstracted the work away from its material instantiation, only to re-embody it in purer, more transcendental form. Although Blackstone located the work both in “style” and “sentiment,” subsequent commentators realized that the part of the work that could be secured as private intellectual property, and therefore the part appropriate for copyright protection, was the way ideas were expressed, rather than the ideas themselves. This aspect of the work—“style” or “expression”—was frequently likened to clothes that dressed the thought. Through the clothes of expression, the body of the work entered into social legibility and was recognized as partaking in the social regulations that governed exchanges between free men who could hold private property. As Rose
makes clear, it was the author's style—the clothes he selected to dress his thought—that was considered most indicative of his individual personality, so style was also associated with the originality that was rapidly becoming the touchstone of literary value. These interrelations were further extended through metaphors that identified style with the author's face. Note that it was the face and not the body. Not only was the body hidden by clothes; more significantly, the body was not recognized as a proper site in which the author's unique identity could be located. The final move was to reconstitute the author from the "face" exhibited in the style of his works, but by now bodies of all sorts had been left so far behind that critics felt free to attach this ethereal, noncorporeal face to any appropriate subject. (The prime example was the detachment of "Shakespeare" from the historical actor and playwright and the reassignment of his "face" to such august personages as Francis Bacon.) As Rose observes, these developments operated as a chain of deferrals sliding from the embodied to the disembodied, the book to the work, the content to the style, the style to the face, the face to the author's personality, the personality to the author's unique genius. The purpose of these deferrals, he suggests, was to arrive at a transcendental signified that would guarantee the enduring value of the work as a literary property, establishing it as a "vast estate" that could be passed down through generations without diminishing in value.

In the process, certain metaphorical networks were established that continued to guide thinking about literary properties long after the court cases were settled. Perhaps the most important were metaphors equating the work with real estate. The idea that a literary work is analogous to real estate facilitated the fitting together of arguments about copyright with the Lockean liberal philosophy that C. P. Macpherson has labeled possessive individualism.¹ Rose finds it appropriate that James Thomson's long landscape poem *The Seasons* became the occasion for a major copyright case, for it was read as a poet transforming the landscape into his private literary property by mixing with it his imagination, just as the Lockean man who owns his person first and foremost creates private property by mixing it with his labor (113). Whereas the landholder supplies physical labor, the author supplies mental labor, particularly the originality of his unique "style." Rose makes the connection clear: "The Lockean discourse of property, let us note, was founded on a compatible principle—'Every Man has a Property in his own Person' was Locke's primary axiom—and thus the discourse of originality readily blended with the eighteenth-century discourse of property" (121).

Macpherson pointed out years ago that there is implicit in Locke a chicken-and-egg problem. Whereas Locke presents his narrative as if market
relations arose as a consequence of the creation of private property, it is clear that the discourse of possessive individualism is permeated through and through by market relations from the beginning. Only in a society where market relations were predominant would an argument defining the individual in terms of his ability to possess himself be found persuasive. The same kind of chicken-and-egg problem inheres in the notion of literary property. The author creates his literary property through the exercise of his original genius, yet it is clear that writing is always a matter of appropriation and transformation, from syntax to literary allusions and the structure of tropes. A literary tradition must precede an author’s inscriptions for literature to be possible as such, yet this same appropriation and reworking of an existing tradition is said to produce “original” work. Arguments about literary property were persuasive in part because they fit together so well with prevailing notions of liberal subjectivity, but that same fit implied common blindesses.

In particular, anxiety about admitting that writing was a commercial enterprise haunted many of the defenders of literary properties. In a fine image, Rose remarks that “the sense of the commercial is, as it were, the unconscious of the text” for such defenders of literary property as Samuel Johnson and Edward Young (118). There were other suppressions as well. The erasure of the economic networks that produced the books went along with the erasure of the technologies of production, a tradition that continued beyond print technologies to other media, and beyond Britain to other countries. Rose recounts, for example, Burrow-Giles Lithographic Co. v. Sarony (1884), the landmark case in the United States in which the court decided that the photograph derived entirely from the photographer’s “‘original mental conception’” and thus owed nothing to the camera that produced it (cited in Rose, 135). The decision clearly relied on the notion of the author’s “originality” as a key component of an artistic work. The commitment to originality led to especially strained interpretations when the work was collaborative, for “originality” implied that the work resulted from the unique vision of one gifted individual, not from the joint efforts of a team of skilled craftsmen. Thus the legal fiction was invented that allowed an organization to become the “author,” a fiction routinely evoked to this day for films collaboratively produced by perhaps hundreds of cultural workers.²

The patchwork quality of these legal fictions indicates the fragility of the consensus hammered out in the eighteenth century. Over subsequent decades and centuries this consensus was challenged repeatedly in court. It was also challenged through artistic productions that sought to wrench the idea of the writer away from the transcendent ideal of the autonomous

146 Storing: Print and Etext
creator, from the automatic writing of the Surrealists to the theoretical arguments of Michel Foucault in his famous essay “What Is an Author?” Patchwork Girl contributes to these ongoing contestations by exploiting the specificities of the digital medium to envision a very different kind of subjectivity than that which emerged in eighteenth-century legal battles over copyright. Those aspects of textual production that were suppressed in the eighteenth century to make the literary work an immaterial intellectual property—the materiality of the medium, the print technologies and economic networks that produced the work as a commodity, the collaborative nature of many literary works, the literary appropriations and transformations that were ignored or devalued in favor of “originality,” the slippage from book to work to style to face—form a citational substrata for Jackson’s fiction, which derives much of its energy from pushing against these assumptions. When Patchwork Girl foregrounds its appropriation of eighteenth-century texts, the effect is not to reinscribe earlier assumptions but to bring into view what was suppressed to create the literary work as intellectual property. In Patchwork Girl, the unconscious of eighteenth-century texts becomes the ground and surface for the specificity of this electronic text, which delights in pointing out that it was created not by a fetishized unique imagination but by many actors working in collaboration, including the “vaporous machinery” of digital text.³

Creating a Monster: Subject and Text

Patchwork Girl’s emphasis on appropriation and transformation begins with the main character, which is reassembled from the female monster in Mary Shelley’s Frankenstein. Recall that in Frankenstein the male creature, having been abandoned on the night of his creation and having learned through hard experience that humankind finds him repulsive, returns to beg Frankenstein to create a mate for him, threatening dire revenge if he does not. Frankenstein agrees and assembles a female monster, but before animating her, he is struck with horror at the sight of her body and the prospect that she and the male creature will have sex and reproduce. While the howling creature watches at the window, Frankenstein tears the female body to bits. In Shelley Jackson’s text the female “monster” (as she refers to herself) reappears, put together again by Mary Shelley. Like the female monster’s body, the body of this hypertext is also seamed and ruptured, composed of disparate parts with extensive links between them. The main components of the hypertextual corpus are “body of text,” containing the female monster’s narration and theoretical speculations on hypertextual and human bodies, “graveyard,” where the stories of the creatures whose parts were
used to make the female monster are told, “story,” in which are inscribed excerpts from the relevant passages in Frankenstein along with the monster’s later adventures; “journal,” the putative journal of Mary Shelley where she records her interactions with the female monster; and “crazy quilt,” a section containing excerpts from Frank Baum’s Patchwork Girl of Oz, as well as reinscriptions from other parts of the text.

From the hypertext links and metaphoric connections between these parts, a vivid picture emerges that radically alters the eighteenth-century view of the subject as an individual with a unique personality and the Lockean ability to possess his own person. For the female monster, it is mere common sense to say that multiple subjectivities inhabit the same body, for the different creatures from whose parts she is made retain their distinctive personalities, making her an assemblage rather than a unified self. Her intestines, for example, are taken from Mistress Anne, a demure woman who prided herself on her regularity. The monster’s large size required additional footage, so Bossy the cow contributed, too. Bossy is as explosive as Mistress Anne is discreet, leading to expulsions that pain Mistress Anne, who feels she must take responsibility for them. The conflict highlights the monster’s nature as a collection of disparate parts. Each part has its story, and each story constructs a different subjectivity. In her article “Stitch Bitch,” Jackson suggests that what is true for the monster is also true for us: “The body is a patchwork,” Jackson remarks, “though the stitches might not show. It’s run by committee, a loose aggregate of entities we can’t really call human, but which have what look like lives of a sort. . . . These parts are certainly not what we think of as objects, nor are they simple appendages, directly responsible to the brain” (527).

The distributed nature of the monster’s subjectivity—and implicitly ours as well—is further performed in the opening graphic. Even before the title screen appears, an image comes up entitled “her,” displaying a woman’s body against a black ground. Traversing the body are multiple dotted lines, as if the body were a crazy quilt of scars or seams; retrospectively the user can identify this image as representing the female monster’s patched body, among other possible referents. Cutting diagonally across the ground of this image is a dotted line, the first performance of a concept central to this hypertext. As the user progresses further into the text, a map view of the different parts opens up, displayed in the Storyspace software (in which the text is written) as colored rectangles that, when clicked, contain smaller rectangles representing paragraph-sized blocks of text or lexias. The lexia “dotted line” explicates the significance of this image: “The dotted line is the best line,” this lexia proclaims, because the dotted line allows difference without “cleaving
apart for good what it distinguishes” (body of text/dotted line). Hovering between separation and connection, the dotted lines mark the monster’s affinities with the human as well as her differences from other people.

The dotted line is also significant because it suggests that the image can move from two to three dimensions, as in a fold-up that lets “pages become tunnels or towers, hats or airplanes” (body of text/dotted line). The movement out of the flat plane evokes the hypertext’s stacks, which suggest through their placement a three-dimensional depth to the screen and a corresponding ability to emerge from the depths or recede into them. The text mobilizes the specificity of the technology by incorporating the threedimensionality of linked windows as a central metaphor for the fiction’s own operations. Like the hypertext stacks, the monster will not be content to reside quiescent on the page but moves fluidly between the world represented on the pages of Mary Shelley’s text and the three-dimensional world in which Mary Shelley lives as she writes this text. Lying on a plane but also suggesting a fold upward, the dotted line becomes a kind of joint or scar that marks the merging of fiction and metafiction in a narrative strategy that Gérard Genette has called “metalepsis,” the merging of diegetic levels that normally would be kept distinct. The line signals the dangerous potential of the monstrous text/body to disrupt traditional boundaries in a border war where the stakes are human identity. In an interview with Rita Raley, Shelley Jackson remarked that “a radical text can’t just depict monstrosity, but must be itself monstrous.”

In hypertext fashion, let us now click back to “her,” the opening graphic, and explore some of the other links radiating out from this lexia. Linked to “her” is “phrenology,” a graphic that further performs the metaphoric overlay of body and text. Showing a massive head in profile, “phrenology” displays the brain partitioned by lines into a crazy quilt of women’s names and enigmatic phrases. When we click on the names, we are taken to lexias that tell the stories of the women from whose parts the monster was assembled; clicking on the phrases takes us to lexias that meditate on the nature of “her” multiple subjectivities. Thus we enter these textual blocks through a bodily image, implying that the text lies within the represented body. This dynamic inverts the usual perception the reader has with print fiction that the represented bodies lie within the book. In print fiction, the book as physical object often seems to fade away as the reader’s imagination re-creates the vaporous world of the text, so that reading becomes, in Friedrich Kittler’s phrase (discussed in the prologue and chapter 1), a kind of hallucination. Therefore, the bodies populating the fictional world seem to be figments of the reader’s imagination. First comes the immaterial mind, then from it
issue impressions of physical beings. Here, however, the body is figured not as the product of the immaterial work but a portal to it, thus inverting the usual hierarchy that puts mind first. Moreover, the partitioning of the head, significantly seen in profile so that it functions more like a body part than a face delineating a unique identity, emphasizes the multiple, fragmented nature of the monster’s subjectivity. The body we think we have—coherent, unified, and solid—is not the body we actually are, Jackson claims in “Stitch Bitch.” Like the monster’s body, our corporeality, which she calls the “banished body,” is “a hybrid of thing and thought. . . . Its public image, its face is a collage of stories, borrowed images, superstitions, fantasies. We have no idea what it ‘really’ looks like” (523).

Although the monster’s embodiment as an assemblage may seem unique, Jackson employs several strategies to demonstrate that it is not nearly as unusual as it may appear. Drawing on the contemporary discourses of technoscience, the lexis “bio” points out that “the body as seen by the new biology is chimerical. The animal cell is seen to be a hybrid of bacterial species. Like that many-headed beast [the chimera], the microbeast of the animal cells combines into one entity, bacteria that were originally freely living, self-sufficient and metabolically distinct” (body of text/bio). In this view, the “normal” person is already an assemblage, designed so by evolutionary forces that make Frankenstein appear by comparison as an upstart amateur. Other perspectives yield the same conclusion. Boundaries between self and other are no more secure than those between plant, animal, and human. “Keep in mind,” the monster warns us in “hazy whole,” that “on the microscopic level, you are all clouds. There is no shrink-wrap preserving you from contamination: your skin is a permeable membrane. . . . If you touch me, your flesh is mixed with mine, and if you pull away, you may take some of me with you, and leave a token behind” (body of text/hazy whole). In “Stitch Bitch,” Jackson writes that the mind, “what Zen calls monkey-mind and Bataille calls project, has an almost catatonic obsession with stasis, centrality, and unity.” The project of writing, and therefore of her writing most of all, is to “dismantle the project” (527).

Following this philosophy, Patchwork Girl not only normalizes the subject-as-assemblage but also presents the subject-as-unity as a grotesque impossibility. The narrator satirizes the unified subject by evoking visions of resurrection, when the body will be “restored to wholeness and perfection, even a perfection it never achieved in its original state” (body of text/resurrection). But how can this resurrection be performed? What about amputees who have had their limbs eaten by other creatures? Following the medieval theological notion that the resurrected body will “take its matter,
if digested, from the animal’s own flesh,” the narrator imagines those parts re-forming themselves from the animals’ bodies. The “ravens, the lions, the bears, fish and crocodiles . . . gang up along shorelines and other verges to proffer the hands, feet and heads that they are all simultaneously regurgitating whole . . . big toe scraping the roof of the mouth, tapping the teeth from the inside, seeming alive, wanting out” (body of text/resurrection/remade). Bizarre as this scenario is, it is not as strange as the problems entertained by medieval theologians trying to parcel everything out to its proper body. Some theologians theorized that eaten human remains will be reconstituted from the “nonhuman stuff” the creature has eaten, a proposition that quickly becomes problematic, as the narrator points out. “But what (hypothesized Aquinas) about the case of a man who ate only human embryos who generated a child who ate only human embryos? If eaten matter rises in the one who possessed it first, this child will not rise at all. All its matter will rise elsewhere: either in the embryos its father ate . . . or in the embryos it ate” (body of text/resurrection/eaten). This fantastic scenario illustrates that trying to sort things out to achieve a unity (that never was) results in confusions worse than accepting the human condition as multiple, fragmented, chimerical.

Suturing the (Textual) Body: Sewing and Writing in Storyspace
As the unified subject is thus broken apart and reassembled as a multiplicity, Patchwork Girl also highlights the technologies that make the textual body itself a multiplicity. To explore this point, consider how information moves across the interface of the CRT screen, compared with books. In print fiction, the reader decodes a durable script to create in her mind a picture of the verbally represented world. With an electronic text, the encoding/decoding operations are distributed between the writer, computer, and user. The writer encodes, but the user does not simply decode what the writer has written. Rather, the computer decodes the encoded information, performs the indicated operations, and then re-encodes the information as flickering images on the screen. As the discussion in chapter 2 makes clear, the transformation of the text from durable inscription into a flickering signifier means that it is mutable in ways that print is not, and this mutability serves as a visible mark of the multiple levels of encoding/decoding intervening between user and text. Through its flickering nature, the text-as-image teaches the user that it is possible to bring about changes in the screenic text that would be impossible with print (changing fonts, colors, type sizes, formatting, etc.). Such changes imply that the body represented within the virtual space is always already mutated, joined through a flexible,
multilayered interface with the user’s body on the other side of the screen. In “Stitch Bitch,” Jackson puts it this way: “Boundaries of texts are like boundaries of bodies, and both stand in for the confusing and invisible boundary of the self” (535).

These implications become explicit in one of the opening graphics of Patchwork Girl, “hercut 4.” In this image, the monster’s body, which was previously displayed with dotted lines traversing it, has now become completely dismembered, with limbs distributed into rectangular blocks defined by dotted lines, thus completing the body/text analogy by making the dispersion of body parts visually similar to the hypertext lexias connected to each other in the Storyspace display by lines representing hypertext links. In addition, the upper right-hand corner of the image looks as though it has been torn off, revealing text underneath. Although fragmentary, enough of the text is visible to allow the user to make out instructions on how to create links to “interconnect documents and make it easier to move from place to place [word obscured].” Thus the text underlying the image points to the Storyspace software program used to create the work, so the entire image functions as an evocation of the multilayered coding chain Mutually Mutating across interfaces to create flickering signifiers.

In her interview with Rita Raley, Jackson comments that the idea for creating a fiction that would use a patchwork quilt as a central metaphor came to her when she looked at the map view of Storyspace, which appears on the screen as linked and nested rectangular boxes (within boxes within boxes). “When I first started working in electronic media, the applications all seemed fraught with metaphoric implications, which not only bled into the work I was doing but inspired it,” Jackson comments. She continues, “I wouldn’t have written Patchwork Girl at all if I hadn’t been puzzling over hypertext in general, and I wouldn’t have found the graveyard and quilt metaphors I employed in that piece nearly so ready to hand if I hadn’t been using an application, Storyspace, that involved moving little rectangles around inside bigger rectangles!” As these comments suggest, much of the genius of Patchwork Girl derives from Jackson’s ability to exploit the idiosyncrasies of Storyspace for her own purposes. Created by Mark Bernstein of Eastgate Systems, in collaboration with Jay Bolter and Michel Joyce, Storyspace was one of the first comprehensive hypertext writing systems.9 When the Web was still in its infancy, Storyspace provided a flexible and relatively easy-to-use tool for creating lexias, linking structures, and “guard fields” (conditional links) that allowed authors to establish pre-scripted sequences. From about 1987 through 1995, first-generation hypertext writers used Storyspace to create some of the first widely discussed literary hyper-
texts, including Michael Joyce’s *afternoon*, Stuart Moulthrop’s *Victory Garden*, and, of course, *Patchwork Girl*. These works have often been called (in retrospect) the “Storyspace school” of hypertext writing, and it is worthwhile to consider what such a designation means.

Storyspace is conceived first and foremost as a software for creating and linking blocks of text. The principle unit is what the Storyspace manual calls a “writing space,” and although it is possible (with some difficulty, as I found when I tried to use the software) to import images and sound (WAV) files, the basic assumption is that the writing spaces will be filled primarily with text. The software cannot, for example, create animations or accommodate QuickTime movies. It was designed before the Web took off, and its Web capabilities remain limited. To port a Storyspace work to the Web, image files stored in the Storyspace format have to be manually converted into JPEG or GIF files, and the articulation between the text styles used in Storyspace and Web text styles is somewhat unpredictable. Moreover, the different views through which Storyspace displays a work’s structure (such as the map view, chart view, and outline view) do not translate to the Web, and so the visual display of structure that is one of Storyspace’s strengths is lost in the Web translation. Links from graphics also do not work, and sound files associated with writing spaces will not play. Because of these limitations, someone intending to create a work for the Web would be much better off beginning with a Web authoring tool rather than trying to retrofit a work created in Storyspace for the Web.

In *Patchwork Girl*, Jackson uses only limited graphics and no sound, video, or animation. Moreover, she adapts her text to accommodate the limited ways in which the text’s structure can be displayed. A good example is the “crazy quilt” section, in which Storyspace’s extremely limited palette of eight colors does not seem overly restrictive, given the fact that crazy quilts were traditionally constructed from fabric scraps and did not necessarily have an artistically compelling or unified color scheme. Her most wide-ranging inspiration, as we have seen, was to use the visual display of nested and linked boxes as metaphors for the fragmented and dispersed body of her protagonist. Working with a software that can seem unbearably restrictive and rigid judged by today’s standards of fluid animations, layered images, morphings, and sonic environments, she made a virtue of necessity by appropriating its visual displays and hierarchical structures as primary metaphors for the seamed and ruptured bodies foregrounded in her work.

The specificities of the software sharply distinguish her text from the print works on which she draws. Of course, print texts are also dispersed, in the sense that they cite other texts at the same time they transform those
citations by embedding them in new contexts, as Derrida among others has taught us. Nonetheless, the specificity of an electronic hypertext like *Patchwork Girl* comes from the ways in which it mobilizes the resources (and restrictions) of the software and medium to enact subjectivities distributed in flexible and mutating ways across author, text, interface, and user. As we saw in chapters 2 and 4, electronic text is less durable and more mutable than print, and the active interface is not only multilayered but itself capable of cognitively sophisticated acts. By exploiting these characteristics, Jackson constructs distinctions between author and character, user and represented world, as permeable membranes that can be configured in a variety of ways.

In *Patchwork Girl*, one of the important metaphoric connections expressing this flickering connectivity is the play between *sewing* and *writing*. Within the narrative fiction of *Frankenstein*, the monster’s body is created when Frankenstein patches the body parts together; at the metafictional level, Mary Shelley creates this patching through her writing. Within *Patchwork Girl*, however, it is Mary Shelley (not Frankenstein) who assembles the monster, and this patching is specifically identified with the characteristically feminine work of sewing or quilting. The fact that this sewing takes place within the fiction makes Mary Shelley a character written by Shelley Jackson as well as an author who herself writes. This situation becomes more complex when Mary Shelley is shown both to sew and write the monster, further entangling fiction and metafiction. “I had made her, writing deep into the night by candlelight,” Mary Shelley narrates, “until the tiny black letters blurred into stitches and I began to feel that I was sewing a great quilt” (journal/written). This lexia is linked with “sewn”: “I had sewn her, stitching deep into the night by candlelight, until the tiny black stitches wavered into script and I began to feel that I was writing, that this creature I was assembling was a brash attempt to achieve by artificial means the unity of a life-form” (journal/sewn).

In the Raley interview, Jackson remarks that when she first began writing hypertext she “discovered that the link was not neutral, but was itself a kind of argument, one I should not duplicate in my prose. I had to learn to allow the link to make points that I would formerly have spelled out in words.” So here the link between writing and sewing, a stereotypical feminine activity, serves to mark this as a female—and feminist—production. Throughout, the relation between creature and creator in *Patchwork Girl* stands in implicit contrast to the relation between the male monster and Victor Frankenstein. Whereas Victor participates, often unconsciously, in a dynamic of abjection that results in tragedy for both creator and creature, in *Patchwork Girl* Mary feels attraction and sympathy rather than horror.
and denial. In contrast to Victor's determination to gain preeminence as a great scientist, Mary's acts of creation are hedged with qualifications that signal her awareness that she is not so much conquering the secrets of life and death as participating in forces greater than she. In "sewn," the passage continues with Mary wondering whether the monster's fragmented unity is "perhaps more rightfully given, not made, continuous, not interrupted; and subject to divine truth, not the will to expression of its prideful author. Author, I amend, smiling" (journal/sewn). The self-conscious placement of herself in an inferior position of "authorless" compared to the male author—surely in relation to her husband most of all—is connected in Jackson's text with subtle suggestions that the monster and Mary share something Mary and her husband do not, an intimacy based on equality and female bonding rather than on subservience and female inferiority. Although Mary confesses to feeling sometimes frightened of the female monster, she also feels compassionate and even erotic attraction toward her creation. Whereas Victor can see his monster only as a competitor whose strength and agility are understood as threats, Mary exults in the female monster's physical strength, connecting it with the creature's freedom from the stifling conventions of proper womanhood. When the female monster leaves her creator to pursue her own life and adventures, Mary, unlike Victor, takes vicarious delight in her creation's ability to run wild and free.

In her comprehensive survey of the status of the body in the Western philosophic tradition, Elizabeth Grosz has shown that there is a persistent tendency to assign to women the burden of corporeality, leaving men free to imagine themselves as disembodied minds—an observation that has been familiar to feminists at least since Simone de Beauvoir. Even philosophers as sympathetic to embodiment as Maurice Merleau-Ponty and Mark Johnson are often blind to issues of gender, implicitly assuming the male body as the norm. The contrast between woman as embodied female and man as transcendent mind is everywhere at work in the comparison between Mary's care for the female monster and Victor's astonishing failure to anticipate any of the male creature's corporeal needs, including the fact that making him seven feet tall might make it difficult for the monster to fit into human society. Whereas the disembodied text of the eighteenth century work went along with a parallel and reinforcing notion of the author as a disembodied face, in Jackson's text the emphasis on body and corporeality goes along with an embodied author and equally material text. "The banished body is not female, necessarily, but it is feminine," Jackson remarks. "That is, it is amorphous, indirect, impure, diffuse, multiple, evasive. So is what we learned to call bad writing. Good writing is direct, effective, clean as a bleached bone.
Bad writing is all flesh, and dirty flesh at that. . . . Hypertext is everything that for centuries has been damned by its association with the feminine” (“Stitch Bitch,” 534).

Reinforcing this emphasis on hypertext as “femininely” embodied are links that re-embodify passages from Shelley's text in contexts that subtly or extravagantly alter their meaning. A stunning example is the famous passage from the 1831 preface where Mary Shelley bids her “hideous progeny go forth and prosper” (quoted in story/severance/hideous progeny). “I have an affection for it, for it was the offspring of happy days, when death and grief were but words which found no true echo in my heart. Its several pages speak of many a walk, many a drive, and many a conversation, when I was not alone; and my companion was one who, in this world, I shall never see more. But this is for myself; my readers have nothing to do with these associations” (story/severance/hideous progeny). In the context of Frankenstein, “hideous progeny” can be understood as referring both to the text and to the male monster. As Anne Mellor points out, taking the text as the referent places Mary Shelley in the tradition of female writers of Gothic novels who were exposing the dark underside of British society. When the monster is taken as the referent, the passage suggests that Mary Shelley's textual creature expresses the fear attending birth in an age of high mortality rates for women and infants—a fear that Mary Shelley was to know intimately from wrenching personal experience. Moreover, in Barbara Johnson's reading of Frankenstein, Shelley is also giving birth to herself as a writer in this text, so her authorship also becomes a “hideous progeny.” The rich ambiguities that inhere in the phrase make Jackson's transformation of it all the more striking.

In Jackson's work, the passage's meaning is radically changed by the lexia “Thanks,” to which it is linked. In this lexia, the female monster says, “Thanks, Mary, for that kindness, however tinged with disgust. Hideous progeny: yes, I was both those things, for you, and more. Lover, friend, collaborator. It is my eyes you describe—with fear, yes, but with fascination: yellow, watery, but speculative eyes” (story/severance/hideous progeny/thanks). The linked passage changes the referent for “hideous progeny,” so that the female monster occupies the place previously held by the male creature, the text of Frankenstein, and Mary Shelley as writer. All these, the link implies, are now embedded as subtexts in the female monster, who herself is indistinguishable from the ruptured, seamed textual body that both contains her and is contained by her. “The hypertext is the banished body,” Jackson remarks. “Its compositional principle is desire” (“Stitch Bitch,” 536). If desire is enacted by activating links, this linked text not only expresses
the user's desire but also Mary's desire for her monstrous creation. Its most subversive—and erotic—implication comes in changing the referent for the lost companion "who, in this world, I shall never see more." Now it is not her husband whose loss Mary laments but the female monster—the "lover, friend, collaborator" without whom Patchwork Girl could not have been written.  

Among Patchwork Girl's many subversions is its attack on the "originality" of the work. "In collage, writing is stripped of the pretense of originality," Jackson writes. "One can be surprised by what one has to say in the forced intercourse between texts or the recombinant potential in one text, by other words that mutter inside the proper names" ("Stitch Bitch," 537). This muttering becomes discernible in Shelley Jackson's playful linking of her name with Mary Shelley's. The title screen of Jackson's work performs this distributed authorship, for it says Patchwork Girl is "by Mary/Shelley & herself," a designation that names Mary Shelley, Shelley Jackson, and the monster all as authors.  

Jackson's subversions of her publisher's proprietary claims continue in a section entitled "M/S," a naming that invites us to read the slash as both dividing and connecting Mary Shelley and Shelley Jackson. When Jackson reinscribes Shelley's text into hers, the act is never merely a quotation, even when the referents are not violently wrenched away from the originals as in "Thanks"; witness the fact that Jackson divides Shelley's text into lexias and encodes it into the Storyspace software. Rather, the citation of Shelley is a performative gesture indicating that the authorial function is distributed across both names, as the nominative they share between them would suggest (Mary Shelley/Shelley Jackson). In addition, the slash in M/S (ironically interjected into the MS that would signify the "original" material text in normal editorial notation) may also be read as signifying the computer interface connecting/dividing Mary Shelley (a character in Patchwork Girl) with Shelley Jackson (the author who sits at the keyboard typing the words that, by conflation Mary's sewing and writing, make "Shelley" into both character and writer).  

The computer also actively participates in the construction of these flickering signifiers, in all their distributed, mutable complexity. "There is a kind of thinking without thinkers," the narrator declares, "Matter thinks. Language thinks. When we have business with language, we are possessed by its dreams and demons, we grow intimate with monsters. We become hybrids, chimeras, centaurs ourself: steaming flanks and solid redoubtable hoofs galloping under a vaporous machinery" (body of text/it thinks). The surface of the text-as-image may look solid, this passage suggests, but the

Flickering Connectivities in Shelley Jackson's Patchwork Girl
"vaporous machinery" generating it marks that solidity with the mutability and distributed cognition characteristic of flickering signifiers. In "Stitch Bitch," Jackson argues that even the subject considered in itself is a site for distributed cognition: "Thinking is conducted by entities we don't know, wouldn't recognize on the street," Jackson writes. "Call them yours if you want, but puff and blow all you want, you cannot make them stop their work one second to salute you" (527).

The trace of flickering signification is as pervasive and inescapable in this text as it is with the constantly refreshed CRT screen. In one of the fiction's climactic scenes, Mary and the monster, having become lovers and grown physically intimate with each other's bodies, decide to swap patches of skin. Each lifts a circle of skin from her leg, and Mary sews her flesh onto the monster, and the monster's flesh onto her own human leg. This suturing of self onto other reveals more than a wish of lovers to join. Because Mary is the monster's creator in a double sense, at once sewing and writing her, the scene functions as a crossroads for the traffic between fiction and metafiction, writer and character, the physical body existing outside the textual frame sutured together with representations of the body in virtual space. Throughout, the narrator has been at pains to point out the parallels between surgery and writing: "Surgery was the art of restoring and binding disjointed parts. . . . Being 'seamed' with scars was both a fact of eighteenth-century life and a metaphor for dissonant interferences ruining any finely adjusted composition" (body of text/mixed up/seam'd). One of the sutures that reappears in several lexias is the "intertwisted" closing that "left needles sticking in the wounds—in manner of tailors—with thread wrapped around them" (body of text/mixed up/seam'd). Thus a metaphorical relay system is set up between surgery (particularly sutures using needle and thread), sewing, the seamed body, and writing.

Jackson uses this relay system of surgery/sewing/writing to set up an argument about "monstrous" writing that reverberates throughout the text. The narrator points out that "the comparison between a literary composition and the fitting together of the human body from various members stemmed from ancient rhetoric. Membranum or 'limb' also signified 'clause'" (body of text/typographical). As the narrator notes, this body/writing analogy allowed rhetoricians to conclude that writing was bad if it resembled a disproportioned or grotesque body. But the analogy was to go only so far; writing was not actually to become the body. Decorum dictated that the barrier between the book as physical object and the text as immaterial work be maintained intact. Joseph Addison found any writing distasteful that was configured in the shape of the object it represented, such as George
Herbert’s poem “Wings,” printed to resemble the shape of wings. The narrator remarks that Addison called this “visual turning of one set of terms into another” the “Anagram of a Man” and labeled it a classic example of “False Wit” (body of text/typographical). This aesthetic judgment is consistent with the assumption that the work is immaterial. Making the physical appearance of the text a signifying component was improper because it suggested that the text could not be extracted from its physical form. According to this aesthetic, bodies can be represented within the text, but the body of the text should not mix with these representations. To do so is to engage in what Russell and Whitehead would later call a “category mistake”—an ontological error that risks, through its enactment of hybridity, spawning monstrous bodies on both sides of the textual divide.

It is precisely such breaches of good taste and decorum that the monster embodies. Her body, “seam’d with scars,” becomes a metaphor for the ruptured, discontinuous space of the hypertext, which in its representations also flagrantly violates decorum by transgressively mixing fiction and metafiction in the same chaotic arena. When deciding what skin to swap, the monster, with Mary’s consent, significantly decides that “the nearest thing to a bit of my own flesh would be this scar, a place where disparate things are joined in a way that was my own” (story/severance/join). Composed of parts taken from other textual bodies (Frankenstein and Frank Baum’s Patchwork Girl of Oz, among others), this hypertext, like the monster’s body, hints that it is most itself in the links and seams that join one part to another. In a passage that conflates body and text, the monster says, “My real skeleton is made of scars, a web that traverses me in three dimensions. What holds me together is what marks my dispersal. I am most myself in the gaps between my parts” (body of text/dispersed). The user inscribes her subjectivity into this text by choosing which links to activate, which scars to trace. Contrary to the dictates of good taste and good writing, the scars/links thus function to join the text with the corporeal body of the user who performs the enacted motions that bring the text into being as a sequential narrative. Because these enactments take place through the agency of the computer, all these bodies—the monster, Mary Shelley, Shelley Jackson, the specificity of the electronic text, the active agency of the digital interface, and we the users—are made to participate in the mutating configurations of flickering signifiers.

As a result of these dotted-line connections/divisions, the text has a livelier sense of embodiment than is normally the case, and the bodies within the text are more densely coded with textuality. “I am a mixed metaphor,” the monstrous text/textualized monster declares. “Metaphor, meaning something like ‘bearing across,’ is itself a fine metaphor for my condi-

Flickering Connectivities in Shelley Jackson’s Patchwork Girl
tion. Every part of me is linked with other territories alien to it but equally mine... borrowed parts, annexed territories. I cannot be reduced, my metaphors are not tautologies, yet I am equally present in both poles of a pair, each end of the wire is tethered to one of my limbs. The metaphorical principle is my true skeleton” (body of text/metaphor me). The multilayered sense of “metaphor” here—a rhetorical trope of writing that is also a Storyspace link and a scar traversing the monster’s body—implies that the movement up and down fictional/metafictional levels is not limited to certain moments in the text but pervades the text as a whole, spreading along with (and becoming indistinguishable from) the “true skeleton” of the text/monster/software. In this fluid movement between bodies inside texts and texts inside bodies, “inside” is constantly becoming “outside” becoming “inside,” as if performing at the visible level of the text the linkages between different coding levels within the computer. The dynamic makes real for the user the fact that each visible mark on the screen, in contrast to the flat mark of print, is linked with multiple coding levels whose dimensionalities can expand or contract as the coding commands require. It is not entirely coincidental that the dynamic is also central to Elizabeth Grosz’s discussion of “volatile bodies,” in which she uses the Moebius strip as a metaphor indicating that bodies are constituted through cultural and linguistic forces that move both from the outside in and from the inside out. Like Patchwork Girl, Grosz understands bodies not as static structures but as sites where complex intermediations are enacted.

The dynamic inside/outside/inside is vividly, hauntingly represented in “body jungle,” in which the monster dreams herself inside a lush jungle landscape composed of body parts: beating hearts “roost like pheasants on high bone branches”; “intestines hang in swags from ribs and pelvic crests, or pile up like tires at the ankles of legs become trees”; “ovaries hang like kumquats from delicate vines” (story/falling apart/body jungle). The monster imagines passing days and nights in the jungle. “In the morning the convoluted clouds will think about me. They will block my view of the domed sky, which I know will bear faint suture marks, the knit junctures between once-soft sectors of sky.” In time she supposes that her legs will be dissolved by the acid dripping from the overhanging stomachs. “My bony stumps will sink deep; I will shuffle forward until I tire, then stand still. I will place the end of a vein in my mouth and suck it. At last I will no longer bother to remove it... I do not know how my skull will open, or if I will still know myself when my brain drifts up to join the huge, intelligent sky.” In this vision, she becomes a body part of some larger entity, perhaps the computer that thinks/dreams her, just as her parts were once autonomous entities that
have now been incorporated into the larger whole/ hole that she is. Jackson remarks in “Stitch Bitch” that in hypertext fiction there are especially powerful opportunities to “sneak up on reality from inside fiction . . . to turn around and look back on reality as a text embedded in a fictional universe” (534).

We can now see that in this text both the construction of multiple subjectivities and the reconfiguration of consciousness in relation to body are deeply bound up with the intermediating dynamics of flickering signification, which is constituted through the fluidly mutating connections between writer, interface, and user. It is not, however, the hypertext structure that makes Patchwork Girl distinctively different from print books. As Dictionary of the Khazars has taught us (along with similar works), print texts may also have hypertext structures. Rather, Patchwork Girl could be only an electronic text because the trace of the computer interface, penetrating deeply into its signifying structures, does more than mark the visible surface of the text; it becomes incorporated into the textual body. Flickering signification, which in a literal and material sense can be understood as producing the text, is also produced by it as a textual effect.

Through the complex enactment of linking structures, both within the text and within the distributed cognitive environment in which the text is read, Patchwork Girl brings into view what was suppressed in eighteenth-century debates over copyright. Instead of an immaterial work, this text foregrounds the materiality of fictional bodies, authorial bodies, users’ bodies, and the writing technologies that produce and connect them. Instead of valorizing originality, it produces itself and its characters through acts of appropriation and transformation that imply that writing and subjectivity are always patchworks of reinscription and innovation. Rejecting the notion of an author’s unique genius, this text self-consciously insists on the collaborative nature of its productions, from the monster as assemblage to the distribution of authorship between the monster “herself,” Mary Shelley, Shelley Jackson, the user, the computer, as well as other more shadowy actors.

Closure: Link, Lexia, and Memory

To complete the comparison between Patchwork Girl and the subjectivity implicit in eighteenth-century debates over copyright, let us now turn to the distinctions between style and idea, form and content, face and body that informed the invention of copyright. Although one could still talk about the “style” of Patchwork Girl, the text offers another set of terms in which to understand its complexities: the alternation between lexia and link, the
screen of text that we are reading versus the “go to” computer command that constitutes the hypertextual link in electronic media. In Patchwork Girl this alternation is performed through a network of interrelated metaphors, including tissue and scar, body and skeleton, presence and gap. Underlying these terms is a more subtle association of link and lexia with simultaneity and sequence. The eighteenth-century trope of the text as real estate has obviously been complicated by the distributed technologies of cyberspace. Moreover, when the print book becomes unbound in electronic media, time is affected as well. The chronotopes of electronic fictions function in profoundly different ways than the chronotopes of literary works conceived as books. Exploring this difference will open a window onto the connections that entwine the link and lexia together with simultaneity and sequence.

With many print books, the order of pages recapitulates the order of time in the lifeworld. Chronology might be complicated through flashbacks or flashforwards, but normally these flashes comprise episodes that stretch for many pages. There are, of course, notable exceptions, for example, Robert Coover’s print hypertext “The Babysitter.” Choosing not to notice such experimental print fictions, the narrator of Patchwork Girl remarks, “When I open a book I know where I am, which is restful. My reading is spatial and even volumetric. I tell myself, I am a third of the way down through a rectangular solid, I am a quarter of the way down the page, I am here on the page, here on this line, here, here, here” (body of text/this writing). In Patchwork Girl, as in many hypertexts, chronology is inherently tenuous because linking structures leap across time as well as space. As if recapitulating the processes of fragmentation and recombination made possible by digital technologies, Patchwork Girl locates its performance of subjectivity in the individual lexia. Since the past and the future can be played out in any number of ways, the present moment, the lexia we are reading right now, carries an unusually intense sense of presence, all the more so because it is a smaller unit of narration than normally constitutes an episode. “I can’t say I enjoy it, exactly,” the narrator comments. “The present moment is furiously small, a slot, a notch, a footprint, and on either side it is a seethe of possibility, the dissolve of alphabets and of me” (body of text/a slot, a notch).

Sequence is constructed by accumulating a string of present moments as the user clicks on links, as if selecting beads to string for a necklace. In contrast to this sequence is the simultaneity of the computer program. Within the non-Cartesian space of computer memory, all addresses are equidistant (within near and far memory, respectively), so all lexies are equally quick to respond to the click of the mouse (making allowance for those that load slower because they contain more data, usually images). This situa-
tion reverses our usual sense that time is passing as we watch. Instead, time becomes a river that always already exists in its entirety, and we create sequence and chronology by choosing which portions of the river to sample. There thus arises a tension between the sequence of lexias chosen by the user, and the simultaneity of memory space in which all the lexias already exist. The tension marks the difference between the narrator’s life as the user experiences it, and that life as it exists in a space of potentiality in which “everything could have been different and already is” (story/rethinking/a life).

When the narrator-as-present-subject seeks for the “rest of my life,” therefore, the situation is not as simple as a unified subject seeking to foresee a future stretching in unbroken chronology before her. To find “the rest of my life,” the narrator must look not forward into the passing of time but downward into the computer space in which discrete lexias lie jumbled together (in her metaphorical view, which neglects for poetic effect the computer’s precise address system). “I sense a reluctance when I tow a frame forward into the view,” the narrator says, in an utterance that conflates writer, user, and character, as if reflecting within the jumble of fiction and metafiction the heterogeneous time represented by the lexias. “It is a child pulled out of a fantastic underground hideaway to answer a history quiz. Were you brought out of polymorphous dreams, in which mechanical contraptions, funnels, tubes and magnifying glasses mingled with animal attentions and crowd scenes, into a rigidly actual and bipolar sex scene? Don’t worry, little boxy baby, I will lift you by your ankles off the bed. . . . I will show you the seductions of sequence, and then I will let the aperture close, I will let you fall back into the muddled bed sheets, into the merged molecular dance of simultaneity” (story/rest of my life).

The interjection of simultaneity into the sequence of a user’s choices makes clear why different ontological levels (character, writer, user) mingle so monstrously in this text. In the heart of the computer, which is to say at the deepest levels of machine code, the distinctions between character, writer, and user are coded into strings of ones and zeros, in a space where the text written by a human writer and a mouse-click made by a human user are coded in the same binary form as machine commands and computer programs. When the text represents this process (somewhat misleadingly) as a “merged molecular dance of simultaneity,” it mobilizes the specificity of the medium as an authorization for its own vision of cyborg subjectivity.

Part of the monstrosity, then, is this mingling of the subjectivity we attribute to characters, authors, and ourselves as users with the nonanthropomorphic actions of the computer program. This aspect of the text’s monstrous hybridity is most apparent in “crazy quilt,” where excerpts from Frank
Baum’s *The Patchwork Girl of Oz* increasingly intermingle with other sections of the hypertext and with instructions from the Storyspace manual. Typical is “seam’d,” a significantly named lexia that stitches together the Storyspace program and the surgery/sewing/writing metaphoric network established in other lexias: “You may emphasize the presence of text links by using a special style, color or typeface. Or, if you prefer, you can leave needles sticking in the wounds—in the manner of tailors—with thread wrapped around them. Being seam’d with scars was both a fact of eighteenth-century life and a metaphor for dissonant interferences ruining any finely adjusted composition” (crazy quilt/seam’d). The patchwork quality of the passage is emphasized by the fact that another lexia entitled “seam’d” appears elsewhere (body of text/mixed up/seam’d), from which some of the phrases cited above were lifted.

Although memory is equidistant within the computer, such is not the case for human users. In our memories, events take place in time and therefore constitute sequence. The “seam’d” lexia in “crazy quilt” relies for its effect on the probability that the user has already encountered the lexias of which this is a patchwork. Because we have read these lines in other contexts, they strike us now as a crazy quilt, a textual body stitched together from recycled pieces of other lexias and texts. Memory, then, converts simultaneity into sequence, and sequence into the continuity of a coherent past. But human memory, unlike computer memory, does not retain its contents indefinitely or even reliably. If human memory has gaps in it (a phenomenon alarmingly real to me as my salad days recede in the distance), then it becomes like atoms full of empty space, an apparent continuity riddled with holes.

Fascinated with recovering that which has been lost, the narrator recalls a speech made by Susan B. Anthony at a “church quilting bee in Cleveland” in which the monster “was the featured attraction, the demon quilt” (body of text/mixed up/quilting). Anthony (or is it the monster?) remarks that “our sense of who we are is mostly made up of what we remember being. We are who we were; we are made up of memories.” But each of us also holds in her mind experiences she has forgotten. Do these memories, the monstrous Anthony speculates, cohere to make another subject, mutually exclusive of the subject constituted through the memories one remembers? If so, then “within each of you there is at least one other entirely different you, made up of all you’ve forgotten . . . . More accurately, there are many other you’s, each a different combination of memories. These people exist. They are complete, if not exactly present, lying in potential in the buried places in the brain” (story/seance/she goes on). Like the eaten body parts incorporated in the animal’s flesh that then scrape to get out at the resurrection, like the textual
body that exists simultaneously within the equidistant spaces of computer memory, human memory, too, is chimerical, composed of the subject I remember as myself and the multiple other subjects, also in some sense me, whom I have forgotten but who remember themselves and not me.

When the monster offers to buy a past from Elsie, a randomly chosen woman she approaches on the street, this lack of a past is in one sense unique to the monster, a result of her having been assembled and not born, with no chance to grow into the adult she now is. In another sense, this division between the past the monster can remember and the pasts embodied in her several parts is a common human fate. “We are ourselves ghostly,” Anthony/herself goes on. “Our whole life is a kind of haunting; the present is thronged by the figures of the past. We haunt the concrete world as registers of past events. . . . And we are haunted, by these ghosts of the living, these invisible strangers who are ourselves” (story/seance/she goes on). Significantly, the hybridity performed here is a mental assemblage that does not depend on or require physical heterogeneity. Even if the text were an immaterial mental entity, it still could not be sure of internal cohesion because the human memories that contain it are themselves full of holes and other selves. On many levels and across several interfaces, this monstrous text thus balances itself between cohesion and fragmentation, presence and absence, lexia and link, sequence and simultaneity, coherent selfhood and multiple subjectivities.

How can such a text possibly achieve closure? Jane Yellowlees Douglas, writing on Michael Joyce’s hypertext fiction afternoon, suggests that closure is achieved not when all the lexias have been read, but when the user learns enough about the central mystery to believe she understands it.21 Douglas suggests that the privileged lexia in Joyce’s text is “white afternoon”—privileged because its transformative power on the user’s understanding of the mystery is arguably greater than other lexias. Although Patchwork Girl has no comparable central mystery, it does have a central dialectic, the oscillation between fragmentation and recombination. “I believed that if I concentrated on wishing, my body itself would erase its scars and be made new,” the narrator confesses. This wishing for wholeness continues in dynamic tension with the simultaneous realization that she is always already fragmented, ruptured, discontinuous (story/falling apart/becoming whole). When this oscillation erupts into a crisis, the text initiates events that make continuation impossible unless some kind of accommodation is reached. The crisis occurs when the narrator awakes one morning to find that she is coming apart. As she tries to cover over the cracking seams with surgical tape, the dispersion rockets toward violence. “My foot strove sky-
ward...trailing blood in mannered specks. My guts split open and something frilly spilled out....My right hand shot gesturcating stump-first eastward" (story/falling apart/diaspora). The tide is stemmed when Elsie, the woman whose past the monster bought, comes upon the monster disintegrating in the bathtub and holds onto her. "I was gathered together loosely in her attention in a way that was interesting to me, for I was all in pieces, yet not apart. I felt permitted. I began to invent something new: a way to hang together without pretending I was whole. Something between higgledy-piggledy and the eternal sphere" (story/falling apart/I made myself over). This resolution, in which the monster realizes that if she is to cohere at all it cannot be through unified subjectivity or a single narrative line, leads to "afterwards," in which the monster decides that the only life she can lead is nomadic, a trajectory of "movement and doubt—and doubt and movement will be my life, as long as it lasts" (story/rethinking/afterwards). Thus the narrative pattern of her life finally becomes indistinguishable from the fragmentation and recombination of the digital technology that produces it, a convergence expressed earlier through the metaphor of the dotted line. "I hop from stone to stone and an electronic river washes out my scent in the intervals. I am a discontinuous line, a dotted line" (body of text/hop). Connecting and dividing, the dotted line of the monster’s nomadic trajectory through "movement and doubt" resembles the lexia/link, presence/absence pattern of the screeinc text. Following this trajectory, she goes on to become a writer herself.

But what does she write—the narrative we are reading? If so, then the authorial function has shifted at some indeterminate point (or many indeterminate points) from Mary Shelley to the monster, recalling the earlier distribution of authorship between M/S. Just as the user can no longer be sure if, within the fictive world, the monster now writes herself or is written by Mary, so the monster is similarly unsure, in part because her body, like her subjectivity, is a distributed function. "I wonder if I am writing from my thigh, from the crimp-edged pancakelet of skin we stitched onto me....Mary writes, I write, we write, but who is really writing?" Faced with this unanswerable question (unanswerable for the user as for the narrator), the monster concludes, "Ghost writers are the only kind there are" (story/rethinking/am I mary).

The larger conclusions suggested by juxtaposing Patchwork Girl with nineteenth-century debates crucial to the formation of print literature go beyond showing how this text makes the unconscious of the earlier period into the stage for its performances of hybrid subjectivities. More broadly, Patchwork Girl testifies to the importance of materiality in its signifying
strategies—in the ways it mobilizes the specificities of the Storyspace software and, beyond this, the specificities of the digital computer. It vividly demonstrates why a linear causal model would be doomed to inadequacy in accounting for its complexities. The text relies as much on print predecessors as on electronic textuality to create meaning; it marshals language and code to produce the text in a literal sense and also to produce discourse about the text; and in the central trope of the dotted line, at once continuous and discrete, it enacts the complementary dynamic between the digital and analog. In short, it demonstrates on many levels and in diverse ways—in its aesthetic, its performance of subjectivity, and the multiple causalities that create its flickering connectivities—the importance of intermediation.