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HYPERTEXT: THE ALPHANUMERIC PHOENIX

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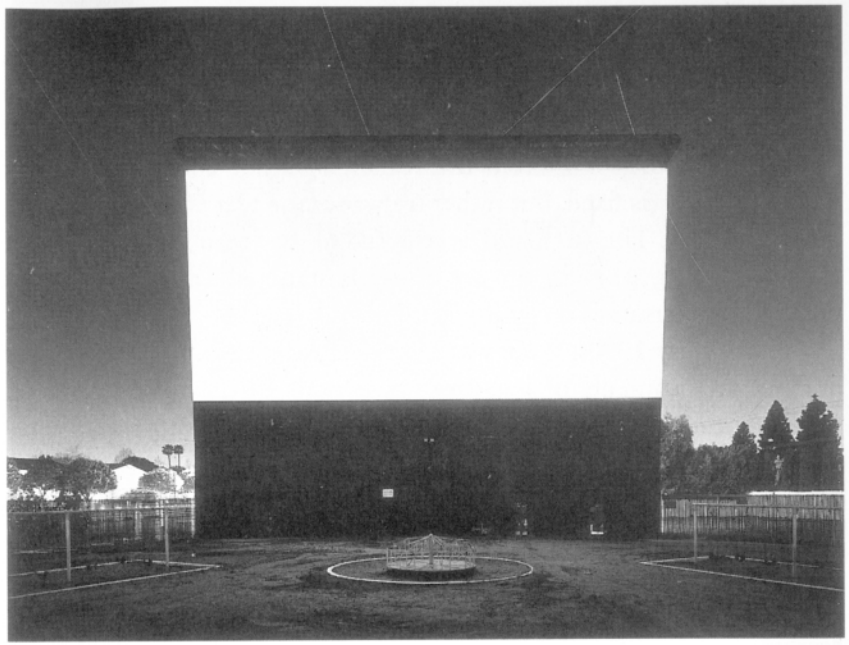
Peter Lunenfeld, Snap to Grid. Cambridge, MA: MIT Press 2000, 44-54

The sixteenth-century shift from manuscript to print was pushed in large measure by the populace's demand for copies of the living word of God. The 20th century's escape from the Gutenberg Galaxy into the realms of the nonlinear, the hypertextual, and the multimediated was driven by something far humbler—the memorandum. The generation of ever more paper in an information economy produced a demand for computer systems to create and store documents. These systems became smaller and less expensive with each passing business quarter until they reached a point when users moved the machines out of their offices, on the road, and into their homes.

The proliferation of word-processing systems and screen-based reading environments like the Internet has engendered a radical reorientation in the way that people write and read, and hence think. Rather than having to rewrite every text from start to finish, the contemporary writer/reader enters a text at any point and amends it, with all the other elements shuffling themselves into a new order—a fluidity the term nonlinear is meant to describe. This shift has taken place not just in the sheltered laboratories of academia and industry but as well to a majority of those people who write in the information economy.

No longer stationary on the page, the word once digitized is afloat in a universe of polyvalent databases. Reading becomes less a matter of following than a process of extracting. The user enters the database like a miner after precious metals. The search may take unexpected turns, but extraction is the paramount concern. The pressing need for a system of extraction encouraged the next shift away from the stable universe of the book, a shift that took full advantage of the computer's ability to link disparate bits of data instantaneously, regardless of their origin.



The very vastness of the cinematic screen challenges our preconceptions about how type and text should be displayed: a movie is a billboard, not a page.

Hiroshi Sugimoto, *Studio Drive-in, Culver City* (1993). Courtesy of Sonnabend Gallery, New York, and Angles Gallery, Santa Monica.

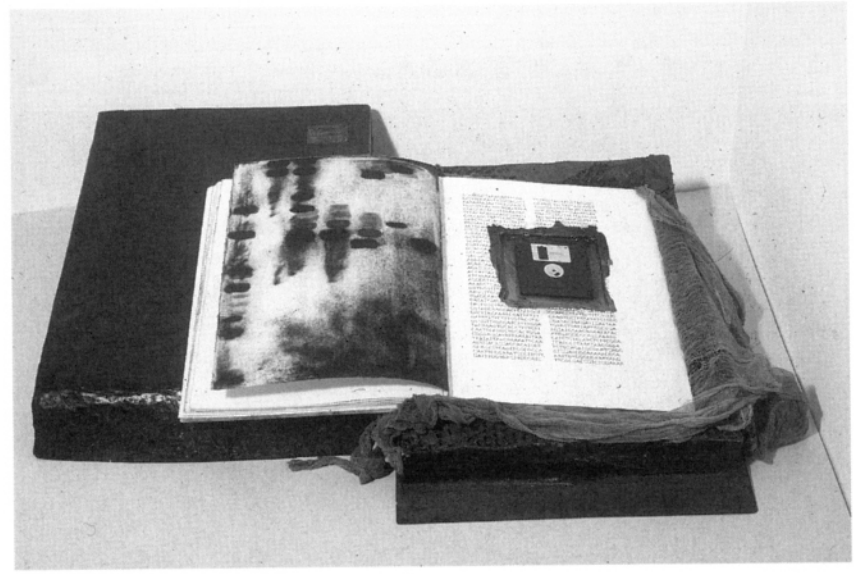
The word "hypertext" was coined in the 1960s by visionary systems designer Ted Nelson, who defines it as "non-sequential writing—text that branches and allows choices to the reader, best read at an interactive screen."[1] The interactivity of the most sophisticated hypertexts allows users to choose their own paths through materials contained in the computer or in any electronic database to which it is connected. As a technology, it is the most sophisticated manifestation of the computer's impact on writing and reading. At its best, then, the medium of hypertext opens up the static book to nonlinear exploration, exegesis, and, of course, extraction.

There has been an explosion of literary critical writing about hypertext.[2] Once exposed to electronic language's open-ended, multiuser, multi-creator documents, theorists (ever resourceful) have noted

similarities to poststructuralist notions of the production of meaning. Clearly, digital environments complicate questions of authorship, as noted in chapter 3, "Real-Time Theory." They also seem to offer a privileged space to explore theorist Roland Barthes's valorization of "writerly" textuality, wherein the reader does not encounter a work whose meaning is fixed, but rather (re)writes the text through the process of reading. The "writerly" is opposed to the "readerly" qualities of classical fiction, wherein the art object is static and the hierarchy of creator and consumer is rigidly maintained.[3]

In the early 1990s, there was a surge of interest in the possibilities and accomplishments of hypertextual fictions in the popular media. On the same Sunday morning, the book sections of both the *Los Angeles Times* and the *New York Times* had front-page reviews of hyperfictions.[4] The *New York Times*'s was actually the second cover piece the newspaper ran by novelist Robert Coover on emerging hyperfictions. Coover included a long review of Stuart Moulthrop's *Victory Garden*,[5] short reviews of ten other hyperfictions (occasionally scathing, a refreshing change for a field where breathless praise for the new is the norm), a theoretical overview of hypertext, and a resource guide for ordering the works reviewed. In other words, *The New York Times Book Review*, the most powerful critical organ of the publishing establishment, took hypertext seriously.

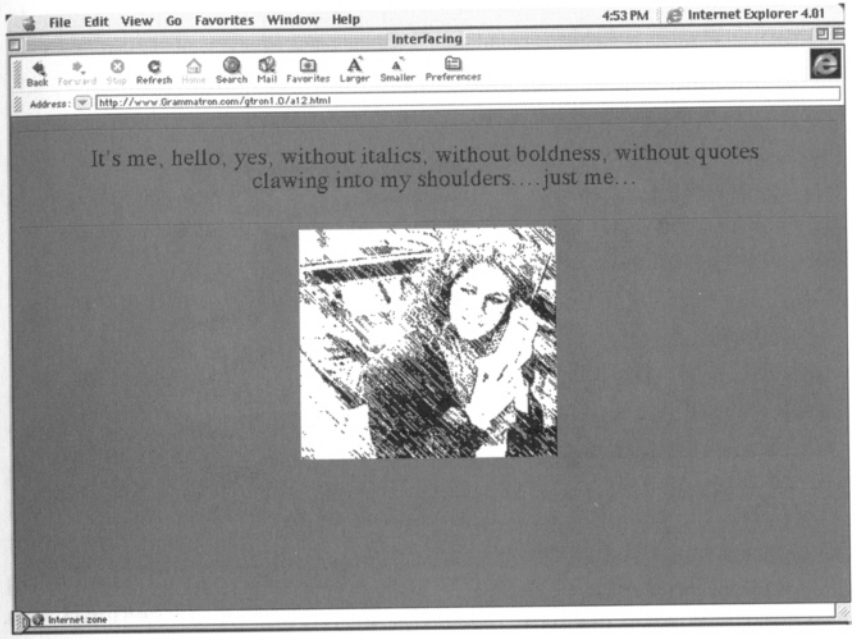
One of the most evocative hypertexts published in the 1990s was *Agrippa: A Book of the Dead*. *Agrippa* was a collaborative project among book publisher Kevin Begos, artist Dennis Ashbaugh, and author William Gibson, best known as the author of the previously mentioned *Neuromancer*, the most influential cyberpunk science-fiction novel. *Agrippa*, however, is something quite distinct. Described as "a black box recovered from some unspecified disaster," *Agrippa* opens to reveal charred-edged pages, covered with repeated letter patterns: "AATAT / TACGA / GTTTG."[6] After a moment, the realization comes that these are not merely couplets of concrete poetry, that, in fact, they are the signifiers of the genetic code, sequences of deoxyribonucleic acids. The pages of DNA codes are intermingled with Ashbaugh's engravings of subjects ranging from guns to telephones. Embedded within *Agrippa*'s back cover is a computer disc that contains the text of Gibson's poem: "The sweet hot reek/ Of the electric saw/ Biting into decades" closes one stanza. What is unusual is not simply that the text is designed to be read only on the screen—many hypertexts are written to be read in this way—but rather that Gibson's work is meant to be read once and once only. The floppy disk is programmed to destroy the text as soon as it is read. The poem itself is about family and memory, which are usually considered to be elements of our lives that endure. *Agrippa* plays with temporalities; the past, present, and future implode as an integral part of experiencing the work. That the material is intended to be read once and only once, and then to deteriorate, is in itself the deftest of hyperaesthetic gestures—"biting into decades" indeed.



Agrippa plays with temporalities; the past, present, and future implode as an integral part of experiencing the work.

Agrippa: A Book of the Dead (1992). Text by William Gibson, etchings by Dennis Ashbaugh. Photo © by Ken Showell. © 1992 Kevin Begos Publishing.

This kind of disk-based hyperfiction, no matter how packaged, did not emerge as a marketable commodity within the constraints of the publishing industry. Its spirit, however—and many of its forms—moved gleefully onto the World Wide Web. "Avant-pop" hyper-



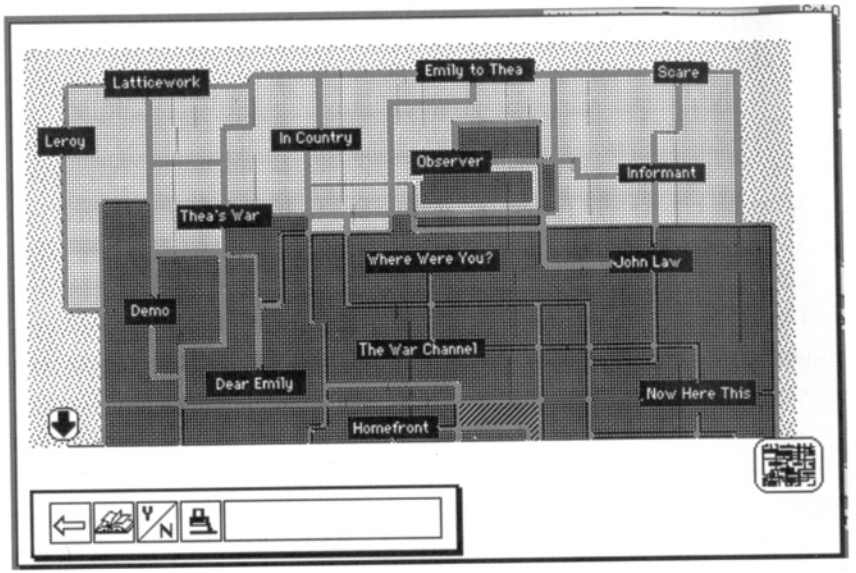
Grammatron is a hypermedia narrative environment that expands into audio and animation, complete with "Grammatron magic cookies" connecting users to pages determined in part by which links they previously followed.

Mark Amerika, *Grammatron* (1999). Screengrab from <*www.Grammatron.com*>.

author Mark Amerika is perhaps the best known author of sustained hyperfictions on the net. Amerika describes *Grammatron* <www.Grammatron.com> as "a public-domain hypermedia narrative environment," a work that expands into audio and animation, one that comes complete with "Grammatron magic cookies" that connect users to pages determined in part by which links they previously followed.[7] That these magic cookies might indeed be reading the reader is a new twist on McLuhan's observation that "schizophrenia may be a necessary consequence of literacy."[8]

The Rebirth of Text

The development of hypertext came at the close of a century that had been a great one for the printing business, but ironically, an awful one



No longer stationary on the page, the word once digitized is afloat in a universe of polyvalent databases, like this hyperlinked map. Reading becomes less a matter of following than a process of extracting.

Stuart Moulthrop, *Victory Garden* (1993), screen grab from the hypertext.

for the culture of literacy. For one hundred years, commercial and governmental bureaucracies generated a terrifying tower of paper at the same time that print was losing its primacy as *the* source for information, for education, and for entertainment. Audiovisual mass media, especially cinema and television (those bastard children of the photograph and the radio), have poisoned the environment for text.[9] It is not simply that audiences are seduced away from typographic culture by the moving image, it is that it is almost impossible to read text within linear audiovisual media like film and TV. One of the defining qualities of printed text is that readers can skip around, return to previously read passages, linger or push on—in other words, set their own pace. Chapter 3, "Real-Time Theory," noted the ways in which the Web can push media on the Internet, but it is important to remember that film and television are the original push media: their forward

movement is uncontrollable and it is impossible to refer back to that which has come before.[10]

It is this linear dynamic that accounts for the central importance of overdetermination in the dominant narrative forms of entertainment media. Plot points, character names, vital props, important locations, all must be constantly reiterated if they are to make their required impact on the spectator. Commercial film and television are thus quintessentially overdetermined media. Like everything else in film and television, text in linear dynamic media spews out at a predetermined and uncontrollable rate, and can neither be referred to nor reversed.[11]

As well, film and television subject text to specific technological abuse. Though the resolution of 35mm film is higher than electronic displays, the very vastness of the cinematic screen challenges our preconceptions about how type and text should be displayed: a movie is a billboard, not a page. If the overwhelming size of the screen is a problem in the cinema, television offers different limitations. NTSC video (the North American standard) is a terrible medium for all but the largest fonts.[12] As commercial videotext providers learned in the disastrous experiments of the 1970s, people do not like to read from their television screens. NTSC is an interlaced video system, meaning that only alternating lines are refreshed by the scanning gun, contributing to American TV's overall blurriness, which in turn leads to eyestrain and headaches whenever text is present.[13]

The computer, on the other hand, solves both of the major problems presented by cinematic and televisual technologies. The computer monitor's scale is obviously more intimate than the screen in a movie theater. Ergonomically, a computer workstation offers a more amenable distance for reading than the typical living-room layout of a couch placed far from the television.[14] In addition, computers use much higher resolution non-interlaced screens, which offer vastly better legibility. Beyond these technological differences, the higher-order possibilities of nonlinear access, hypertextual linking, and interactivity that distinguish digital media can combine to offer the kinds of temporal control we expect from print rather than audiovisual media. In other words, the user of an interactive entertainment has the opportunity to go back, to linger, or to speed ahead, just as with a

printed magazine or novel. Dynamic, yet free to escape from the constraints of overdetermination, digital media are open to text and subtle typographic treatments. Alphanumeric text has risen from its own ashes, a digital phoenix taking flight on monitors, across networks, and in the realms of virtual space.

The Technics of Text

It is not simply that computers are technically suited to revive typographic culture; users, for decades now, have been conditioned to view computers first and foremost as machines to create, store, manipulate and deliver alphanumeric text. From early word processing systems like those offered by the Wang Corporation to spreadsheet programs like Lotus 123 that made the PC ubiquitous within the business economy and the PostScript typographic printing technology that powered the desktop publishing explosion, users have come to expect text to be a major component of digital environments.[15] Even as processing speed improved enough to make computer-driven multimedia a marketable commodity, users continued to demand some sort of textual interface. When, for example, digital publishers repurpose film and television properties, the first thing they tend to do is add textual supplements. The Voyager Company did just this with its 1993 QuickTime version of the Beatles film *A Hard Day's Night* (Richard Lester, 1963). The disc hyperlinked the audiovisual materials with texts including the original script and an essay by the critic Bruce Eder on the band, their music and the movie.

Just because the technical capacity exists does not mean that text will reemerge in a form that transcends logos and info-bytes. Too easily glossed over in all the excitement are the questions that nonlinear authoring and use raise about the creation of textual and hypertextual meaning. Examine the temporality of text: the action of reading is always linear; meaning is formed by stringing words together one after another in sequence. Yet in the future/present, the computer allows nonlinearity in the way that authors present materials and users extract information. The constant play between interlinked nodes of information transforms our conceptions of rhetoric: we can no longer know where a proposition will come in relation to other propositions. Our situation is somewhat akin to that facing the originators of quantum

physics. In 1913, Niels Bohr observed that the position of the electron within the atom had more in common with musical notes on a piano's keyboard, which make definite jumps from key to key, than with the notes of a stringed instrument that can flow smoothly from one to the other.[16] This brings to mind the contrast between the discrete steps of digital imaging systems and the continuity of change in analog photographic technologies. In 1928, expanding upon Bohr's work, Paul Dirac described the atomic structure as an "arbitrary electronic field of potentials."[17] The most we can know of a microparticle, then, is its partially defined state—its contribution to an irresolvable ensemble. This is quite different from the ability to pin down the exact location of a particle in the Cartesian grid at place x, y, and z and at time t. In a like manner, we can no longer count on the physical unity of the book, and cannot precisely determine the position of the proposition within a hypertext system. We simply accept its position as a probability and make do with that level of uncertainty.

Extracting the Nano-Thought

The author can assume no a priori knowledge on the reader's part because hypertext allows that reader to enter, exit, and augment the work at any point or time. One strategy that hyperauthors have developed is the repetition of key topics throughout the linked nodes.[18] To laud the use of these small textual units, or *lexia* as Barthes coined the term, as base reading units is to acknowledge a condition of nonlinear production and reception—the difficulty of pre-structuring complex arguments of extended length.

But are all ideas, metaphors, and images, then, to be processed down to their smallest units, the nano-thought, and repeated *ad nauseam* throughout digital databases? In this analogy, the nano-thought represents "information," the raw data of science or the undigested facts and factoids of the essay—or even fictional—form. This is not to say that intriguing ideas cannot be generated by sifting through nano-thoughts, just that a regime of nano-thinking to the exclusion of other conceptual practices is probably going to lead to an impoverished discourse. To evaluate hypertextual systems, then, we must ask how they aid the user towards "knowledge," much less the even more quicksilver "wisdom." If we accept that a hypertextualized, database-driven culture will perforce encourage the proliferation of nano-thoughts, the next issue becomes ensuring that this new form can be used with precision, and wit towards those ineffable goals lauded above. Rhetoric is the study of language as the art of persuasion, and its ancient lexicon can be mined for tools to address the nano-thought. Two terms in particular, *multum in parvo* and *mise-en-abyme*, offer insights into how to ensure that hypertextual systems do not completely atomize discourse.

Susan Stewart notes that a "reduction in dimensions does not produce a corresponding reduction in significance."[19] Collapsing the *Oxford English Dictionary* from twenty-four volumes to two, for example, and then to a single CD-ROM, does not affect the dictionary's content. Precisely how, though, does one collapse discourse without completely losing its meaning, much less its significance? The Latin phrase *multum in parvo*, "much in little," describes those turns of phrase that condense larger ideas and concepts into pithy aphorisms, epigrams, and fragments. Our culture is awash in the *multum in parvo* without ever calling it by name. Bumper stickers advising us to "Think Locally, Act Globally," T shirts that assure us their wearers are recovering "One Day at a Time," and even the little tags (annoying or edifying) that senders attach to their e-mail signatures all are signs that attempt to condense meaning rather than simply dice it into ever smaller shards. The aphorism was Marshall McLuhan's favorite form of the *multum in parvo*. He contrasted the unfinished quality of the short "probe" to the overly explicit (at least in his view) essayistic form he had been trained in by the dons at Cambridge. The essay tells; the aphorism teaches: "For instruction, you use incomplete knowledge so people can fill things in; they can round it out and fill it in with their own experience."[20] The *multum in parvo* takes a sure hand to keep from sliding into banality (and McLuhan stumbled there regularly), but a phrase like "the medium is the message" is truly "much in little," and those crafting their thought hypertextually have in McLuhan's work a model worth striving for.

The *mise-en-abyme* is less a feat of condensation, though it is that, than a sleight of structural hand. This term implies that a book, story, film, CD-ROM, Web site, or hypertext contains selected passages that play out within themselves, in miniature, the process of the work as a whole. At its limit, the *mise-en-abyme* is an almost infinitely regressing

series of mirror reflections of a work's most significant concerns and structures. The *mise-en-abyme* is a mini narrative that encapsulates or somehow reflects the larger structures within which it is held: it is a mirroring of the text by the subtext. As Gregory Ulmer puts it, the *mise-en-abyme* "is a reflexive structuration, by means of which a text shows what it is telling, does what it says, displays its own making, reflects its own action."[21]

The relevance of this term to hypertextual environments is that the *mise-en-abyme* allows the unfolding of meaning; it makes feasible a Romantic conceit: click on the acorn, and the tree majestically unfolds. One of the central questions for the design of the Web is how to make information accessible, attractive and meaningful. By developing introductory or covering structures that contain within themselves in miniature the concerns of the work as a whole, and offering direct access to that whole or to those other relevant parts, the hypertextual, networked *mise-en-abyme* can help to stem the gush of unconnected nano-thoughts.

Michael Heim notes, "Thought must now learn to live in a new element if it is to live at all."[22] Hypertext systems must offer users the ability to craft or follow linkages among the nodes of information that build arguments, construct plots, even search for epiphanies. Only by planning for and incorporating ongoing synthetic processes can hypertextual systems overcome the tendency to let the screen's size determine the length of discourse. In a networked environment, the scope of the database is almost limitless, and this is one of the most exciting qualities of our era. But we must not forget that so much of that data must display itself in the concrete blocks of text determined by the limited real estate of the single screen. If we are justifiably wary of our culture's overflow of nano-thoughts, info-bits, unsustained characterization, plotless narratives, and sound bites, we need to determine how to use the short forms dictated by the medium to craft longer forms of argumentation and narrative.