DARK FIBER

Cryptography, Telegraphy, Science Fiction

And who shall calculate the immense influence upon social life—upon arts—upon commerce—upon literature—which will be the immediate result of the great principles of electro-magnetics?

Brevet Brigadier General John A. B. C. Smith

Cryptography is not a transhistorically stable subject; it changes along with the cultures from which it springs. This was rarely truer than during Poe's lifetime, when interest in cryptography burgeoned remarkably. It was not, one must admit, a time of rapid or profound cryptographic innovation. Although the American government had made extensive use of ciphers throughout the Revolutionary period and Thomas Jefferson had developed a wheel cipher so simple to operate and yet so devious to solve that the American navy employed it until 1967, little went on at the highest levels of cipher. There were two changes in the decades leading up to the Civil War, however, that bear directly on Poe's fictive use of ciphers: the spread of magazines and newspapers to a growing leisurely middle class, and, incomparably more important, the development of the telegraph. The combination of these factors led to the creation of telegraphic writing, by which I mean writing about the telegraph, writing transmitted over the telegraph (private letters, stock quotes, news of war), and, above all, the way in which the telegraph infected thought and imagination regarding human communication through writing.

The early decades of the nineteenth century were marked by a growing popular interest in elementary ciphering in much of Europe, including Italy (for centuries the center of cryptographic invention and use), Germany, and France. That interest was even more pronounced in England and America, if only because those countries had a higher percentage of literate and leisureed citizens. This interest took a variety of forms, from small military volumes such as William Rochefort's *Treatise upon Arithmography; or, A New Method of Secret Writing, Defying Discovery or Detection, and Adapted for All Languages to William Thompson's New Method for the Instruction of the Blind,* which argued that a zigzag cipher ordinarily used to teach
reading to the visually impaired would prove of service in diplomatic correspondence. Perhaps oddest of all was James Swain’s striking adaptation of Bacon’s binary cipher, published in *The Mural Diagraph; or, The Art of Conversing through a Wall*, which presented a two-part auditory cipher based on the knock and the scratch, designed to enable prisoners to communicate through the barrier of their prison walls.

Technical journals also issued articles on cipher writing: the *American Rail-Road Journal* (1832) and the *United States Service Magazine* (1841) were two of a handful of magazines that published essays on the Vigenere cipher in the early 1830s. The most readily available information about cryptography, however, appeared in general-interest magazines from the 1820s through the middle of the century. *Chambers’s Edinburgh Journal*, *the Eclectic Magazine*, *Littel’s Living Age*, *the Leisure Hour*, *the Saturday Magazine*, and many other journals published popular treatments of cryptography under such titles as “Secrets Exposed.” To be sure, the amount of cryptographic expertise to be gleaned from such articles was often extraordinarily small, and yet these were obvious stimuli to the spreading interest in ciphers, and ones that would be practically enhanced with the creation of Morse’s telegraph.

The origins of that telegraph might be dated to August 1831, when Morse—a young American painter training in London—wrote home to complain to his family about the long gap between the time of his letter’s composition and its arrival in America, and the even longer interval until he received his family’s response. “While I am writing,” Samuel Finley Breese Morse observed, “I can imagine mama wishing that she could hear of my arrival, and thinking of thousands of accidents that may have befallen me, and I wish that in an instant I could communicate the information; but three thousand miles are not passed over in an instant and we must wait for long weeks before we can hear from each other.” Morse answered his own wish three decades later by inventing the electrotelegraph, in so doing altering forever the nature of writing. Morse’s invention was a momentous event. By permitting the virtually instant transmission of information, the telegraph spawned a major industry, played a key role in the rise of newspapers, the development of railroads, and the creation of regional stock markets, and generally changed patterns of human communication forever. Yet although critics have occasionally noted its local effects, such as in the terse aesthetics of implication that Hemingway forged out of the telegraphic style he practiced as a foreign correspondent, the cultural consequences of telegraphy have remained largely unstudied.

Because the telegraph depends on Morse’s code for its utility, there exists a natural affinity between telegraphy and cryptography. As David Kahn explains, “the telegraph made cryptography what it is today”; it is not surprising that much of Poe’s cryptographic writing was driven by the
intellectual and cultural consequences of this invention, which required the immediate development of commercial telegraphic codes and of ciphers to protect the diplomatic and military traffic of nations. As the telegraph worked its way into the texture of daily life, it became far easier for Poe to conceive of a world structured around the concept of information, where knowledge itself was a form of decoding. Eventually, the telegraph's electric cipher led Poe to emphasize prosthesis, antiorganicism, and the destruction of history, and to understand even photography as a mode of writing, with an encoded substratum invisible to the eye.

That the structure of Morse's code infected Poe's concurrent thinking about languages and ciphers seems undeniable. Between 1837, when Morse began publicly experimenting with the telegraph, and 1844, when it went into commercial operation, Poe published the bulk of his cryptographic writing, including the essays, the Dupin trilogy, and "The Gold-Bug." According to John Linton, the "ubiquitous appearance" of Morse's telegraph at just the moment of the "simultaneous professionalization of science" had "a shattering literary importance." For an antebellum writer was the telegraph more shattering than for Poe, who claimed it as "a theorem almost demonstrated, that the consequences of any new scientific invention will, at the present day exceed, by very much, the wildest expectation of the most imaginative." 3

But which of Poe's works qualify as science fiction? "The Balloon-Hoax," "The Unparalleled Adventure of One Hans Pfaall," and "Mellonta Tauta," to be sure. But what of "The Facts in the Case of M. Valdemar?" Or "Some Words with a Mummy?" The genre's conventions were not codified until the early twentieth century, when Hugo Gernsback coined the term, promising readers of Amazing Stories "the Jules Verne, H. G. Wells, and Edgar Allan Poe type of story—a charming romance intermingled with scientific fact and prophetic fiction." 4 Worse, the tales with the clearest generic claim tend to be among Poe's least-loved works, such as "The Collopy of Monos and Una." Yet despite their weakness and generic uncertainty, it is through Poe's science fiction that he comes to terms most radically with the social consequences of cryptography. Particularly compelling is Poe's pronounced sense of the apocalypse of signification, in which the opaque materiality of the world reveals its symbolic organization. Although the characteristic semantic strategy of detective fiction is that of encryption—of language embedded, covered over, hidden by bodies, buildings, and the opacity of social relations—Poe's science fiction is predicated on the sense of the sign's apocalypse (from ἄπε-ἀληφτία, to inclose or discover), in which the crypt of the letter is shattered and immediate communication becomes the basis for unfettered self-realization and sociability.

Ultimately, Poe's secret writing presents an instance of what the telecommunications industry calls dark fiber. When the railroads were built in
the middle of the nineteenth century, they were often required to purchase rights-of-way on either side of the track. These rights-of-way have subsequently become important for telecommunications companies, which have used them as paths for cross-country networks of optic cable. “Dark fiber” is the name for dormant fiber optic cables that have been laid but not yet exploited. Poe’s cryptographic writing is a symbolic equivalent of this fiber, as his nineteenth-century fiction becomes a pathway to our twentieth-century imagination of the relations among the organic body, technology, and the self.

The cryptographic imagination exists in complicated tension with a phenomenologically deep sense of self. This tension is exacerbated by Poe’s understanding of telegraphy, which further ruptures the connection between body and message, and accelerates the de-realization of the body. Organicism, representation, wholeness, and depth are all undermined by the prosthetic extension of the self into telegraphic code. The consequent separation of bodies and communication leads Poe closer to imagining human identity as a problem in information processing, free from identification with a particular human body. Throughout the late fiction and “Marginalia” one finds Poe’s presentiments of the human as a cyborg, part cybernetic machine, part organism. In what follows, I trace some of the fibers leading from Poe’s science fiction to the postmodern decomposition of bodily identity. In its intersection with telegraphy, Poe’s cryptographic writing has helped shape the contemporary imagination of telecommunicative subjectivity. It also clarifies how models of the self in recent science fiction negotiate between a hieroglyphic and a cryptographic approach to identity. To this end, the chapter ends with a discussion of William Gibson’s *Neuromancer*—a contemporary science fiction novel built on many of the premises found in Poe.

**The Death of Space and Time**

I have reached these lands but newly
From an ultimate dim Thule—
From a wild weird clime that lieth, sublime,
Out of SPACE—out of TIME.

Edgar Allan Poe, “Dream-Land”

A central feature of modernity is the repeated claim that, through telecommunications, time and space have been destroyed. Today such claims are commonly advanced about the Internet, but three decades ago Marshall McLuhan declared that through “electric technology, we have extended our central nervous system itself in a global embrace, abolishing time and space as far as our planet is concerned.” McLuhan, in turn, was echoing Futurists such as Filippo Tommaso Marinetti (“Time and Space died yesterday.
We already live in the absolute, because we have created eternal, omnipresent speed”), whose fantasy of omnipresence and instantaneity was already old hat in 1909. A half-century earlier, Nathaniel Hawthorne had asked “is it a fact—or have I dreamt it—that, by means of electricity, the world of matter has become a great nerve, vibrating thousands of miles in a breathless point of time?”

The origins of this fantasy of speed can be dated to the birth of Morse’s new device. In the words of Carleton Mabee, visitors to an experimental version of the telegraph in Washington in 1838 felt Morse’s invention as a cataclysm: “The world is coming to an end,” Vail heard some say. “Where will improvement and discoveries stop?” others asked. “Time and space are now annihilated,” was the far-seeing conclusion of one visitor. His comment was to be on the lips of millions.” As the first telecommunications device, Morse’s telegraph represented a watershed for mass culture, “as significant a break with the past as printing before it.” In telegraphy, the Newtonian unities of being are replaced by the prosthetic extension of the self over a network of wires. All communication technologies created since “have simply been elaborations on the telegraph’s original work,” growing directly out of discoveries in communications engineering predicated on Morse’s invention, including the transatlantic cable (1866), telephone (1876), wireless telegraphy (1895), radio (1906), and television (1926). Even the digital computer is “no more than an instantaneous telegraph with a prodigious memory,” and between them, the telegraph and the computer constitute the communicative matrix of this century.

Inspiration for the telegraph came in 1832 when, on learning of experiments by André-Marie Ampère that showed that electricity apparently passed instantly over any length of wire, Morse understood that if “the presence of electricity can be made visible in any desired part of the circuit, I see no reason why intelligence might not be instantaneously transmitted by electricity to any distance.” Although the telegraph’s invention is usually credited to Morse, forms of semaphore military communication can be traced back to the ancient Greek use of lighted torches alternately obscured and exposed. Nor, although Morse was unaware of this, was the idea of an electric telegraph absolutely new. Morse’s originality consisted of his combination of a binary code with a means of electrical transmission for the dots and dashes of that code. Like all ciphers, Morse’s is a metacode for representing language, in which words are decomposed into letters and the letters transformed into short and long pulses of electrical current. Originally, Morse planned to use a numerical code in which each word would be represented by a particular integer, which could be translated back into English by means of a code book. This proved cumbersome, and within months Morse replaced it with an alphabetic cipher in which a specific combination of dots and dashes stood for a letter. Like a good
cryptographer, Morse based his new code on a study of the frequency of
different letters in English, and in 1844, after considering "the incidence of
letters in ordinary usage and of errors in transmission," Morse further
revised his code, with such efficiency that, as the information theorist John
Pierce approvingly notes, engineers today can only best Morse by 15 percent
in speed. The lesson of Morse's code is clear: "It matters profoundly how
one translates a message into electrical signals. This matter is at the very
heart of communication theory."20

Poe's cryptographic writing followed close on the heels of Morse's ex-
eriments, in an environment in which congressional debates over the ques-
tion of funding Morse's invention were widely reported. In 1842, when a
bill appropriating thirty thousand dollars for the construction of a telegraph
line from Baltimore to Washington finally reached the floor of the Senate,
it was proposed that half the funds be given to Morse and half used for
experiments in mesmerism. The chair, Robert C. Winthrop of Massachu-
setts, replied that "it would require a scientific analysis to determine how
far the magnetism of mesmerism was analogous to that employed in tele-
graphs."21 The scientific basis of the telegraph was so little understood that
more than twenty senators adjourned from the Senate hall, judging it safer
to vote at all than to be proved fools. One who did vote, Lew Wallace
of Indiana, "was defeated for re-election soon afterward because he had voted
to spend public money for this absurdity."22

Within this charged environment, Poe began referring to the telegraph
well before its commercial deployment. In 1839, five years before Morse re-
cived congressional approval, Poe had the narrator of "The Man That Was
Used Up" report that he "telegraphed a few signals" to his neighbor in
church, before commencing, "sotto voce, a brisk tête-à-tête."23 In the first
installment of "Marginalia" (November 1844), the telegraph appears as a
metaphor for good writing. Noting the inefficient beginnings of many good
books, Poe suggests that "it is far better that we commence irregularly—
immethodically—than that we fail to arrest attention; but the two points,
method and pungency, may always be combined. At all risks, let there be
a few vivid sentences imprimit, by way of the electric bell to the telegraph"
(ER, 1332). In 1845, Poe correctly observed that "the Electro Telegraph
transmits intelligence instantaneously—at least so far as regards any dis-
tance upon the earth" ("The Thousand-and-Second Tale of Scheherazade,
PT, 803). And in "Melonta Tanta," Pundita records that she "spoke to-day
the magnetic cutter in charge of the middle section of floating telegraph
wires, ... What would we do without the Atalantic telegraph?" (ibid., 873).

The literary significance of the telegraph, however, lies not in the fic-
tions it has inspired but in its status as a model and an instance of the world's
growing encipherment and electrically unified sociality. This is more than
a matter of style. Rather, the dual antebellum fascination with technology
and with language meant that the telegraph quickly inflected thinking about linguistic representation. By destroying the identity between transportation and communication, the telegraph marked an unprecedented moment in communications history. With such minor exceptions as carrier pigeons and semaphore fires, communication had previously required physical transport: a chain of bodies tied every message to its author. Although messages might be centrally produced and controlled, through monopolization of writing or the rapid production of print, these messages, carried in the hands of a messenger or between the bindings of a book, still had to be distributed, if they were to have their desired effect, by rapid transportation. The telegraph ushered in a time in which bodies and information can be separated. By rupturing the association between a body and its effects, the structure of the telegraph reminded Poe of the marvel of writing, which enables people distant in time and place to comprehend what is traced on the page today.

In addition, telegraphy dualizes the imagination of writing, dividing it into the signer, represented by the dots and dashes of Morse’s code (always, on some level, an alien trace) and the signified, imagined as the instantaneous zip of electrical current. Electricity, I need hardly add, is a part of the telegraph’s signifying mechanism, not its content, but there was an almost instantaneous elision of the electrical medium to the principle of communication itself. Limon notes that for Hawthorne electricity “re-describes human communication as divine self-consciousness.” Although Poe does not spiritualize the telegraph in quite this manner, for both writers the promise of telegraphy is metaphysical: by annihilating space and time, it allows humankind to escape its physical limitations. The power and ubiquity of electricity are metaphorically attached to a newly disembodied consciousness. In addition, the relation of double-encoding to the apparent imminence of the telegraph’s message recalls Poe’s illusory achievement in the articles on cryptography, in which he treats his code breaking as if it were the breaking of coding itself—as if language and meaning were thereafter transparent.

From the beginning, the social effects of the telegraph were tied to cryptography. In 1845, the telegraph’s first full year of commercial operation, Morse’s lawyer, Francis O. J. Smith, “published a commercial code entitled The Secret Corresponding Vocabulary: Adapted for Use to Morse’s Electro-Magnetic Telegraph, in whose preface he declared that ‘secrecy in correspondence, is far the most important consideration.’” Smith’s code was followed by dozens more, such as John Wills’s Telegraphic Congressional Reporter of 1847 and the ABC Code of 1866, which were designed to safeguard the privacy of correspondence. Like cinema, telegraphic crypto seems to have been a technology that answered a deep-seated human interest. "As the most exciting invention of the first half of the century, the telegraph..."
stirred as much interest in its day as Sputnik did in its. The great and widely felt need for secrecy awakened the latent interest in ciphers that so many people seem to have, and kindled a new interest in many others. Hundreds of persons attempted to dream up their own unbreakable ciphers."28

The telegraph and its ciphers also quickly became the site for quasi-literary play. In my copy of the collected numbers of Graham's Magazine for 1845 (which also contains the first appearances in print of "The Imp of the Perverse" and "The System of Dr. Tarr and Professor Fether"), someone has penciled in the key to the International Morse Code on the flyleaf and has deciphered helter-skelter a series of messages. No breaks are included between words, and the deciphered messages seem incoherent; for example,

clock the hardnoord postthkmeeetis melwars tou
tpry harry occupy ibshsh bryl...

Remembering Legrand's comment in "The Gold-Bug" ("You observe there are no divisions between the words. Had there been divisions, the task would have been comparatively easy" [PT; 581]), and correcting for some obvious errors in enciphering, one obtains the following: ... clock. The Hartford Post Home Edition. Cvl wars rout ... Perry's army occupies [?] ... stop the press." And on the next page: "Harry B. is home at Melrose." The fragmentary "cvl wars" must refer to the Civil War, a date permitted by the history of the Hartford Post, which was founded in 1838. In all likelihood, the messages were put there by children, practicing Morse on old journal issues relegated to an attic or back room, an impression cemented by the handwritten imitation of a library card stuck to one of the book's endpapers. However inconsequential the content of these messages, their existence in cipher indicates the fascination with writing, secrecy, and power that Poe's fiction helped create, and the promiscuous intertextuality of antebellum culture, when a story by Poe might sit cheek by jowl with an essay on the telegraph, Poe's comments on telegraphy from the "Marginalia," and the kind of secret writing (with headlines taken from newspapers) found on the endpapers of Graham's Magazine.

It was not only children who committed their secrets to cipher. In 1862, while reading the 1864 issues of Colburn's United Service Magazine, a Civil War buff named Ray Neff noticed ciphered messages written on the inner margins of several pages. The one on page 183, for example, began: "J O 5
O F X 2 S P N F 6 U I F S P 8 X B M L F ..." Solved, the monochromatic substitution cipher disclosed a long allegorical poem by "L.C.B.," along with a series of confessions in which L.C.B. admitted that he was a spy involved in a plan to assassinate President Lincoln on 14 April 1865. According to the decrypted messages, at least eleven members of Congress were also implicated in the conspiracy, along with Edwin Stanton, Lincoln's secretary of war, and Thomas T. Eckert, the general superintendent
of military telegraphs, whom Lincoln had asked to serve as his bodyguard on the fateful evening. But who was L.C.B.? When exposed to heat, one of the magazine's margins revealed a signature written in invisible ink: "Lafayette C. Baker," chief of the secret National Detective Police. There is some evidence to suggest that Baker was poisoned to death with arsenic in an attempt to keep him silent. For our purposes, it does not much matter whether L.C.B.'s dubious confession is real; like the Morse code scribbled in Graham's Magazine, the ciphered confession indicates how the telegraph expanded the cryptographer's imaginative possibilities, particularly regarding its users' predilection for subversive histories and conspiracies.

That the development of the telegraph drastically reshaped antebellum economies of representation is evident in the move during the 1840s away from the hieroglyph and toward cryptography—away, that is, from a model of a visually grounded form of representation to an emphasis on the systematic manipulation of signs. This shift was abetted by achievements in science and technology. Champollon's successful translation of Egyptian hieroglyphs damaged the myth of Adamic language even as it reinforced the scientific methods of comparative linguistics. In The Elements of Technology (1834), Harvard professor Jacob Bigelow treated writing as the formative technology in human culture. Writing is "the root of all human knowledge"; without "the invention of written characters," history "must have remained uncertain and fabulous, and science been left in perpetual infancy." Clearly, Bigelow understood the arbitrary nature of language: be pointedly abandoned the hieroglyph as an originary sign, noting that "the recent investigations of M. Champollon have led to the discovery that a great part of the hieroglyphic characters upon the antiquities of Egypt are in reality the letters of an alphabet; and considerable progress has been made in deciphering their import."

The effects of the telegraph were intensified by the almost simultaneous development of the daguerreotype, which appeared in 1839. Surprisingly often, antebellum writers imagined the daguerreotype in terms borrowed from the telegraph, confused about whether information was properly a sign or an image. Just as the hieroglyph had once promised to fulfill both requirements, Daguerre's invention was everywhere described as a form of language. The type in daguerreotype returns us to the printing press, and photography—coined in 1839—is no better. By calling the act "writing with light," photography casts image making as a form of script. Where etymology once, there shall metaphor be. Responding to the discovery that light could fix an image, the one-time mayor of New York, Philip Hone, speculated thus: "Who knows whether, in this age of invention and discoveries, we may not be called upon to marvel at the exhibition of a tree, a horse, or a ship produced by the human voice muttering over a metal plate... the words 'tree,' 'horse,' and 'ship.'" And an anonymous reporter described the
daguereotype as the “first universal language,” addressing itself “to all who possess vision, and in characters alike understood in the courts of civilization and the hut of the savage. The pictorial language of Mexico, the hieroglyphics of Egypt, are now superseded by reality.”

For that reporter, the daguerreotype made good on the promise of the hieroglyph, offering a mode of representation that combines the universality of sight with the abstracting force of words. Sketching Poe for the *Graham's Magazine* series “Our Contributors,” James Russell Lowell jumbled image and sign in his efforts to correlate the “mathematical” clarity of Poe’s genius with the indistinct “figures” and “shadows” prominent in Poe’s hieroglyphic imagery: “Even his mystery is mathematical to his own mind. To him x is a known quantity all along. . . . However vague some of his figures may seem, however formless the shadows, to him the outline is as clear and distinct as that of a geometrical diagram.”

This conceptual association was not limited to nonscientists. When François Arago argued before the French Chamber of Deputies that Daguerre and Joseph Nicéphore de Niepee ought to be given state-sponsored pensions in recompense for their joint invention, his justification of the daguerreotype turned to questions of writing:

> Had we photography in 1798 we would possess today faithful pictorial records of that which the learned world is forever deprived. . . . To copy the millions of hieroglyphics which cover even the exterior of the great monuments of Thebes, Memphis, Karnak and others would require decades of time and legions of draughtsmen. By daguerreotype one person would suffice to accomplish this immense work successfully. . . . These designs will excel the works of the most accomplished painters, in fidelity of detail and true reproduction of the local atmosphere.

By celebrating the daguerreotype’s ability to preserve images of the hieroglyphs, Arago reveals how completely the imagination of his day was haunted by the dream of a natural mimetics, in which writing would function as a picture-story. Implicitly, the hieroglyph describes a matrix or interface that would permit people to bring the material world into contact with human consciousness. For Arago and his peers, hieroglyph and photograph figure the origin and end of writing; just as script began with the Atlantic transparency dimly reflected in the hieroglyphs, it would return to such clarity through the technological perfection of the daguerreotype. (By contrast, the cryptographic imagination depends on the distance between noumena and phenomena.)

In this context, the concept of “information” acts as a hinge that swings between these opposed symbolic modes, pointing alternately toward image and sign. The term’s etymology reveals its connections with cryptography: “Information, n. OFr information; L. informatio (-onii), a representation, an
outline, sketch, from informare, to give form to, to represent, to inform."

As "an outline [or sketch]," information translates the hieroglyphic attempt to understand the world through visual representations; the root meaning of "to give form to . . . to inform" suggests the process by which symbols shape the inchoate stuff of the world. By joining writing to image, information links the symbolic to the material world, connecting its hieroglyphic origin and its contemporary meaning. "Information" is, of course, an incoherent notion: a datum has no edges or outline, and what may appear as a discrete conceptual unit is only a tiny part of the discursive field in which the datum is produced. But because information is based on an imagined distinction between container and contents (as in the use of Morse's code to transmit English text), information as a concept is generically linked to cryptography.

If initially the telegraph and daguerreotype seem to constitute polar models of representation (with the telegraph as pure sign, in contrast to the antisymbolic materiality of the glass image), Poe dismantles such oppositions, converting the daguerreotype into a rebus whose truth-telling powers exceed even the best human eye. Writing in January 1840, Poe emphasized the inhuman precision of the new invention, which is "infinitely more accurate in its representation than any painting by human hands. If we examine a work of ordinary art, by means of a powerful microscope, all traces of resemblance to nature will disappear—but the closest scrutiny of the photo-
genic drawing discloses only a more absolute truth, a more perfect identity of the aspect with the thing represented. The variation of shade, and the
gradations of both linear and aerial perspective are those of truth itself."

This makes it look as if Poe would agree with Morse, who claimed that the daguerreotype offered "not copies of nature, but portions of nature itself." But Poe's late writing repeatedly strives to accomplish what Georges Canguilhem describes as the nineteenth century's "mathematization of non-formal concepts," such as the theory of probability put forth by Pierre Simon, Marquis de Laplace. To this end, Poe keeps looking in his writing for an ersatz precision. Hence the discussions of algebra in "Marginalia" and in "Rue Morgue"; hence the attempt to quantify reading as if it, too, were algebraic:

Physically considered, knowledge breeds knowledge, as gold gold; for he who reads really much, finds his capacity to read increase in a geometrical ratio . . .

A deep-rooted and strictly continuous habit of reading will, with certain classes of intellect, result in an instinctive and seemingly magnetic appreciation of a thing written; and now the student reads by pages as other men by words. Long years to come, with a careful analysis of the mental process, may even render this species of appreciation a common thing. It may be taught in the schools of our descendants or the tenth and twentieth generation . . .

And should these matters come to pass—as they will—there will be in them
no more legitimate cause for wonder than there is, to-day, in the marvel that syllable by syllable, men comprehend what, letter by letter, I now trace upon this page."

Poe's fantasy of speed-reading suggests his desire to see literacy subject to instrumentalizing rules, such as when he refers to a "geometrical increase" in the amount of material that good readers can consume—such a nonsensical notion. With time, the mechanical act of reading becomes so natural that the book drops away, leaving a "magnetic appreciation" of the writer's words to "multiply" in the reader's brain. Yet after elaborating his technological vision of "analysis," "computations," and "erudition," Poe returns to the moment of reading, which he has now rendered strange and science-fictional: "the marvel that, syllable by syllable, men comprehend what, letter by letter, I now trace upon this page." For Poe, the cryptographic text is a hermetically sealed instrument, a capsule impervious to the wasting rust of time.

Perversely, Poe's appreciation of photography is based on his attempt to supersede its perceptual qualities, exploring rather its "infinitely" precise renderings of the world—an attempt that accords with Poe's rejection of mimesis. Discussing drama, Poe necessarily finds it regressive, given its status as "the chief of the imitative arts." It has, he finds, an unfortunate "tendency to beget and keep alive in its votaries the imitative propensity... During the last fifty years it has materially advanced. All other arts, however, have, in the same interval, advanced at a far greater rate—each very nearly in the direct ratio of its non-imitativeness—painting, for example, least of all—and the effect on the drama is, of course, that of apparent retrogradation" ("Marginalia," ER, 1367; emphasis added). "Imitative propensity" was the phrase used to describe the ape's behavior in "The Murky," and the battle for representational supremacy that took place in that story between Dupin's syllabic language and the ape's impassioned gestures is replayed in the excerpt above as an implicit opposition between the imitative visual arts—painting, drama, and, after 1839, the daguerreotype—and the nonimitative, language-based arts, which find their model in the telegraphic cipher.

Commenting on Poe's belief in the "infinitesimal" accuracy of the daguerreotype, Lisa Cartwright observes that for Poe photography is superior to painting "because it harbors the logic of perspective on a scale beyond the reach of the perception of the unaided eye. The real of the Daguerreotype is not that of the scene reproduced, but that of the unseen, invisible organization of the Daguerreotype's own material properties, encoded into the visible." Ultimately, Poe's relation to the photographic image is premised on a comparative analysis in which an immediate "perceptual mode is replaced by a conceptual or analytic process. This process is ultimately non-
visual, arriving at theoretical findings only indirectly founded on sensory impressions. ... A visual aesthetic practice thus becomes a knowledge-producing process that circumvents the conclusiveness of sight." By imagining the daguerreotype as a mnemonic that extends beyond the realm of human perception (and note the odd suggestion that in 1839 one might look at a painting through a microscope), Poe discloses his need to atomize the work of art.

The rationale for Poe's counterintuitive approach is not hard to locate: in its association with telegraphic ciphers and with a burgeoning culture of information, the sign becomes a permanent trace of experience. Cryptography represents for Poe a further metaphorization of writing as vestiment, a form of semiotic protection against the natural world. Given the opportunity, Poe always repudiates his mortal and distorting sense organs, choosing rather to reinforce his sense of the symbolic (not just symbol-making, but constituted by symbols) nature of identity.9 Information is the form of human memory after experience becomes stabilized as discrete signs.

A similar notion of cryptography appears in the last pages of Gabriel García Márquez's *One Hundred Years of Saliitude*, when Aureliano Buendía, the last of the Buendía line, forgets "about his dead ones and the pain of his dead ones" and returns to read the parchments written a century earlier by the itinerant gypsy Melquiades.9 In his great-grandfather's study, Aureliano discovers that the texts, which had resisted all previous efforts to read them, are in fact the history of the family, written by Melquiades "down to the most trivial details, one hundred years ahead of time":

He had written it in Sanskrit, which was his mother tongue, and he had encoded the even lines in the private cipher of the Emperor Augustus and the odd ones in a Lacedeemonian military code. ... Aureliano skipped eleven pages so as not to lose time with facts he knew only too well, and he began to decipher the instant that he was living, deciphering it as he lived it, prophesying himself in the act of deciphering the last page of the parchments, as if he were looking into a speaking mirror. (388–89)

García Márquez contrasts these pristine parchments (and the pristine room in which Aureliano writes and studies) with the fecund jungle rotting outside the house. Indeed, *One Hundred Years of Saliitude* is constructed on the tension between its tumultuous historical-romance plot and the recalcitrance of its narration, whose impassive involutions of time aim to produce the sense that Melquiades "had concentrated a century of daily episodes in such a way that they coexisted in one instant" (ibid., 381). In its cryptic secrecy, Melquiades' text (a mise en abîme for the novel) pulls away from human time, leveraging itself against the ongoingness of life, transforming itself into a secret history protected by multiple levels of textual encipherment.
Disembodied Selves

From the middle of the 1830s until Poe's death, physical prostheses increasingly show up in his work, as do instances of immaterial existence that culminate in the late angelic colloquies and mesmeric fiction. These phenomena coexist, as if whatever brought Poe to think of mechanical extensions to the self also led him to conceive of a freedom from any material form. As Michael Bell observes, Poe's "intellectual ruminations of the 1840s were linguistic in nature, precipitated by his effort to find a meaning for a 'mere word.' ... Like many of his contemporaries, Poe was fond of discussing literary relations in terms of a spiritual metaphor; he complained, for instance, of artificial imitations of Gibbon's style, that in them 'the body is copied, without the soul, of the phraseology.' Meaning was to expression as the soul to the body, spirit to matter." The ancient distinction between body and soul reemerged with intensity in Poe's work because it provided a vocabulary, however inadequate, to describe the momentous effects of technological change. The relation of body to soul metaphorically duplicates the telegraph's combination of visible code and imminent electrical transmission, as Poe comes to think of the body not as a necessary component of being but as a shell or husk, indifferently organic, designed to house an immaterial self.

One can trace Poe's progressive derealization of the body through several texts written in this period. In 1836, a year after Morse began work on the telegraph, Poe published "Macduff's Chess-Player." Poe's essay on the chess-playing automaton that traveled along the Eastern seaboard, challenging (and usually beating) all comers at its performances, is a pretext for considering the image of human consciousness as the ghost in the machine. Cribbing heavily from David Brewster's Letters on Natural Magic, Poe concludes that far from being "a mere machine," as its owner implied, all the internal operations of the more-than-life-sized automaton were "regulated by mind, and by nothing else" (EA, 1253). "Wherever seen, the most intense curiosity was excited by its appearance, and numerous have been the attempts, by men of all classes, to fathom the mystery of its evolution" (ibid., 1257); eliding the meanings of "evolution," one could argue that the Chess-Player provides Poe with the opportunity for an inquiry into the nature of identity parallel to that centered on the ape in "Rue Morgue." The difference is that in place of the ape's gross corporeality, one finds a construct of artificial parts.

In effect, Poe is striving toward a notion of artificial intelligence, and to that end he draws a long comparison between the Chess-Player and Babbage's Calculating Machine (more properly, his Difference Engine), which impressed Poe so much that he treated it in both his fiction and his criticism. Here he compares the relative sophistication of the Chess-Player to
Babbage's machine: "What shall we think of an engine of wood and metal which can not only compute astronomical and navigation tables to any given extent, but render the exactitude of its operation mathematically certain through its power of correcting its possible errors? What shall we think of a machine which can not only accomplish all this, but actually print off its elaborate results, when obtained, without the slightest intervention of the intellect of man?" (ER, 1255).

If the Chess-Player were real, he would represent a far more wonderful achievement than the Calculating Machine because, unlike the numbers in a shipping table, the moves in a chess game possess no "determinate progression" (ibid., 1256). The distinction between the rigid sequence of the calculations and the responsiveness of the Chess-Player is, for Poe, something very like intelligence itself; "if we choose to call the [Chess-Player] a pure machine we must be prepared to admit that it is, beyond all comparisons, the most wonderful of the inventions of mankind" (ibid.). This Poe will not admit, although by juxtaposing the idea of the automaton with the fixed codes of Babbage's calculator, Poe comes close to modeling human existence as a deterministic combination of the mechanical and the mathematical.

For all the ways in which it prefigures science fiction, "Maelzel's Chess-Player" still insists that there is a ghost in the machine, an ensouling principle secretly running the show. But in "The Man that Was Used Up" (1839), Poe implies that one can no longer clearly distinguish between human and machine. Poe liked the story enough to give it "a place of honor, second to 'The Murders in the Rue Morgue', in both Phantasy-Pieces and Prose Romances," but "it has often baffled or repelled commentators" (CW, 21376). The grotesqueness of the story's conceit suggests Poe's difficulty in incorporating the derailing effects of telegraphic cryptography into his fiction. Ostensibly, the story directs its satire against the socially ambitious narrator, who recounts his first acquaintance with "that truly fine-looking fellow, Brevet Brigadier General John A. B. C. Smith," distinguished veteran of the "Bugaboo and Kickapoo" wars. Although afflicted with "a certain stiffness of carriage," the General is a man of "remarkable appearance" who is in every other way distinguished for his beauty, nobility, and "air distinguished." Following a comic-Petrarchan admiration of the General's parts ("these were, indeed, the ne plus ultra of good legs" [PT, 307-8]), the narrator attempts to learn the source of the General's renown, but every time his interlocutors explain, "Why he's the man—," they are interrupted. The narrator decides to ask the General himself, but perceiving that "he delighted, especially, in commenting upon the rapid march of mechanical invention," they speak instead about the technological marvels of the age, a conversation that culminates in speculation on the telegraph: "There is nothing at all like it," [the General] would say; "we are a wonderful people and live in a
wonderful age. Parachutes and railroads—man-traps and spring-guns! Our steam-boats are upon every sea, and the Nassau balloon packet is about to run regular trips... between London and Timbuctoo. And who shall calculate the immense influence upon social life—upon arts—upon commerce—upon literature—which will be the immediate result of the great principles of electro-magnetics?" (ibid., 310).

In search of a solution to "this abominable piece of mystery," the narrator visits the General at home, having no intention of "being thwarted in touching the information I desired" (ibid., 314; emphasis added). Pleading urgent business, he is shown into the bedroom, as the story modulates into the grotesque:

As I entered the chamber, I looked about, of course, for the occupant, but did not immediately perceive him. There was a large and exceedingly odd-looking bundle of something which lay close by my feet on the floor, and as I was not in the best humor in the world, I gave it a kick out of the way.

"Hem! ahem! rather civil that, I should say!" said the bundle, in one of the smallest, and altogether the funniest little voices, between a squeak and a whistle, that I ever heard in all the days of my existence. (Ibid., 315)

The speaking bundle is nothing less (or more) than the General, and the rest of the story is filled with the narrator's horrified observance of the General's toilette: "Strange you shouldn't know me, though, isn't it?" presently re-squeaked the nondescript, which I now perceived was performing, upon the floor, some inexplicable evolution, very analogous to the drawing of a stocking. There was only a single leg, however, apparent. Deprived of organs lost in battle with the Indians, the General requires the help of a servant to don false leg, arm, shoulders and bosom, wig ("I am a shapely rough process after all; but then you can procure such a capital scratch at De L'Orme's"), teeth, eyes, and palate ("they not only knocked in the roof of my mouth, but took the trouble to cut off at least seven-eighths of my tongue"). As the story concludes, "it was evident. It was a clear case. Brevet Brigadier General John A. B. C. Smith was the man—was the man that was used up!" (Ibid., 315-16).

Poe's pun on "used up" has given rise to readings identifying the General with different antebellum politicians, but these fail to explain the story's extended anatomization of Smith, whose most human features turn out to be prothetic. The General—who lacks "information" in the most physical sense possible—is doubly a cyborg. In addition to his obvious physical extensions, he has the name General John A. B. C. Smith, the circulation of which guarantees him the social identity that his physical amplifications help him inhabit. As Robert Byer brilliantly shows, "The Man That Was Used Up" ruminates on the corrosive effects of publicity in a democracy increasingly stage-managed by the mass media. Poe's story depends on
the drama of circulating information—the gossip, news report, and rumor that constitute the public self in an age of mass communication. The joke is that Smith sees nothing odd in this. Unlike his body, his body image is intact: he is a Brief Battle General John A. B. C. Smith, distinguished veteran, and he perceives no discrepancy between his continual description in society, and the "nondescript" bundle of flesh he has become. The bodily ego survives the body, as the General refires himself with the aid of his multiple prostheses.

Even bereft of spaceships or aliens, "The Man That Was Used Up" is a kind of science fiction, one that registers the effects of telegraphy as an attack on normative concepts of the human. Poe's attitude toward technology here is mixed: Smith's faith in its promises ("Parachutes and railroads—man-traps and spring-guns!") is the butt of satire, but the intended humor is overshadowed by Poe's fascination with the possibility of literalizing the Jacksonian self-made man. Despite the General's talk of electromagnetics, in this vision of the cyborg Poe finds neither utopian transformations in social relations nor simply the loss of the real, but a queasy suggestion that the self, even in its image of the body, is a prosthetic construct whose social well-being depends on the repression of its organic basis.

Five years later, Poe did away with the Chess-Player's troublesome ghost. "The Swiss Bell-Ringers" was a jeu d'esprit for the New York Evening Mirror, announcing the visit of some Swiss musicians who appeared to great success in New York theaters in 1844 and 1845. Poe took advantage of their elegantly synchronized performances to imagine the self as a robot. His note to the Evening Mirror is written to correct the erroneous but common idea that these Bell-ringers are real living beings. The writer is firmly convinced that they are ingenious pieces of mechanism, contrived on the principle of Maedel's Automaton Trumpeter and Piano-forte player (exhibited here some years ago), but made so much more perfect and effective by the application to them of the same power which operates in the Electro-Magnetic Telegraph, but which should here be called Electrom牢固icable. A powerful electric battery under the stage communicates by a hidden wire with each of them, and its shocks are regulated and directed by the skilful musician and mechanician who secretly manages the whole affair. This explains the precision with which they all bow at the same instant, as if moved by the same soul (and so they are—an electric one), and keep such perfect time and order. (CW, 3:1119)

The object of "The Swiss Bell-Ringers" is clearly to reconsider the automaton in the age of electricity. In their technological purity, the Swiss bell-ringers represent the antithesis of the gross corporeality displayed by the contemporaneous M. Valdemar, who ends his days as "a nearly liquid mass of loathsome—of detestable putridity" (PT, 842). Poe has seen the
future, and it is *Metropolis*: a world in which the flesh has been replaced by a total-body prosthesis, which serves as a container for the "electric" soul. Given the degree to which Poe’s readers tend to attribute aspects of his writing to his character, there is a pleasing symmetry in Poe perhaps being the first of these cyborgs. As Bell notes, in 1850 Evert Duyckinck ungraciously wrote that Poe was "merely a Swiss bell-ringer, who from little contrivances of his own, with an ingeniously devised hammer, strikes a sharp melody of his own, which has all that is delightful and affecting, that is attainable without a soul." 30

**Dark Fiber**

Now, perhaps, one can better evaluate my contention that Poe’s science fiction constitutes a series of hidden fibers or threads connecting nineteenth- and twentieth-century literary cultures. Certainly, stories such as “The Man That Was Used Up” and “The Swiss Bell-Ringers” resonate with many accounts of postmodern experience. As Donna Haraway frames it, postmodernity is characterized by the simultaneous collapse of Newtonian space and time and of an organic humanism. Cultural and scientific problems have simultaneously been recast as problems in information processing. Haraway’s “Cyborg Manifesto” is premised on the assumption that information is “just that kind of quantifiable element (unit, basis of unity) which allows universal translation, and so unhindered instrumental power.” 31 Because of this potential for “universal translation,” information has become a universal currency, a transcendental signifier able to bring science, technology, and culture into conversation.

Consequently, information emerges as a unifying characteristic of the postmodern social order. Illustrating the changes between cyborg culture and its nineteenth-century precursors, Haraway pairs a series of key terms with their postmodern equivalents. These include the following:

<table>
<thead>
<tr>
<th>Representation</th>
<th>Simulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bourgeois novel, realism</td>
<td>Science fiction, postmodernism</td>
</tr>
<tr>
<td>Organism</td>
<td>Biotic component</td>
</tr>
<tr>
<td>Depth, integrity</td>
<td>Surface, boundary</td>
</tr>
<tr>
<td>Reproduction</td>
<td>Replication</td>
</tr>
<tr>
<td>Mind</td>
<td>Artificial Intelligence</td>
</tr>
</tbody>
</table>

The problem with using this list as a tool to clarify different historical periods is that Poe’s cryptic graphic fiction *already* embraces all the terms Haraway associates with postmodernity. With their thinking machines, automata, prostheses, simulacra, invented voyages, synthetic identities, and textual replications, Poe’s tales are founded on a repudiation of the terms (representation, realism, depth, integrity) used to characterize nineteenth-century fiction, and on the embrace of simulation in their stead.
The inference to be drawn is not that Haraway's scheme is generally wrong, but that Poe's recognition of the cultural power of information in an era of telecommunications was remarkably prescient. In antebellum America, the almost simultaneous creation of the penny press, railroads, transatlantic packet ships, and the telegraph contributed to the rise of a literary public interested in producing, consuming, and exchanging information. In concert with these developments, Poe's writing "derives its raw materials not from divine inspiration, experience, or a discrete literary tradition, but instead from the whole jumbled mass of information that has been accumulating from ancient times down to the present moment."

Poe could exhibit a prodigious mastery of this jumble: in "The Mystery of Marie Roget," he produced pages of technical minutiae, much of it imported wholesale from newspaper coverage of the murdered Mary Rogers. In the process, Poe manipulated his audience's hunger for novelty to create factual-sounding pieces about the crossing of the Atlantic ("The Balloon-Hoax"), or the transmutation of lead into gold ("Von Kempelen and His Discovery"), even inserting his fiction into a genuine scientific discourse: "By reference to the 'Diary of Sir Humphrey Davy,' (Cottle and Munro, London, pp. 150), it will be seen at pp. 53 and 82, that this illustrious chemist had not only conceived the idea now in question, but had actually made an inconsiderable progress, experimentally, in the very identical analysis now so triumphantly brought to an issue by Von Kempelen" (PP, 909).

"The Man That Was Used Up" seems to be smack in the middle of translating itself from Haraway's left-hand column to her right-hand column, as the narrator realizes with shock that there is something profoundly dehumanizing in the miraculous technologies of the present. What is dehumanizing, though, is not an Orwellian subjection to the machine, but the machine's subjugation to human fantasies and desires. Even by Poe's loose standards, the General in "The Man That Was Used Up" and Scheherazade in "The Thousand-and-Second Tale of Scheherazade" are mere effigies through which Poe makes his joking points. The continuous Petrarchanism of description in the story is Poe's labored way of shoving up the structural failure of representation in a time of prosthesis. The General's perfect appearance—his "richly flowing" hair, his "mouth utterly unquelled," with "the most brilliantly white of all conceivable teeth," from which issued "a voice of surpassing clearness, melody, and strength" (PP, 307–8): all these are simulations, biotic components extrinsic to the "squeaking bundle" himself. By dissolving such root concepts as self, character, and body, the advance of technology obviates realism as a mode of representation.

The General's transfiguration into a bionic man follows from the prosthesis of telegraphy. Clearly, the telegraph is not Poe's manifest subject. But the theme of technological celebration coincides with the story's interest in prosthetics in the General's otherwise unaccountable paean to tele-
graphic communication, with its "immense influence upon social life—upon arts—upon commerce—upon literature." In "Scheherazade," too, the telegraph is linked to the body's fragmentation: describing the telegraph and teleprinter to the Caliph, Scheherazade claims that a wizard "had cultivated his voice to so great an extent that he could have made himself heard from one end of the earth to the other. Another had so long an arm that he could sit down in Damascus and indite a letter at Bagdad—or indeed at any distance whatsoever" (PT, 802). Unable to find an experiential parallel to the telegraph's power, Poe extends these wizards' hands and voices to absurd dimensions, in a moment of ostensibly comic anthropomorphism.

As "The Man That Was Used Up" and "Scheherazade" indicate, technological progress anachronizes the present. Technology is a machine of cultural displacement, one whose positive moment is utopian futurism and whose negative moment is the countervailing realization that the past will be rendered illegible by change over time. Both moments are visible in the late satire "Mellonta Tauta," which purports to be the translation of a letter written by "Pundita," "On Board Balloon 'Skylark,' April 7, 2848." Although "Mellonta Tauta" celebrates such marvels as magnetically driven ocean lines and a transatlantic telegraph, Poe also reminds us that tempus fugit—times change, and we change with them. Pundita's knowledge of the past is woefully corrupt: like the conquering primates in Planet of the Apes, she has only a wayward sense of the "savage" lives lived by the "Jurtmans," "Witch," and the "Americans" in the dim past of the nineteenth century. Though Pundita's garbled history, Poe discredits the notion of cultural progress.

Poe also understands that despite its breathtaking speed, the telegraph contributes nothing to the historical transmission of culture. Indeed, its speed may actually interfere with our perception of the world. In her letter, Pundita recalls a "fight on the railroad across the Kanadaw continent" taken at "fifty three hundred miles the hour." "This was travelling," she explains, in a familiar association of travel, modernity, and collapsing space. Yet something is lost with such haste: "Do you remember what an odd sensation was experienced when, by chance, we caught a glimpse of external objects while the cars were in full flight? Everything seemed unique—-in one aspect" (PT, 979). Rather strikingly, Poe virtually invents the idea of dark fiber himself when, in a story primarily about the telegraph, he discusses how the railroad lines laid down in his own era predict the paths of future development: "Pundita says that the route for the great Kanadaw railroad must have been in some measure marked out about nine hundred years ago! In fact, he goes so far as to assert that actual traces of a road are still discernible—traces referable to a period quite as remote as that mentioned. The track, it appears, was double only; ours, you know, has twelve paths" (ibid., 979). The communications technologies of the next millennium, Poe aug-
suggests, will follow paths laid down today (just as, by implication, the science fiction of the future will follow the contours established by Poe’s postdated letter to the future).57

At the birth of the telegraph, Poe imagines how seamlessly the new technology will be integrated into ordinary life. “What would we do without the Atlantic telegraph?” Pundita asks. To judge by her own writing, the answer is not much differently. Peering down from her transatlantic balloon, Pundita witnesses “the magnetic cutter in charge of the middle section of floating telegraph wires. I learn that when this species of telegraph was first put into operation by Horse, it was considered quite impossible to convey the wires over sea; but now we are at a loss to comprehend where the difficulty lay! So wags the world” (PT, 873). Horse or Morse; Arius Tootle or Aristotle; Cant or Kant: what does it matter? Writing at the moment of American empire, Poe explodes the boosterism of the day by imagining his America dissolved by time into illegible fragments. Echoing the era’s fascination with Egyptian monuments and their “lost” originary writing (a theme treated with apparent respect in Narrative of A. Gordon Pym), “Mellonta Tauta” sacrilegiously concludes with the unearthing of some “genuine American relics belonging to the tribe called Knickerbocker,” including an inscription on a monument in memory of George Washington, on “the anniversary of the surrender of Lord Cornwalis to General Washington at Yorktown, a.d. 1781”—an event Pundita interprets as the prelude to cannibalistic sacrifice.

Cybernetic Reading

Today, a century and a half after Poe’s experiments in science fiction, the influence of his writing is most profoundly felt in a generalized sense of the cryptographic collapse of space and time, and in the simultaneous interest in the nature and function of information. Occasionally one meets with revisions of specific texts by Poe, as in the mathematician and novelist Rudy Rucker’s Hollow Earth (1991), a vivid continuation of the adventures of Arthur Gordon Pym. But a more typical form of debt is that exhibited by William Gibson and Bruce Sterling in The Difference Engine, which explores the wonderfully Poe-like consequences that follow from their conceit that Charles Babbage had successfully produced a workable steam-driven version of his Difference Engine in the mid-nineteenth century, thus introducing the computer revolution into the midst of Victorian England.58

Like every cyberpunk author, Gibson is explicitly concerned with the social and cultural valence of information. That social identities are formed out of encoded signs is to him a commonplace, the jumping-off point for his fiction. But this development of a culture based on the abstract power of binary ciphers comes at a price. For Jaron Lanier, founder of Virtual Perception Laboratories, information can be described as alienated experi-
ence—the result of a process by which some form of perceptual knowledge is translated into formal expression, distant from the body that originally knew it. Such alienation has always been a price paid for the acquisition of culture, but in a world of texts, the overwhelming amount of information constitutes an assault on human identity. This spread of digital communications has produced a corresponding desire to “reexperience” information—which means, among other things, to render it visible, bounded, hieroglyphic. For Lanier and Gibson, one response is to reconverge complex forms of information back into perceptual entities, as in the helmet and data-glove of Lanier’s virtual systems, or in the imagined cyberspace of Gibson’s Neuromancer.

For Gibson, digitizing information leads to a conception of the computer as a cryptographic matrix, within which a series of electrical ones and zeroes translate the world into data. Argued that “information is the dominant scientific metaphor of our age, so we need to face it, to try to understand what it means,” Gibson acknowledges that “Newtonians didn’t see things in terms of information exchange, but today we do.” Such exchanges center on the electronic computer, whose digital codes represent a two-dimensional key to an imagined three-dimensional space. As Gibson remarks, “Everyone I know who works with computers seems to develop a belief that there’s some kind of actual space behind the screen, someplace you can’t see but you know is there.” Like the cryptogram, the computer is unlocked with a code and operated with a code, and like the cryptogram, the computer is ostensibly infallible. The computer becomes a modern philosopher’s stone, capable of transforming matter into data, which can then be statistically reprocessed to reveal truths about the world never visible to the eye.

On its appearance, Neuromancer was widely praised for its innovative imagination of virtual reality. Yet what seems newest in Gibson’s novel turns out to have deep roots in Poe’s treatment of technology. Extrapolating from Lanier’s desire to experience information, Gibson imagines a time when computer networks have become so extensive, and information so oppressive, that information systems have to be recoded as perceptual structures known as cyberspace. The novel’s protagonist is Case, an “interface cowboy” trained to steal computer data from these vast computer networks by patching electrodes on his temples and “jacking in” to cyberspace. For the duration of the interface, Case transforms himself into a virtual self within the vividly three-dimensional world of the computer network, breaking and entering data banks.

Late in Neuromancer Case jacks in, only to discover blankness: “no matrix, no grid, no cyberspace” (233). Instead, he finds himself on a beach near a bunker in which he encounters Linda Lee, a former girlfriend who had died earlier in the novel. Case has been incorporated into a kind of CD-
ROM world produced within cyberspace by a renegade artificial intelligence named Neuromancer. Trapped there, Case gradually accustoms himself to its real unreality and eventually makes love to the synthesized version of Linda Lee, discovering “a strength that ran in her” that he had “always managed to forget.”

It belonged, he knew—he remembered—as she pulled him down, to the meat, the flesh the cowboys mocked. It was a vast thing, beyond knowing; a sea of information coded in spiral and pheromone, infinite intricacy that only the body, in its strong blind way, could ever read.

The zipper hung, caught, as he opened the French fatigues, the coils of toothed nylon clotted with salt. He broke it, some tiny metal part shooting off against the wall as salt-rotten cloth gave, and then he was in her, effecting the transmission of the old message. Here, even here, in a place he knew for what it was, a coded model of some stranger’s memory, the drive held. (Ibid., 239–40)

This is incoherent, not just because Case’s epiphany over incarnation occurs in the disembodied nowhere of cyberspace, but also because the body itself turns out to be an unbelievably complex machine for information processing: “a vast thing, beyond knowing, a sea of information coded in spiral and pheromone.” In Neuromancer, information is all there is—a point that Gibson drives home by treating sex, a token for the embodied real, as the ultimate form of cryptography, in which the text written into the DNA of Case’s semen effloresces into three-dimensional existence. That there is no semen here—that the whole thing is a cognitive shell game—does not interfere with Gibson’s point, since the central drama of cyberpunk is just this type of failed Manichaean encounter between an embodied and a symbolic identity in which the binary terms collapse.

Indeed, Neuromancer depends on this oxymoronic movement between representation and simulation, as when we learn that only the “strong blind” body has the right sort of vision for “reading” the genetic text. The novel oscillates between the careful representation of throwaway moments, whose pointless quiddity functions as a code for the real (“the zipper hung, caught, as he opened the French fatigues, the coils of toothed nylon clotted with salt”), and the abstration of Case’s thought (“effecting the transmission of the old message”). Consider the moment when, after making love with Linda and falling asleep, Case is roused by distant sound:

The music woke him, and at first it might have been the beat of his own heart. He sat up beside her, pulling his jacket over his shoulders in the predawn chill, gray light from the doorway and the fire hung dead. His vision crawled with ghost hieroglyphs, translucent lines of symbols arranging themselves against the neutral backdrop of the bunker wall. He looked at the back of his hands, saw faint neon molecules crawling beneath the skin, ordered by the unknow-
able code. He raised his right hand and moved it experimentally. It left a faint, fading tail of strobbed afterimages. (Ibid., 241)

Case's perceptual field is interrupted by music that a friend is blasting into the ears of the jacked-in cowboy. As the neural interference of the music shatters his absorption in the construct, Case experiences its dissolution into digital code. Case finds himself revealed as signs. Taking advantage of the beach's dissolution, he walks out of the cyberspace construct and back into his real life.

As these excerpts imply, it is often impossible to know what should count as the real within the novel's representations. To Case and to the reader, the beach construct feels every bit (or byte) as authentic as the world from which Case has come (itself a space station specializing in terrestrial simulation). Gibson seems to want it both ways, validating the body's quality even as that body is revealed as only a sophisticated textual processor, translating information about the world into sensible percepts in ways that computers can only approximate. In the last analysis, Neuromancer's novelty derives from literary effects that originate in Poe's information-oriented revision of Defoe. Case's engagement with the codes of cyberspace transparently figures the reader's relation to the text, alternately experienced as a fully fleshed world and as a series of foreign signs. One can, in fact, locate the model for Case's cyberspace dissolve at the origin of the novel, on another beach just off the coast of Brazil (itself an alien new world): "I was exceedingly Surprized with the print of a Man's naked Foot on the shore. ... But after innumerable fluttering Thoughts, like a Man perfectly confused and out of my self, I came Home to my Fortification, not feeling, as we say, the Ground I went on." 64

By the time of Neuromancer, the loss of the real that Crusoe experiences at the sight of the footprint has now become a "natural" fact of existence. Unlike Crusoe, who panics in the face of the alienating print, Case is rescued from his claustrophobic construct by the dissolution of the text's representations into signs. For Case, the system of the code is a source of power, not of fear. The difference between Gibson and Defoe is finally Poe—not only because the caverns in Pym mark the moment when, by exploiting the semiotic rupture in Defoe's realist adventure, a certain kind of science fiction was born, but also, and more importantly, because Poe's cryptograph offers a primary source for the denaturalized technological power that Case (and presumably the reader) experiences through Case's command of symbols. In Neuromancer, the problems posed by Poe and ostensibly resolved by the hieroglyph have come full circle: although the hieroglyph attempts to unite symbol and percept by making the former an image, one aspect of Poe's modernity consists of his cryptographic willingness to understand information as the basis of perception.
Ultimately, Poe intimates, our knowledge of the world is symbolic, not material. In this he anticipates the striking identification of the self with data in *Neuromancer*, which concludes with a vision of Case both inside and outside the data system of the computer (and, by extension, the virtual reality of the novel). The end of Gibson's book represents the culmination of a logic lodged darkly in the fibers of Poe's science fiction. (How unlikely must it have once seemed for a fiber to carry light, or language?) Case's dual existence (as body and as data) repeats a separation initiated by the discovery of writing, that first prosthesis. It is predicated, too, on the death of Newtonian space and time, which structure the coordinates of our mortality.

Case is, then, immortal: deprived of linear spatial and temporal trajectories, Case fissions in two, bound both to the flesh and to the colder runes of data.

Despite its erotic investment in codes and data, though, the conclusion of *Neuromancer* betrays a nostalgic attachment to the Adamic nature of the hieroglyph. Saved from the digital construct of the beach, Case goes on to witness the electric synthesis of Winternute and Neuromancer, to collect the money owed him, and to get a new liver and pancreas to replace the poisoned sacs within him. He returns to Earth, back to work as a data cowboy, when, "one October night,"

"punching himself past the scarlet tiers of the Eastern Seaboard Fission Authority, he saw three figures; tiny, impossible, who stood at the very edge of one of the vast steps of data. Small as they were, he could make out the boy's grin, his pink gums, the glitter of the long gray eyes that had been Riviera's. Linda still wore his jacket, she waved, as he passed. But the third figure, close behind her, arm across her shoulders, was himself."

Peering into cyberspace, Case sees himself in the distance, a small Adam, his own hieroglyph. With that moment, *Neuromancer* reaches the culmination of a certain fantasy of identity and information, now ubiquitous, that was first shaped by the telegraphic prose of Poe's science fiction.
Chapter 4. Dark Fiber

1. William Rochfort, _A Treatise upon Arranography; or, A New Method of Secret Writing, Defying Discovery or Detection, and Adapted for All Languages_ (London, 1856); William Thompson, _A New Method for the Instruction of the Blind_ (Nashville, Tenn., 1832).


4. Kahn, _Codebreakers_, 111.


7. Compare this to Mark Taylor’s analysis of the cyborg, which is made possible by the gradual removal of the barriers separating interiority and exteriority, as well as public and private space. This collapse of differences proceeds in two directions at once: from outer to inner and, conversely, from inner to outer. On the one hand, the body itself is progressively colonized by prosthetic devices. . . . On the other hand, artificial wombs, test-tube babies, artificial intelligence, and computer literacy ‘externalize’ bodily and mental functions to such an extent that the outer is no more merely outer and the inner simply inner. . . . If, as contemporary biologists argue, physical organisms, human as well as nonhuman, are information machines created and
sustained by digital codes, the difference between the real and the hyperreal becomes obscure.

Taylor, "Terminal Space," 27.


13. Ibid., 4.


16. Mabee, American Leonardo, 249. A former student of both Washington Allston and Benjamin West, and the first president of the National Academy of Art, Morse was one of the important American painters of his generation. Only his bitter failure as a history painter (due partly to his fervent anti-Catholicism) led him to forsake art in order to create the telegraph. In the midst of this decade-long pursuit (from 1833 to 1844), Morse, on a trip to secure funds in Europe, heard of Daguerre's new process, which he eagerly brought back to this country, thus earning the distinction of having introduced America to the two most revolutionary communication technologies of the nineteenth century. He may have taken the first daguerreotype made in America; almost certainly, he took the first portrait. Morse's career combines what are usually thought of as polar forms of representation: on the one hand, the iconic, "sensible" forms of painting and daguerreotype; on the other, the numeral code, reduced by Morse to a binary minimum.

17. See, for instance, the opening scenes of Aeschylus's Agamemnon.

18. A German version had been proposed as early as 1787. See Mabee, American Leonardo, 203.

19. Ibid., 207. In 1838, the year Morse submitted his request for a patent to Congress, four other telegraphic plans were also sent in; significantly, his was the only electrical system of record.


22. Ibid., 258.

23. PT, 312. Poe is not necessarily referring to Morse's invention. The word was coined in 1792 by the French inventor Chappe, and was used to describe a semaphore system on poles that he invented, which achieved a minor success in England and France.

also Daniel J. Castron, *Media and the American Mind: From Morse to McLuhan* (Chapel Hill: University of North Carolina Press, 1982), 3–29, for a useful essay on the cultural meanings of the telegraph. As Stephen Rachman has observed, the association of telecommunications and space travel continues in the current telephone company gambit of awarding frequent-flier miles for long-distance calls.


27. The abbreviation of “cryptography” into “crypto” here reflects current usage.


32. American painting has from the start been intimately tied to writing. Given space, one could trace a continuous line from the bolder tradition of the seventeenth and eighteenth centuries, with its strong emphasis on outline and sign painting, through the text-based work of Edward Hicks and Thomas Eakins, to the reemergence of the sign in the pop art of the 1960s.


34. Eighty years later, writers struggling to conceptualize the significance of film turned to the same metaphor of hieroglyphic inscription. “Abel Gance, for instance, compares the film with hieroglyphs: ‘Here, by a remarkable regression, we have come back to the level of expression of the Egyptians’” (Benjamin, *Illuminations*, 227).


39. Morse is quoted in Rudisill, *Mirror Image*, 57. Note, too, that Poe seems less interested in how this “most wonderful” of human inventions works than he is in the question of how one ought to spell and pronounce it: “This word is properly spelled Daguerreotype, and pronounced as if it were written Daguerrvois eclipse. The inventor’s name is Daguerr, but the French usage requires an accent on the second e, in the formation of the compound term” (Bringham, *Poe’s Contributions*, 20). Again, Poe emphasizes linguistic structure as the key to comprehension.

40. On Poe’s mathematization and formalization of concepts, see Leon Chai,

47. "Marginalia," ER, 138-39. Consider also Poe’s insistence that "arithmetical or algebraical calculations are, from their very nature, fixed and determinate. Certain data being given, certain results necessarily and inevitably follow. These results have dependence upon nothing, and are influenced by nothing but the data originally given" ("Maelzel’s Chess-Player," ER, 135).


49. Ibid., 16.

50. Poe comically displays his mistrust of the senses in both "The Spectacles" and "The Sphinx" (ER, 612-42, 843-47).


53. The mind in question belonged to a rather acrobatic assistant, sequestered under the chess-table cabinet and in the Chess-Player’s torso, who adjusted his position to remain invisible when Maazel opened the cabinet doors.

54. In "The Thousand-and-Second Tale of Scheherazade," Poe describes, respectively, Maazel’s Chess-Player and Babbage’s Calculating Machine as follows: "One of this nation of mighty conjurers created a man out of brass and wood, and leather, and endowed him with such ingenuity that he would have been as wise as all the race of mankind with the exception of the great Caliph Haroun Alraschid. Another of these magi constructed (of like material) a creature that put to shame even the genius of him who made it; for so great were its reasoning powers that, in a second, it performed calculations of so vast an extent that they would have required the united labor of fifty thousand fleshly men for a year" (PT, 801).

55. See the July 1846 "Marginalia" for additional references.


57. Bell, Development of American Romance, 103.


60. Ibid., 161-62.
54. Terence Whalen, “Edgar Allan Poe and the Horrid Laws of Political Economy,” *American Quarterly* 44, no. 3 (1992): 381-417. After the Panic of 1873, Poe’s writing, Whalen argues, was “conditioned not only by the depression in the publishing industry, but also by the more catastrophic emergence of information, which systematically undermined all traditional standards of literary value” (384).


56. Almost all of the figures the General cites were, in fact, Philadelphia traders who specialized in false teeth, wigs, prosthetic legs, and the like. See CR, 2:391-92.


58. The means by which Gibson and Sterling wrote *The Difference Engine* suggest how telecommunications have altered writing. According to the authors, no hard copy of the novel ever existed. Instead, the manuscript was exchanged electronically, through a descendant of the telegraph, with each author “free to add to and revise the text in any manner he saw fit.” The other was also free to “undo” such revisions at any time subject to the limitation of his own memory. Because no backup copies existed for reference, . . . after many exchanges, erasures, and addenda, neither author could confidently point to a section of the text and claim exclusive authorship” (Bryan J. Malone, “Cyberpunk” [senior thesis, Williams College, 1993], 3:6). See William Gibson and Bruce Sterling, *The Difference Engine* (New York: Bantam, 1991).


61. Ibid., 270.


63. Cyberpunk fiction aims to eradicate “the difference between the organic and the synthetic by insisting that what had been perceived as difference was merely a function of ‘language’ barrier, an interfacial or interloquency deficiency.” Cybernetics is thus an alchemical instrument akin to cryptography: it, too, is “a science of translation that aspires to a sorcery of control and True Naming” (Malone, “Cyberpunk,” 3:9).

64. Defoe, *Robinson Crusoe*, 153-54.


Chapter 5: Resurrexi
