

# What's the Matter with the Internet

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Abstract: The essay explores alterations in authorship and readership brought about by new material conditions of textuality. The argument is that print, broadcast electronics and digital networks each construct authors and readers in different ways. I ask what are the material conditions of authors/readers today? I use Walter Benjamin and Michel Foucault to frame the question of the author/reader in relation to new technologies. I contrast the analogue and the digital, the printed book with the hypertext, the classroom lecture and distance learning of the Internet, the TV image with the multi-media hypertext of the World Wide Web. In each case I explore the changed configuration of the subject. I conclude with questions about the nature of the subject in new fields of authoring/reading and connect these with implications for political theorizing.

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I argue today for profound changes in the discourse of critical theory, and of academia in general, as a consequence of the digitization of writing. For, as Sandy Stone writes, We no longer live in a world in which information conserves itself primarily in textual objects called books.... but inescapably, at the threshold of a new and unsettling age [in which we must] reimagine the scholarly enterprise...<sup>1</sup> If what Stone argues is convincing, we must invent the Humanities in relation to digital texts. I hope today to clarify some of the issues at stake in such a change. But I do so with a special difficulty because I deploy a pre-digital form of presentation: an oral, face-to-face format. Although this essay was written on a computer, with the keyboard input mediated by binary code before becoming a graphic, alphabetic representation as pixels on a screen, then a series of ink marks on paper, the machine product has been appropriated by analogue apparatuses of authorship.<sup>2</sup> If you were reading this essay using a browser on your computer to access an Internet site where the work exists, let us say, in hypertext format, my arguments might be more convincing and my illustrations might hit home with greater effect. Instead I am like a reporter returning home from a foreign culture to relate exotic discoveries, except the foreign culture, digital authorship, is right here, to the extent that cyberspace is anywhere. I am not then a foreign correspondent but a local informant and perhaps you the listener/reader if you have not already shared my experience, are becoming other, becoming distant, like all analogue authors, within your own discursive home.

### **Insisting on the Medium**

The 1996 Geneva conference of the World Intellectual Property Organization (created in 1967) attempted to reform copyright law to reflect computer communications technologies.<sup>3</sup> The problem for the group was daunting: to adjust laws originally formulated during the print age of the seventeenth century to the conditions of the

digital age. How could the medium of the Internet be reconciled with the media of print and broadcast? Copyright law presumes what has become no longer necessarily true: that the reproduction of information requires costly material casings (books, celluloid films); that the dissemination of information entails expensive construction of channels and apparatuses of transmission; and the audience of information is unable to alter it in the form it is received. In Geneva delegates contrived to ignore above all these momentous changes in technological form.<sup>4</sup> This is the problem I want to address. With the digitization of print, film, radio and television broadcasts and their insertion into a global network, I shall argue, the media in which intellectual property appears alters the message of its legal integument. Put otherwise, the commodity form of cultural objects and the authorial coherence of individual subjects are shaken by digitization.

A great deal is at stake in the current change of the media of cultural objects, with those most benefitting from the existing arrangements also most resistant to the change and generally least able to discern the significance of what is happening. In current debates, the figure of the author becomes one such rallying point for much ideological jockeying. In the guise of protecting authors, media moguls — those who have most exploited authors — raise the banner of copyright protection against what they see as the anarchic exchange of bytes on the Internet. If we set aside the tendentious positions of those who wish only to extend existing copyright provisions to include new media such as the Internet, we may then ask: What might actually be the fate of authorship when technology shifts from print to the Internet? Is the figure of the author in fact a good point of defense against alarming technical innovations? Is cyberspace an occasion of strengthening, restructuring or abandonment of authorship?

In this essay, I want to bring together an analysis of the technical conditions of authorship in print and in cyberspace with the theoretical proposals for understanding the question of the construction of the author. In most cases the discussion of these two related issues fails adequately to connect them: either one is knowledgeable about

technology or one is adept in social and cultural theory. Those who understand the technology are frequently hampered by an unexamined instrumentalist framework while theorists who address questions of the media often have limited grasps of their technical characteristics. By bridging the gap between technology and culture I hope to illuminate the relations between them.

### **Beyond the Author Function**

The cultural figure of the modern author begins in the eighteenth century, emerging in a confluence of print technology, a book market, a legal status and an ideology of individual as creator. Mark Rose has shown how the inception of the modern author required the preexistence of these elements as well as their convergence into a particular social form.<sup>5</sup> The legally defined rights of the author required a print technology which could reproduce large quantities of texts, a market system which could determine printed products as objects for sale, and distribution institutions which could make identical copies available in many places, a discursive regime in which individuals were understood as agents capable of inventing new things and as proprietors with interests in accumulating capital. The interlocking of these elements alone affords authorship both cultural recognition and social place. Authorship also required, as I shall argue below, a technology of the analogue: a conviction that what was printed in the book was a direct representation of an author's intention, be it in the form of idea, style or rhetoric. In short that the book was an analogue reproduction of an original, authentic author.

Before turning to the possible fates of the author in a digital age, I shall explore the characteristics of what I call the analogue author by briefly reviewing Foucault's position. Foucault has presented the most complex and convincing conceptual articulation of the modern author. What is remarkable in his analysis is not only its rigor and comprehensiveness but its anticipation of digital authorship.

In his influential essay, *What is an author?*, Foucault delimits four perspectives on the modern author.

- 1. The humanist author who governs the meaning of the text. This author expresses, intends and creates all the meanings that may be read in the text.
- 2. The structuralist rejection of the humanist author, most notably in Roland Barthes' essay, *The Death of the Author*. In this view, the meaning of the text has no connection with the author. It is a pure synchronic, semiotic object contained within the external materiality of the printed page.
- 3. A poststructuralist move in which Foucault rejects the structuralist annihilation of the author, returning to recognize the importance of the author but not as the humanist understood him or her. Foucault uses the term *the author function* as the discursive figure and institutional practice of modern society which inscribes the author as a source of meaning. Now the critic can acknowledge the importance of the figure of the author in modern society but instead of translating his recognition into affirmation, legitimation, and celebration, turn it rather into an analysis of the construction of the figure. This *genealogy* of the author, as Foucault calls it, would also serve as a basis for its critique.
- 4. The last perspective on the author Foucault offers is a most uncharacteristic one for him.<sup>6</sup> Foucault sets forth an alternative, future, *utopian* non-author which, presciently, bears remarkable resemblance to the position of authors in cyberspace, or what I call digital authors. I shall examine Foucault's discursive move in more detail.

As part of his critique of the modern subject, Foucault opposed as a conservative gesture the penchant of the traditional intellectual to compose metanarratives that totalized the historical field. In this discursive regime, the theorist produced a discursive closure either by legitimizing the present as the fulfillment of human essence or predicting a future (the tenth epoch in Condorcet, communism in

Marx, the transvaluation of all values in Nietzsche) which served the same purpose. It is most surprising then to find Foucault making a similar gesture as when one reads the following in *What is an Author?* :

I think that, as our society changes, at the very moment when it is in the process of changing, the author function will disappear, and in such a manner that fiction and its polysemous texts will once again function according to another mode, but still with a system of constraint — one which will no longer be the author, but which will have to be determined or, perhaps, experienced.<sup>7</sup>

The passage is maddeningly brief, not indicating which processes are changing or why they will lead to the disappearance of the author function. Yet even in this utopian moment of his text, Foucault is careful to indicate that the inconveniences of authorship will be replaced by new constraints. In addition one cannot speculate about the new regime, by time-traveling into the future, but patiently await its appearance to experience it before giving shape to these impediments to freedom. With these caveats, Foucault offers his tenth epoch beyond the author function.

Foucault's future eviscerates the author's presence from the text, shifting interpretive focus on the relation of the reader to a discourse understood in its exteriority, without resort to a founding creator, without reference to the patriarchal insemination of text with meaning. His utopia of writing would seem to contravene both Benjaminian aura and culture industry celebrity. Here in his own words is the Foucaultian heterotopia:

All discourses... would then develop in the anonymity of a murmur. We would no longer hear the questions that have been rehashed for so long: Who really spoke? Is it really he and not someone else? With what authenticity or originality?

And what part of his deepest self did he express in his discourse? Instead there would be other questions, like these: What are the modes of existence of this discourse? Where has it been used, how can it circulate, and who can appropriate it for himself? What are the places in it where there is room for possible subjects? Who can assume these various subject functions? And behind all these questions, we would hear hardly anything but the stirring of an indifference: What difference does it make who is speaking? (pp. 119-120)

If one can imagine the future according to Foucault where so little interest rests with the author's relation to the text, the question of the transition, the hoary Marxist conundrum, raises its head. How would the author function disappear, especially considering it has adapted itself so well to the change from print to broadcast media? What social process would work to strip the author from his or her reign over discourse? What conceivable transformation would undo the cultural operations through which the reader, listener or viewer thinks of little else than who is speaking ?

I contend that digital writing, linked to electronic networks, is the mediation Foucault anticipated but did not recognize. Digital writing separates the author from the text, as does print, but also mobilizes the text so that the reader transforms it, not simply in his or her mind or in his or her marginalia, but in the text itself so that it may be redistributed as another text. Digital writing functions to extract the author from the text, to remove from its obvious meaning, his or her intentions, style, concepts, rhetoric, mind, in short, to disrupt the analogue circuit through which the author makes the text his or her own, through which the mechanisms of property solidified a link between creator and object, a theological link that remains in its form even if its content changed from the age of God to the age of Man. Digital writing produces the indifference to the

question who speaks that Foucault dreamt of and brings to the fore in its place preoccupations with links, associations, dispersions of meaning throughout the Web of discourse. And this is so not simply for alphabetic text but for sounds and images as well. The issue rests with the mediation, with the change from analogue to digital techniques.

I introduce then the term analogue author in place of Foucault's author function and digital author in place of Foucault's post-author utopia. The terms analogue/digital are taken from the world of technology and I use them to suggest the centrality of the machinic mediation. So much I hope is already clear. But I do not mean the terms in an apodictic, transcendental sense by which certain media would necessarily produce certain figures of authorship. I am not making a philosophical argument but a historical one: that the figure of the author in the modern period is bound to print technology, while in the more recent, perhaps postmodern, perhaps future, computer mediated, even networked writing produces, amidst the contingent world of events, a digital author. The chief difference between the two, I contend, is the degree and shape of alterity in the relation of author to writing. Analogue authors configure a strong bond between the text and the self of the writer, a narcissistic, mirroring relation as the text is fundamentally an expression of the author his or her style, mind or feelings. The digital author connotes a greater alterity between the text and the author, due in part to the digital nature of the writing. I claim that digital writing is both a technological inscription of the author and a term to designate a new historical constellation of authorship, one that is emergent, but seemingly more and more predominant. So I borrow from the world of technology the terms analogue/digital but I also reconfigure them to designate degrees of otherness in the relation of authors to texts.

### **Digression on the Indeterminacy of Technology**

Cultural theorists might raise immediately the objection that I am flirting dangerously with technological determinism by drawing direct conclusions about discourse and practice from the introduction of new techniques. To forestall these skeptics I maintain that technologies are no more monosemic than language or action, that the impact of technologies is never the linear result of the intention of their creators nor of their internal, material, capabilities. The Internet for example bears not a trace of the U.S. Department of Defense's purpose in developing it: to insure computer communications in the event of nuclear attack from the Soviet Union. The Soviet Union falls now in the category of proper nouns designated by formerly and the Net seems more a threat to the Department of Defense than an instrument of its design. In my own experience with writing technologies, the same contingencies are evident. In Junior High School in the mid-1950s in New York City I was required to take a series of courses introducing me to the practical arts. I took cooking, sewing, carpentry and typewriting. The curricular intent was to train me in manual skills in the event a middle class occupation was not in my future. Even with my academic career these basic skills or at least some of them have proven useful. In particular typewriting, considered at the time a menial practice of secretaries, proved invaluable as this technology changed its social status, becoming acceptable first for academics, then, with the introduction of computing in business, even essential for managers and executives. The technology of the keyboard changed within my lifetime from a machine used by low-level clerks to an essential tool of scientists and leaders of industry. With the use of computers in communication, it mutated further into an instrument for sending messages, chatting in electronic meeting places and such. It has also become the source of crippling diseases like carpal tunnel syndrome. This brief exploration of one technology suffices to indicate the complexity of the relation of machines to humans.

## **Analogue and Digital**

The change from print to computer writing requires a material change in the trace, in the way writing enters the world, circuits through it and is stored in it. This alteration in the material structure of the trace is not widely understood among scholars in the human sciences yet is fundamental to the reconfiguration of authors and readers, of subjects and objects of speech and all forms of cultural exchange, be they text, image or sound. When Marx, in *The German Ideology*, writes of language as puffs or perturbations of air he calls attention to the materiality of language -- that it only appears in a material form -- but strangely he does not raise the question of the change from speech to print. Print is precisely not puffs of air. This is a surprising omission on his part since print technology was so important to his own work of disseminating the critique of political economy and because the forms of print were undergoing major changes in his day. The introduction and spread of the cheap newspaper brought current political information to the working class, extending considerably the scope of class consciousness, and the introduction of the typewriter later in the century changed work opportunities for women and altered significantly the means of literary production both for writers and readers. The example of Marx's neglect of the problem of technological mediation in the case of print is hardly exceptional. Critical theorists have generally read through and past the message of the medium.

The shift in the material form of the sign from print to computer writing may be approached initially as a change from analogue to digital. This formulation is often posited by technically expert commentators whose understanding of the attendant philosophical questions is limited. I shall return to the analogue/digital distinction, attempting to explore both its technical and the theoretical dimensions. It is crucial for humanists to recognize the technical side of the issue and for engineers to come to grips with its culture aspects.

The term analogue refers to an aspect of the relation between a copy and an original. A taped recording of a sound for example transforms waves/cycles of air

emitted for instance by a person into a configuration of metal oxide particles on a Mylar band. This is accomplished by an electro-magnetic transducer that responds to the waves/cycles and moves the particles from a random into a patterned configuration. The relation between the configuration of particles on the tape recording to the original waves/cycles of air is one of analogy, that is the specific density and distribution of particles resembles the characteristics of the waves/cycles in their amplitude and frequency, their loudness and pitch. The same relation of resemblance is found in the older technology of vinyl records. The grooves on the record, in their width and length, form an analogous configuration to the acoustic waves/cycles so that the stylus or needle, tracing the grooves reproduces the shape of the sound. Even though the sound recording, on tape or vinyl, is a different material form from the acoustic event of the sound, there remains a relation of isomorphism or similitude between them. Due to this analogy, some individuals are even able to read the grooves on vinyl disks and say which piece of music is inscribed in it. In the case of photographic, film and television images the analogous relation pertains between light and the recording medium.

Not so with digital reproduction. In this case the sound as waves/cycles is sampled some 40,000 times a second. (This figure allows two results for what is considered the highest frequency available to the human ear, 20,000 cycles.) The computer changes the input into a series of zeros and ones according to a formula that maps the sound event, both in loudness and pitch. The formula relating the characteristics of the sound to specific combinations of zeros and ones is arbitrary. In the case of digital recording there exists no resemblance, no analogy between the configuration of digits and the sound. The digits in no way look like the sound. The relation between the copy and the original in the case of digital reproduction is much more one of difference than in the case of analogue recording. In both cases, let us not forget, the reproduction includes a material transformation of the original, but in the case of digital copying the material configuration of the copy bears no resemblance at

all to the original. As an aside it may be noted that many argue that the reproduction of the sound from a digital recording is superior to that of analogue recording in its coincidence with the original. Digital differs from analogue therefore in the extent of their correspondence to the original. The advantage of digital copying over analogue derives from some aspect of this difference.

There are two separate but related questions that follow from the analogue/digital distinction. The first concerns the qualities of difference between the analogue and the digital. The second concerns the specific attributes of the digital as a material form, its electronic character, its numeric character, its ability to be reproduced exactly, transmitted at the speed of light and stored very efficiently. The implications of the answers to these questions are potentially great for social, cultural and political issues. They raise the specter of nothing short of a revolution in the figure of the author and the reader.

Analogue and digital copying are both material transformations of an original signal or input. A written or printed word is not the same as a spoken word. The latter is fixed in time and space, evanescent and local. Writing, by contrast, as a material trace, is stable in time and movable in place. Handwriting introduces one relation of the writer/reader to the text; typewriting and print different ones. Spoken words rely upon the ear for copying and reproduction; writing depends rather upon the eye. Each change in the form of writing is momentous in its effects upon authors and readers, from cuneiform and papyri to codex and books, the history of writing enormously varies the cultural and social forms of its production and reception. Yet the distinction between speech and writing is much greater than the variations in the written form. That much must be conceded. Is then digital writing to be understood as yet another variation within the history of writing or is it a more momentous change on the order of the shift from speech to writing? I leave this question to the reader to decide, turning instead to the characteristics of the print-digital distinction.

Print relies upon the alphabet and alphabets are not analogue types of reproduction. Though early alphabets like ideograms are indeed analogue in that they depict in traces what they refer to, the Greek alphabet is composed of units which, in their combination, bear no relation to the meaning of the words they generate. The word tree does not look like a tree. Alphabets in this sense are digital in the sense I am using the term. All material variations of writing in alphabets like Greek benefit enormously from their liberation from the constraints of analogue reproduction. Contrasted with the thousands of characters that compose ideographic alphabets, the Greek contains fewer than thirty distinct units. Yet alphabets do bear isomorphic or nearly isomorphic relations with sounds. This is their abstraction, their increased level of generalization, compared with ideographic writing. An *a* in a certain language is limited to a repertoire of sounds. Yet, as a material trace, the *a* does not look like any of these sounds and in this sense is not in a relation of analogy to it. Non-ideographic alphabets introduce a level of articulation beyond that of ideograms. The latter stress a relation between a written symbol and the thing represented. The Greek alphabet introduces a relation between a written symbol and its utterance, between two forms of language, writing and speech. The relation between the word and thing becomes conventional, arbitrary, whereas the relation within language between trace and voice is stronger, more direct.<sup>8</sup>

Printed forms of writing enable easy reproduction. They change culture by retaining the temporal dimension already evident in older forms of writing, its endurance and stability, but extend considerably its spatial dimension, disseminating texts widely. Print democratizes writing by its mere distribution of texts in space. But print retains the material constraint of earlier forms of writing: the requirement that a trace is produced on an enduring substance like paper, a substance that is scarce. There is no escape from this characteristic, one that drastically limits the inscription of print in time and space. Regardless of the type of technology through which the trace is

achieved --- from Gutenberg's mechanical contraptions to the most advanced, automated apparatuses --- print means inscriptions on durable materials. With print, language is set loose from speech and handwriting but also bound tightly with the material in which it resides.

Digitization does not surrender the advantages of writing and print in extending language in time and space nor of the alphabet in deepening the articulation of language. Digitization introduces yet another level of articulation of language, however, by introducing sequences of 1's and 0's as representations of letters. This simple addition would be cumbersome in the forms of writing and print, somewhat equivalent to the disadvantages of Roman numerals in comparison with Arabic. But by introducing this change to 1's and 0's the material form of language can shift to the micro-world of electrons. In Katherine Hayles' words, When a computer reads and writes machine language, it operates directly on binary code, the ones and zeros that correspond to positive and negative magnetic polarities. [*How We Became Posthuman: Virtual Bodies in Cybernetics, Literature and Informatics* (Chicago: University of Chicago Press, 1998) p. 356 in mss.] The basic difference introduced by the digital code is that it is translatable into a simple presence or absence and therefore into a minimal physical trace such as a pulse or an electron. Telegraphy achieves some of this reduction but remains tied to the Newtonian, macro-world of sounds. Once the alphabet is translated into digits it transcends the constraints of printing and enters another, far different, physical regime: electric language. Digitally coded language remains tied to the umbilical cord of the social world where, in the last instance, it will return and enter human writing or speech, being read or heard and perceived by conscious beings. But before this occurs electric language moves within an imperceptible dimension and is governed by its material determinations. Digitized language may be placed in the electronic form of the computer and these may be connected through telephone lines or radio waves, enabling the simultaneous presence of words at any point in the globe.

Digital writing presents a colossal problem of focus: what is the exigent (?) aspect of the technology? Which part of digital writing impinges on the author and reader and in what way do it do so? Is the important aspect of digital writing the computer as machine, the software program, the graphical interface, the network, the programming code, or the binary storage system? Friedrich Kittler, for instance, regards the change in writing tools from typewriter to computer one of loss of perception. He characterizes the change as a rather *sad* [emphasis added] statement since written texts... do not exist anymore in perceivable time and space but in a computer memory's transistor cells.... [Computer writing] seems to hide the very act of writing: we do not write anymore. (Kittler, 1997 p. 40) These pessimistic conclusions are achieved by configuring digital writing as a machine process. Kittler ignores the connectivity of digital texts in favor of their physical characteristics. He represses the distributed network of textual presence in favor of their containment inside a single machine. In short, Kittler limits his interpretation of digital writing to his own relation to his texts stored in his computer. He approaches the question as an analogue author and is dismayed to find his presence missing from his writing. One might just as easily take the stance of a digital author and find an anonymous murmur in the links of hypertexts on the Web.

### **Digital Authors**

How then are authors affected by digitization? As an hypothesis, we may explore the proposition that the shift in the scene of writing from paper and pen or typewriter (+cite Kittler) to the computer is a move that elicits a rearticulation of the author from the center of the text to its margins, from the source of meaning to an offering, a point in a sequence of continuously transformed matrix of signification. I say *elicits* a rearticulation rather than directly *moves* a rearticulation in order to avoid any hint of technological determinism. Whatever happens to the author function will occur through

a conger of discourses and practices that are so complex that they will be an event. Nevertheless a horizon of visibility is at least plausible: the move is/may be one from the author function of modernity to a multiple, unstable author of postmodernity.

### Stability of the sign in time and space

The space/time configuration of the analogue author is different from that of the digital author. Set firmly on the printed page, the words of analogue authors speak to readers without a response. The traces of ink on the page are unaltered by the reader response, be it in a cognitive event, a marginal inscription, a printed review, essay or book. In each case, the printed page is unaltered by the reader so that others may read the same page or another copy of the page and see the same traces, the same arrangement of signs. This page also exists uniquely in space and time. This page is here and now. One must physically move it to displace or one must displace oneself to approach it. The page is an object in the world, obstinately enduring from moment to moment, subsisting in a place through the laws of inertia. Even if there exist multiple copies of the page, each one is subject to the identical conditions of material embodiment. True enough that time wears away at the paper. It shows its age to the reader and to the chemical analyst. That is the way of objects in space. They disappear, however slowly. But for long periods, they are enough the same to yield themselves to different readers with the exact display of traces.

In the digital world, texts are mobile and changeable. I can move a digital text around the world in an instant. Space offers no resistance to bytes on the Internet. A few nanoseconds is all it requires to circle the globe. From the point of view of a reader, a digital text is everywhere at once, so long as the appropriate technical conditions apply. Time constraints of bits are those of electrons. They apply as surely as those that apply to the molecules that compose pages but they are different laws with

different effects on the practice of reading. Insofar as digital texts are everywhere at once they extent the power and authority of the analogue author. If digital texts did no more than disperse themselves more efficiently and ubiquitously than paper, the analogue author would perhaps be expanded.

But the temporal instantaneity of digital texts undermines their spatial stability. Embodied in computer files, digital texts subsist in space only at the whim of the reader. The author of digital texts loses the assurance of their spatial continuity. Pages of digital text have the stability of liquid. They may be altered in their material arrangement of traces as they are read. They may be combined with other texts, reformatted in size and font, have sounds and images added to them or subtracted from them. And all of this may be done with almost no effort. No doubt about it: bits may be moved, erased or changed as easily as they are read. Digital texts thus have more permanence than paper in the sense that they may be distributed or copied without alteration. At the same time they have no permanence whatever. Digital texts are subject to a fundamentally different material regime from analogue texts. I contend that the author function of the analogue period of textual reproduction cannot endure the change to the technology of power of bits.

Analogue authorship took form in the placid world of the printed page. Here signifiers succeeded one another without alteration. The reader could return time and again to the page and reexamine the words it contained. A readerly imaginary evolved which paid homage to this wonderful author who was always there in his or her words, ready to repeat him or herself, always open to be admired or criticized. The world of analogue authors was leisurely, comforting, reassuring to the cognitive function and expanding through continuous exercise of the visual function. Authors of printed pages controlled the meaning of the page in Foucault's sense and were invested with aura in Benjamin's sense in good part through the material configuration of pages of paper. A printing industry, a market for books, an educational system all developed around the

page and the continuity of its arrangement of ink. Modern culture as we have known it in the West is inconceivable without space/time constraints of pages and books. As we move into digital authorship we can expect serious alterations in the author figure, in the readerly imagination evinced by mobile bits and liquid pages traveling at the speed of light. These natural laws of digital authorship are yet only in their beginning stage of development. We can expect that someday they will constitute the formative conditions for a new regime of authorship. Practices of digital authorship have already brought changes to character of the text.

Conclusion: Many of the features of digital authorship, as they affect the conditions of work in the humanities, are in some sense anticipated in the modern period. From the novels of Lawrence Sterne to the theoretical practice of Roland Barthes, anticipations of hypertext may be gleaned. If the digital imaginary is here foreshadowed, the practice of digital authorship had to await the material inscription of networked computing. Only when this rearrangement of ink into bits, this profound destabilization of the trace, occurred could the regime of the author function be transformed in countless practices of symbolic culture. Only then could the Gutenberg Galaxy become universe of cyberspace.

## Notes:

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1. Allucquère Rosanne Stone, *The War of Desire and Technology at the Close of the Mechanical Age* (Cambridge: MIT Press, 1995) pp.177-178.
  2. Sue Ellen Case in *The Domain-Matrix: Performing Lesbian at the End of Print Culture* (Bloomington: Indiana University Press, 1996) argues that orally-presented academic papers echo the condition of having written the paper elsewhere...[and foreground] the stability of print... (p. 24) She suggests that a more improvised performance is more harmonious with poststructuralist theory and digital writing.
  3. Pamela Samuelson Big Media Beaten Back, *Wired* 5.03 (March 1997) pp. 61 ff.
  4. John Browning, Africa 1, Hollywood 0, *Wired* 5.03 (March 1997) p.185.
  5. Mark Rose, *Authors and Owners: The Invention of Copyright* (Cambridge: Harvard University Press, 1993) p. 142. See also the valuable collection of essays by Martha Woodmansee and Peter Jaszi, eds., *The Construction of Authorship: Textual Appropriation in Law and Literature* (Durham: Duke University Press, 1994).
  6. The rare moments where Foucault writes of a future alternative are, to my knowledge, only two: in a conversation with Maoists about the possibility of a system of punishment beyond that of incarceration ( On Popular Justice, in Colin Gordon, ed., *Power/Knowledge* (New York: Pantheon, 1980) pp. 1-36) and at the end of the first volume of his study of sexuality where he proposes a different economy of bodies and pleasures beyond that of the regime of sexuality (*The History of Sexuality, Volume 1*, trans. Robert Hurley (New York: Pantheon, 1978) p. 159). Foucault also discusses utopias in *Of Other Spaces*, trans. Jay Miskowiec, *diacritics* (Spring 1986) pp. 22-27 but these are spaces of the past and present, not the future, especially bordellos and colonies.
  7. Michel Foucault, What is an Author? , in Paul Rabinow, ed., *The Foucault Reader*, trans. Josué Harari (New York: Pantheon, 1984) p. 119.
  8. Walter Ong's *Orality and Literacy: Technologizing the Word* (N.Y.: Routledge, 1982) argues that Greek is therefore the only true language.