

HERETICS

The Logic of Invention

GREGORY L. ULMER

THE JOHNS HOPKINS UNIVERSITY PRESS
Baltimore and London

HYPERMEDIA

Target for my method is the models of memory developed for it, inasmuch as individuals and societies tend to internalize as forms of reasoning the operations of their tools. The current state of computer interface design, then, may hold some valuable lessons for a Derridean heuristics.

Taking up the design of hypermedia interface in terms of Derrida's theories requires specification of my assignment as it concerns the technologies of language. The technology that most interests me—because it represents an integration of most of the features of electronics—is the convergence of video and the computer in hypermedia (anticipating the eventual need for a grammarology of virtual reality). With this equipment it is possible to "write" in multimedia, combining in one composition all the resources of pictures, words, and sound (picto-ideo-phonographic writing).

For grammarology, hypermedia is the technological aspect of an electronic *apparatus* (referring to an interactive matrix of technology, institutional practices, and ideological subject formation). My interest is not only in the technology itself but also in the problem of inventing the practices that may institutionalize electronics in terms of schooling. These practices are not medium specific: rather, they entail a revision of the liberal arts *trivium* (grammar, rhetoric, logic) open to writing on a screen as well as on paper. It may be that eventually the screen will replace the page (and the database replace the library) as the support of all academic work. *Heuristics*, meanwhile, is intended as a means to achieve that transition in the most productive way, including using book strategies to help with the invention process and revising paper practices in the light of the new possibilities of thought manifested in electronic technology.

Part of working heuristically is to use the method that I am inventing while I am inventing it, hence to practice hyperh rhetoric myself, which is assumed to have something in common with the dream logic of surrealism. For, as Jay Bolter noted, the practices of writing in a new technology are fundamentally different from the conventions of the treatise that presently dominate academic

The Logic of Cyberspace

Most of the resources for the CATt that will guide the making of my discourse on method come from grammarology: *Theory* from Jacques Derrida; *Contrast* from book practices such as argumentative writing; *Target* from the electronic apparatus applied within the institutions of education. These items are predetermined by the program of grammarology, which is concerned with the history and theory of writing.

Writing as technology is a memory machine, with each apparatus finding different means to collect, store, and retrieve information outside of any one individual mind (in rituals, habits, libraries, or databases). Part of the contribution of hypermedia as

work. This difference in “logics” is the point of departure for imagining what a new rhetoric will do that does not argue but that replaces the logic governing argumentative writing with asocial networks. Bolter notes that Derrida (along with a number of other critics, including Barthes in *S/Z*, as well as many authors of experimental literature) is already writing this way, simulating electronic effects in experimental books such as *Glac*. It is helpful in this context to recall that all the devices of the book apparatus, which are codified in the treatise (and enforced in practice from the five-part essay through the doctoral dissertation to the book that secures tenure), were themselves invented as the “interface” for print technology.

In this context of writing as a “social machine” it is easier to understand the opposition to Derrida—especially the insulting attacks upon him and some of his peers—when we recall that one of the men most credited with inventing some of the key features of the book interface (such as the spatial display of outlining)—Peter Ramus (“the first modern theorist of method” [Desan, 11])—was also in his day the target of extraordinary anger. As with Derrida, Ramus was guilty of tampering with the conventions of established logic. It has been suggested that his murder during the St. Bartholomew’s Day Massacre of Protestants (despite a decree of protection from the king) was linked in some way to the extreme hatred his work aroused among his colleagues.

The death of Ramus—defenestrated, decapitated, and thrown into the Seine on the third day of the massacre—adds another dismemberment to the body count (recalling the sophists who butchered the organic body of a composition and Breton’s man cut in half by a window) and suggests some relationship between discourses on method and murder. The death of Socrates has to be included in this dark formula of the fate of those who alter the reasoning practices of their age. Will Derrida, declared by a group of Cambridge University professors to be an enemy of science and the Enlightenment, escape assassination?

At one point Ramus’s work was condemned by royal decree

for having “impudently and arrogantly” undermined the (Aristotelian) logic respected by all nations but “of which he himself was ignorant” (Desan, 79). This “impudence” is of the same sort embraced by the surrealists. As a result Ramus’s books were suppressed and he was forbidden to teach or to write about philosophy. John M. Ellis’s *Against Deconstruction* is not alone in taking a similar line against Derrida. Focusing his attack specifically on the claim that deconstruction is “a new and different logic,” Ellis displays the full measure of that frustration Bolter mentioned. If he cannot refute a discourse that is alogical, Ellis wants at least to discredit the defenses made of this otherness.

Why not examine it as well as use it? To this the answer tends to be that the alternative logic cannot be described and stated as can the old because to describe and state *is* to use the old logic. But we must draw some limits here: granted that standard propositional logic might be inadequate and some other kind might be needed, we still could not allow the claim that a different kind of logic could not be characterized in any way; that would be to exceed the boundaries of all possible logics. A logic must work in some way, and it must be possible to show how it operates and to characterize this operation. (Ellis, 4)

At what point does a style of reasoning cease to be “logical”? We have been aware for some time, after all, of the limitations of the finest institutional instantiations of logical and conceptual reasoning—of critique and hermeneutics in the human sciences, and of empiricism in the natural sciences—to the point that critique has become cynical. As Peter Sloterdijk explained, what was not foreseen in the invention of conceptual reason was the possibility of “enlightened false consciousness,” which arose when the enlightened got into power. What these *Aufklärer* learned was that knowledge can be resisted; that knowing may leave people *unaffected*; that “people stick to their positions for anything but ‘rational’ reasons.” Therefore critique developed, “besides the friendly invitation to a conversation—a second,

combative stance" (Sloterdijk, 15). Critique became a "theory of struggle," a weapon against others, and an "instrument for gaining inner strength"; it thus "acquires a cruel aspect that, if it ever really admits to being cruel, claims to be nothing more than a reaction to the cruelties of 'ideology.'" The result or effect can be a dogma as oppressive or manipulative as that of the opponent whose mechanism of power was the object of the critique.

Most of the writers calling attention to the symptoms of the closure of conceptual reason do not want to abandon the principles of the Enlightenment. They retain a desire to act in the world, to make life better for all humanity, but they admit to an experience of impasse.

How can intellectuals be *Aufklärer* at this precise moment in history: . . . What forces do we have at hand against the power of instrumental reason and against the cynical reasoning of institutionalized power? . . . How can one remain an *Aufklärer* if the Enlightenment project of disenchanting the world and freeing it from myth and superstition must indeed be turned against enlightened rationality itself? How can we reframe the problem of ideology critique and of subjectivity? (Huyssen, xiii)

What each one calls for at the same time, in different ways, is invention. It is time to craft some new means for thought and action. Sloterdijk lists as his primary motivation a veneration for philosophy, thinking of "the Greek dawn, when *theoria* was beginning and when, inconceivably and suddenly, like everything clear, understanding found its language. Are we really culturally too old to repeat such experiences?" (Sloterdijk, xxxviii). My project is to find an electronic *theoria*.

Poststructural Computing

Showing the process of a method in the making responds at least partially to an appeal for a characterization of a new reasoning (a logic of invention) that leads to the reinvention of *theoria*

for an electronic apparatus. My claim is not that my discourse on method is Derridean but only that I am making it out of Derrida. Derrida himself, after all, has taken a great deal of trouble to reply to those who attacked deconstruction during the Paul de Man controversy, even calling for "an ethics of discussion" against the poison pens and nescience of those who display an attitude of "I-do-not-want-to-read" (Derrida, 1989b: 823). So he, at least, is willing to argue, even if argument is displaced (but not eliminated) in hyper rhetoric.

Several influential commentators have observed that hypermedia "literalizes" or represents the material embodiment of poststructuralist (mostly French) theories of text. Many of the most controversial notions of textualism expressed by recent French critics (for example, the death of the author or the decentring of meaning), notions that seemed bizarre in the context of the book apparatus, are simply literal qualities of hypermedia. Here my situation could be described in terms of abduction as invention:

Some surprising phenomenon, P , has been observed. (P = the features of hypermedia)

P would be explicable as a matter of course if H were true. (H = Derrida's theories)

Hence, there is reason to think that H is true.

The most constructive attitude to this (unexpected) convergence of a theoretical school with a technology is the one stated by George Landow, that hypermedia now constitutes a laboratory for the testing of poststructuralist (or even more specifically, "deconstructive") theory (Delany and Landow, 6). Although these two phenomena evolved independently, it is reasonable to expect that each will or could influence the other as they come into communication, with deconstruction likely to be changed as much as it will in turn change the direction of computer applications. My assumption is that the theory is no more fixed or "arrested" than is the technology (or than is writing itself).

What role might a heuristic application of grammatological theory (based on Derrida's "poststructuralist" textuality) play in the appropriation of hypermedia for academic writing? This is the question that my method addresses. A preliminary issue related to my use of Derrida as theorist concerns the need to distinguish between Derrida and certain related practices of literary criticism (deconstruction). Jay Bolter, for example, identifies Derrida with a narrow concept of deconstruction, one characterized as "reducing texts to a play of signs that by its very nature can never end. Our reading of all texts becomes an endless transit from one passage to another, never out into a 'real' world beyond signs" (Bolter, 204). He takes notice mostly of a certain "critical" dimension of Derrida's theory, which he says is tied irrevocably to a critique of "the transcendental signified" that would finally delimit meaning. "While traditional humanists and deconstructionists have been battling over the arbitrary, self-referential character of writing, computer specialists, oblivious to this struggle, have been building a world of electronic signs in which the battle is over." Even if this battle were settled in favor of deconstruction, that movement itself, according to Bolter, may have little else to contribute to the next stage of development, since "it is incapable of acquiescing in the arbitrary and limited character of writing."

While my experiment supports Bolter's account in most other respects, his view that "the computer takes us beyond deconstruction" needs to be qualified. "Deconstruction tells what electronic writing is not. We still need a new literary theory to achieve a positive understanding of electronic writing" (166). Whatever the problems with "deconstruction" as literary criticism might be, my point is that the grammatological dimension of Derrida's theory (which Bolter neglects) is precisely the source for this positive account (it will be the burden of my method to generate out of Derridean grammar the terms of an electronic academic writing).

The perception, shared by a number of critics interested in educational hypermedia, that hypermedia computing is inher-

ently poststructuralist (postmodern, deconstructive, textual) raises several issues immediately. First is the fact that theorists of this technology have stressed that hypermedia as an apparatus need not and should not be driven entirely by the hardware and the technicians who design it. There is no inevitability, no technological determinism leading to some dystopian (or utopian) future social condition. Even if many of the applications still come from the side of the hardware, that need not be the case. As Ted Nelson has argued, the design process should and could begin with conceptual and psychological considerations and then work to the mechanics (the hardware is more flexible than most humanists might realize) (Nelson, 3). The design process in any case is carried out by interdisciplinary teams, and, at least in principle, the designers indicate a desire for new ideas that might come from other areas, including the liberal arts.

At the same time, the fact is that until very recently (with the development of "Storyspace," for example), poststructuralism has not informed the invention of the computer as equipment (even if its theories have anticipated the practices of an electronic apparatus). A considerable amount of theoretical activity has been associated with the computer—the whole field of cognitive science, for example—but the practical value of poststructuralism in this area was not appreciated. Part of the interest of including hypermedia in heuristics derives from the potential long-range importance of this alliance between a seemingly marginalized theory and a new technology.

The Frontier of Knowledge

Will the disciplinary organization of knowing (if not science itself) be different in an electronic apparatus? Francis Bacon's gesture at the beginnings of science, associating the scientific enlightenment with the discovery, exploration, and ultimately the colonization of the "new world," suggests one way to open up this question. This association continues today in the American exploration of "the final frontier," outer space, as in the flight of

Magellan, the unmanned spacecraft sent to investigate the planet Venus. The launching of the space shuttle *Atlantis* from Cape Canaveral with six astronauts and a military surveillance satellite on board in November 1991 makes explicit the passage from ancient to modern approaches to the "cosmos."

The question raised by this metaphor concerns the relationship of curiosity (the *désire* to know) in Discipline discourse to curiosity in the other institutions of culture. The protests led by the American Indian Movement (AIM) against the Columbus quincentenary have implications for science, in that the image of the ship carrying explorers to a "new world" has served as the chief metaphor of research in Western civilization. The metaphor of "the frontiers of knowledge" is ubiquitous, a reflex, a habit of mind that shapes much of our thinking about inquiry. As Hans Blumenberg noted, different epochs of the Western tradition (not to mention different civilizations) have had different attitudes to curiosity and set different restrictions on it, different limitations of relevance ranging from liberatory (encouraging a turning over of every rock just to see what might be under it) to censorious (condemning the vice of poking into matters that should not concern humankind). The attitude that Freud expressed in *Beyond the Pleasure Principle* should not be taken for granted nor assumed as "natural" or "obvious": "What follows is speculation, often far-fetched speculation," Freud wrote. "It is an attempt to follow out an idea consistently, out of curiosity to see where it will lead" (Freud, in Blumenberg, 448).

The modern age began with the rehabilitation of theoretical curiosity from the moral quarantine imposed on it during the Middle Ages (238). "Method," the "key word" of this beginning, was associated with the metaphor of the voyager, and the genealogy of seafaring was a "lasting theme in connection with the question of the legitimacy of man's curiosity" (267). "The self-consciousness of the modern age found in the image of the Pillars of Hercules and their order, *Nec plus ultra* [No further], which Dante's *Odysseus* still understood (and disregarded) as meaning 'Man may not venture further here,' the symbol of its new begin-

ning and of its claim directed against what had been valid until then" (340). The "beyond" in Freud's title and in the titles of so many modern books marks the legacy of "beyond the Pillars of Hercules."

Columbus carried the epic of *Odysseus* into history as a figure of "curiosity rewarded," leading to Bacon's claim of a *right to knowledge*. In theorizing his method, Bacon had in mind the compass that made possible the voyages of discovery. With the compass, method is not a matter of having a predetermined goal, but of "holding to a path on which, in the field of the unknown, new land will eventually appear":

The discovery of the compass enables one to imagine a net of coordinates laid over reality and independent of its structures, in which the unsuspected can be caught and arranged. . . . One may hope that nature conceals in its womb still more, of greater importance, which lies entirely outside the familiar paths of the power of imagination and which one can only be sure of finding through the systematization of accident. The tendency of Bacon's method is to set the human mind in controlled motion. (389)

The legacy of Bacon's method persists even in the work of theorists attempting to think "beyond" the modern episteme. Indeed, any attempt at a postmodernist "method" is contradictory (an impossible possibility). Jean-François Lyotard's image of a search for the rules of a new discourse continues the seafaring scene, relayed from Kant's *Critique of Judgment*—the search for "passages" bridging the 'differend' (the lack of translatability between incommensurable genres of discourse), with cognition symbolized as an "archipelago": "Each genre of discourse would be like an island; the faculty of judgment would be, at least in part, like an admiral or like a provisioner of ships who would launch expeditions from one island to the next, intended to present to one island what was found (or invented, in the archaic sense of the word) in the other, and which might serve the former as an 'as-if intuition' with which to validate it" (Lyotard, 131).

The “differend” names an aspect of what is at stake in chorography (the name of the method I will have invented) as well: to write the paradigm, or to write the discourses of all the institutions of the popcycle, is to negotiate the passages among genres separated by differends. The very possibility of nationhood depends upon finding these passages. Chorography is designed to bring into invention the thought of “nation” as “place”: “the Idea of a nation, the Idea of the creation of value. These situations are not the referents of knowledge phrases. There exist no procedures instituted to establish or refute their reality in the cognitive sense. That is why they give rise to differends” (27). And that is also why chorography is an impossible possibility.

Postcolonial Learning

The paradigm of adventure, of voyaging explorers, includes similar statements uttered in different contexts, different institutions, different discourses, concerning the “vehicle” or “diegesis” of the ancient metaphor of method, having to do with “travel.” In the paradigm of this metaphor, a commander of the foreign legion, referring to the forts and roads the legion built in order to control North Africa, made a statement that resonates with the metaphor of method. Their mission, he said, was that of “pioneers who open a new country. We are the rugged, primitive laborers who do the hardest work. We are the visionaries who see wonderful possibilities in the future. . . . Every path we have [built] bears the pain of our men. It is they who have opened the way for civilization to come into the heart of this savage country” (Mercer, 255).

An electronic method cites this metaphor because the first theorists of hypermedia, the founders of educational computing, used terms associated with the frontier to characterize their invention. Vannevar Bush (who proposed the Memex library-in-a-desk before hypermedia technology existed) made such an allusion with his call for a “new profession of trailblazers, those who find delight in the task of establishing useful trails through the

enormous mass of the common record” (Weyer, 89). These trails supplement the bookish mode of indexing by accessing information via “chains of associations.” “The user could join any two items, including the user’s own materials and notes.” Douglas Engelbart thought of the “trailblazers” as working in small groups, constituted as “scouting parties sent ahead to map the pathways for the organization groups to follow. . . . You also need ‘outposts’ for these teams” (Engelbart, 29–30).

The inventors of hypermedia elaborated the metaphor of method as travel and settlement of an area into a model for the computer interface—the system of nodes linked into a network that a user negotiates in order to access information. Designers conceived of the “field” of cognition as a landscape, perhaps a “virtual town or amusement park” (Florin, 30). “Using a computer-based hypertext system, students and researchers can quickly follow *trails* of footnotes and related materials without losing their original context. . . . Explicit connections—links—allow readers to *travel* from one document to another, effectively automating the process of following references in an encyclopedia” (Yankelovich, 82).

The computer is responsible for the most recent “frontier of knowledge” then, bringing into existence a virtual if not a literal new world. Chorography, as a heuristic approach to inventing a “method” useful for this “world,” takes into account the present state of imagination and curiosity. The “timing” of chorography is important because hypermedia still lacks a “rhetoric.” “While the teaching of classical rhetoric may have waned over the years, an accepted set of conventions about style, syntax, and structure still exists. . . . No such ‘rhetoric’ exists for hypertext. To the contrary, it would seem that few of the notions of classical rhetoric can be used in constructing a hyperdocument” (Carlson, in Barrett, 96). But even if the classical rhetoric developed for alphabetic practices is inadequate for electronics, it is a good point of departure for imagining an electronic way of reading, writing, and reasoning.

A point often made in discussions of computers is that ad-

vances in technology have far outstripped software and interface design, not to mention social and institutional behaviors. "The only stumbling place for this onrushing brave new world," Alan Kay (often named as "father of the personal computer") observed, "is that all of its marvels will be very difficult to communicate with, because, as always, the user interface design that could make it all simple lags far behind" (Laurel, 204). "A major new direction that should be taken," Kay noted, "is towards a *rhetoric* for programs expressed as something more like essays—or in the hypermedia equivalent of an essay" (203).

Interface

Another name for "rhetoric" in a computer context is "interface"; the whole problem of interface design—giving an ordinary user access to the power of the machine (communication between a user and the tool)—is a fundamental difficulty for the new apparatus. "The way a user interacts with a computer is as important as the computation itself: in other words, the *human interface*, as it has come to be called, is as fundamental to computing as any processor configuration, operating system, or programming environment" ("Multimedia," 89). The invention of a new rhetoric or interface so far has been organized around the problem of finding an appropriate metaphor, something from the world familiar to users, that functions as a model of the system, mediating and giving the user an intuitive feel for how to interact with the equipment.

The first metaphor to reach application came from the book apparatus—the desktop (guiding the design of the Apple Macintosh interface, including index cards, files hidden in folders, a calculator, a phonebook, and so forth) (Laurel, 135). To take advantage of the convergence of media (sound, image, and writing) made possible by digitalization, Apple developed HyperCard (the first mass-distributed hypermedia system).

HYPERMEDIA

The model for HyperCard is the 3-by-5 card. A card is represented by a Macintosh screen. As you flip through screens (cards) you read them one after another, as if they were in a stack. Cards can hold any kind of information you want, in any format you want, including pictures. Rather than resting inertly, as on a Rolodex, information can be actively linked to any other point on any other card. Another way to imagine it would be to think of a book that had footnotes that appear only when you clicked on a passage you wanted to know more about. It would carry you to interesting details, which might themselves have footnotes which are footnoted and so on ("HyperCard Software," 102).

Walter Benjamin foresaw what a number of contemporary commentators have suggested—that hypermedia does for scholarship what photography did for portrait painting. "Today the book is already, as the present mode of scholarly production demonstrates, an outdated mediation between two different filing systems. For everything that matters is to be found in the card box of the researcher who wrote it, and the scholar studying it assimilates it into his own card index" (Benjamin, 78). Hypermedia "automates" scholarship (the finding and linking of information), thus making available to "amateurs" the resources once produced and consumed solely by small groups of specialists. Having available a databank or online archive of scholarship makes it possible for anyone to write "with the paradigm."

At the same time, it has been suggested that hypermedia frees scholars from the labor of compilation and indexing—as painters were freed from the primary task of representing the visible world—in order to invent new functions and styles for Discipline discourse. Benjamin's prediction that a "qualitative leap" in writing would emerge out of the new media of his day is even more reasonable in the context of hypermedia. This new writing, "advancing ever more deeply into the graphic regions of its new eccentric figurativeness, will take sudden possession of an adequate factual content" (78).

The technology, however, has already outgrown the interface metaphor of the book or library, a metaphor that was inadequate to begin with. Hypermedia is dynamic, not in the manner of pages to be turned, but in the manner of “a tutor to converse with or . . . as laboratory for conducting experiments. To prevent ‘dusty-tome syndrome’ electronic ‘books’ must become nonbooks in both function and name” (Weyer, in Ambron and Hooper, 1988:98). The new metaphor, which is replacing the book or desktop in recent interface design theory, is that of navigating an ocean of information—in short, Bacon’s metaphor of Columbus voyaging beyond the Pillars of Hercules turned into a working model for traveling in an information environment.

In the modern (as opposed to archaic) tradition, beginning with Plato and his Academy, experience was posed in terms of problems to be solved. This tradition is associated with geometry as a “morality of motion”—everything in its *right* place, related to the doctrine of the *route* as a right way to proceed. “The Greek sense of *hodos* or ‘route’ expects rationalization. Our term ‘method,’ which means a *way* of proceeding but implies rational conduct, comes from the Greek words *meta* plus *hodos*” (Walter, 186). This notion influenced the manner of actual and figurative (theoretical) travel.

To go the right way, one made a journey to a proper destination, and after the journey out, sought a return or homecoming. The traveler followed instructions, looked for tidings of the route, and depended on escorts, guides, and hosts to help him on his way. Advancing along the route, he was said to ‘accomplish’ the journey, which was usually understood as a round-trip back to his proper place. The opposite of going the right way was to wander or to go astray.

A “method of invention,” however, deconstructs this opposition between returning home and wandering. Like many theorists of method before him, Derrida makes this point by referring to the legend of Odysseus. If *theoria* involves travel, there should

be no attempt at “homecoming.” “Evoking the same Ulysses, I would insist on that which distinguishes singularity from individuality, and from the totalizing circle. . . . Ulysses means the circle of return, nostalgia, dwelling, the *oikonomia*. From this perspective, I would say that the architect of the next millennium—and of today already—will not be a Ulysses” (Derrida, 1991b:45). Instead, the feeling of method (in design or invention) will be close to that of the double bind or paradoxes of myth—a holding together of what does not “fit,” enacted by an “anyone” (person or discipline) that is “a stranger to itself, foreign to itself. And that will be good.”

Within the terms of grammatology and deconstruction, it is not possible simply to jump to a different metaphor for research. Such a jump would be easy enough intellectually. The electronic apparatus, however, is a *social machine*: the frontier metaphor is in our habits, our conduct, our emotions, in curiosity itself. My experiment, rather, is to deconstruct the metaphor associating method with colonial exploration, to put it under erasure in a certain way, “paleonymically,” remarking “frontier” into “*chora*.”