A long title for the first unittest: exploring some features and questions of the nature of unit tests, poetry, and red lines.

Franz Fanon

French!

Il est désormais difficile de nier[1] le changement[2] fondamental[3] de paradigme[4] que représente l'édition numérique des textes. Du projet Gutenberg de 1971 au projet HyperNietzche actuellement développé au sein de l'ITEM, les éditions numériques ont évolué d'une simple transcription de texte jusqu'à devenir des outils perfectionnés d'analyse, qui ont changé notre façon de comprendre et d'étudier les textes. Tout au long de ce processus, malheureusement, de nombreux corpus importants de la littérature ont été laissés pour compte. Au cours des années 1990, la généralisation de l'internet a coïncidé avec une migration en masse des textes papier vers un support numérique. Mais cet effort étant nécessairement lié à un appui institutionnel et financier massif, la plus grande partie de ces efforts de numérisation ont porté sur les canons bibliographiques de l'Amérique du Nord et de l'Europe. D'autres champs littéraires, dont l'immense majorité des corpus de la sphère francophone (Afrique, Caraïbe essentiellement), n'ont pas été pris en compte, pour des raisons diverses (institutionnelles, technologiques, juridiques etc.) En ce début de XXIème siècle, au moment où l'attention s'est déplacée de la numérisation à la création d'outils d'analyse qui pourraient être appliqués à l'énorme quantité de données collectées, il est devenu encore plus difficile d'obtenir des fonds pour les projets de numérisation à grande échelle de ces littératures négligées. Une solution provisoire, donc, consiste à créer des éditions numériques d'œuvres-clé de ces grands corpus, en laissant de côté pour le moment la numérisation massive des fonds d'archives. L'édition d'une pièce d'Aimé Césaire se propose donc un but démonstratif et exemplaire. Appelons cette solution la micro-numérisation. n'ont pas été pris en compte, pour des raisons diverses (institutionnelles, technologiques, juridiques etc.) En ce début de XXIème siècle, au moment où l'attention s'est déplacée

[1] A rare first page footnote

[2] oooh

[3] just trying to

[4] argh

sm^{a}ll ^{a}xe • Febuary 2016 • DOI 10.1215/07990537-2739812

de la numérisation à la création d'outils d'analyse qui pourraient être appliqués à l'énorme quantité de données collectées, il est devenu encore plus difficile d'obtenir des fonds pour les projets de numérisation à grande échelle de ces littératures négligées. Une solution provisoire, donc, consiste à créer des éditions numériques d'œuvres-clé de ces grands corpus, en laissant de côté pour le moment la numérisation massive des fonds d'archives. L'édition d'une pièce d'Aimé Césaire se propose donc un but démonstratif et exemplaire. Appelons cette solution la micro-numérisation.

Some Poetry

- normal list
- this should have bullets

rather bear those ills we had,
Than fly to others, that we knew not of.
  But brian can't write poetry
  But he can indent
blockquoted lines
This is
a test
  to compel some spaces
  though this is at the same ul level.
and this is back
because poets.
base line
 base line indent 1
  base line indent 2
   base line indent 3
    base line indent 4
     indented line
        8 spaces

- but above
- should not have bullets

A red header thingo

A sub red header thingo

A level threeeeeee header thingo

Parmi les nombreux défis qui sont à relever par les équipes d'édition numérique, dans le cas d'objets éditoriaux complexes, l'un des plus délicats reste de réussir la collecte et de bien choisir ses stratégies de représentation éditoriale. Les textes de Césaire publiés sous le titre Et les chiens se taisaient sont l'un de ces objets éditoriaux complexes. Réunir dans un seul espace en ligne les

matériaux disparates (tapuscrits, livres imprimés, enregistrements, film) qui constituent cette archive sera déjà une réussite considérable. Mais nous désirons ne pas nous arrêter là. Si la tâche de l'édition génétique, comme Walter Benjamin le disait de l'histoire matérialiste, consiste à « prendre possession de la mémoire, dans le cillement d'un éclair au moment du danger »[5] – en l'occurrence une suite d'actes poétiques réalisés par Aimé Césaire et ses collaborateurs[6]– alors il nous faut une édition qui puisse : 1) isoler ce que Jerome McGann[7] appelle le code linguistique (les mots) et le code bibliographique (l'arrangement, la typographie, le support matériel, etc. de façon à ne pas déstabiliser leur équilibre délicat[8] ; 2) représenter de façon dynamique la trajectoire et l'interrelation entre les éléments des différents états du texte, afin de nous permettre de recréer le long processus génétique de l'archive. L'absence de coordination entre ces deux fonctionnalités a imposé jusqu'à aujourd'hui une séparation entre les outils d'analyse et la représentation des textes en ligne. Pour nous, l'avenir de l'édition génétique suppose la capacité de joindre l'analyse à la représentation. Les ressources technologiques n'ont pas encore permis de concrétiser toutes nos intentions, mais notre but est de faire reculer les limites actuelles.

> At the limit of an always increasing elimination of references and finalities, an ever-increasing loss of resemblances and designations, we find the digital and programmatic sign, whose "value" is purely *tactical*, at the intersection of other signals ("bits" of information/tests) whose structure is that of a micromolecular code of command and control.[9]

Roman Jakobson called such construction and deconstruction of meaning the "profuse exchange of ritualized formulas" or the phatic function of language.[10] In the phatic function lies the essence of programming. Code shapes and commands. At the same time, it conjures fantastical metaphors to occlude the structure of shaping and commanding. Simulation obscures the incongruence between visible representation and the underlying material affordances of the medium. What you see is not always what you get. We are instead confronted with a composite image, which under examination reveals a complex process of transfiguration between the visible sign and the sign at the site of the inscription. When reading online, for example, we observe what looks like a book, where we should also perceive an attempt to sensor and surveil. The simulation is without a referent. It bares no resemblance to the material substratum of electronic reading. We believe we are handling a book. Our ideas about reading and interpretation subsequently rely on that initial physical point of contact with paper. But when reading electronically, we are handling something other than print material. The resemblance to paper guides our intuitions about the possibilities of the medium: the ability to scroll, bookmark, or turn pages. We have far fewer intuitions about the affordances of inscription at the micromolecular level. As we "turn the page" an electric charge crosses the impenetrable oxide barrier to reach the floating gate through quantum tunnelling.[11]

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5 This is a footnote?

6 another footnote

7 Shockingly, a footnote

8 The footnotes come marching, one by one...

9 Jean Baudrillard and Mark Poster, *Selected Writings* (Stanford, Calif.: Stanford University Press, 1988), 139–40.

10 Bronislaw Malinowski et al., "The Problem of Meaning in Primitive Languages," in *The Meaning of Meaning; a Study of the Influence of Language Upon Thought and of the Science of Symbolism*, ed. C. K Ogden (London; New York: K. Paul, Trench, Trubner & Co.; Harcourt, Brace & Co., 1923), 146; Roman Jakobson, "Closing Statement: Linguistics and Poetics," in *Style in Language*, ed. Thomas A Sebeok ((Cambridge: Technology Press of Massachusetts Institute of Technology, 1960), 355.

A black header thingo

A sub balck header thingo

A level threeeeeee header thingo

We should talk about this template. Some things to discuss:

- separate bib file?
- yaml metadata
- tests for correct submission

Unlike figurative language, machine control languages function in the imperative. They do not stand for action—they are action. Code represents only the exercise of power. More binding than the "speech acts" J.L. Austin, control codes arrange and regulate. The difference between representation and control is one of brute force. It lies in the distinction between a restraining order and physical restraint. A restraining order *represents* the calling forth of codified power. Physical restraints like handcuffs *enact* the exercise of codified power. Like all violence they do not stand for anything. Stripped of references, resemblances, and designations, they are in themselves an arrangement and rearrangement of matter. The handcuffs contort the body into the shape of submission. Absent a body, the restraints draw an empty shape.

Code acts similarly to shape the word. Located somewhere between idea and material, formatting relates content to matter. It mediates by imposing structure. Think of a paragraph, for example. By convention, writers use paragraphs to break up the flow of monolithic thought on a page. The paragraph contains information. Can we imagine an empty paragraph? Can the shape of the paragraph persist outside of the material confines of the page or the screen? Can one imagine a paragraph that unfolds spatially not in two dimensions, but in one, along a straight line? What about a three dimensional paragraph? Could it take the shape of a cuboid instead instead of a rectangle? These questions boggle the mind because the paragraph draws a singular shape. It is a textual container of a type. Any other shape less or more than the paragraph would go by another name. It would constitute another format. To imagine something like a one-dimensional paragraph is akin to imagining a flat shoebox. A flat shoebox could no longer hold shoes. It would contain something else like images of footwear. Similarly, a paragraph identifies a particular arrangement of elements. It is a box or a data structure of a shape, made to hold words and sentences. Like nesting dolls, words and sentences are in themselves data structures that contain further, smaller arrangements of information. One could say, what of such arrangements? Who cares about paragraphs? It is merely one type of a container among many. It has only an instrumental function to help get the point across. The meat of interpretation lies in the stuff within. Words come in other shapes and sizes. The outer container is disposable and therefore insignificant.

Formats could only seem insignificant in the past when they were few and simple. The transition between static and dynamic media necessitates renewed attention to the formatting layer of

[11] P. Pavan et al., "Flash Memory Cells-an Overview," *Proceedings of the IEEE* 85, no. 8 (August 1997): 1248–71, doi:10.1109/5.622505; V.-Y. Aaron and J. Leburton, "Flash Memory: Towards Single-Electronics," *IEEE Potentials* 21, no. 4 (October 2002): 35–41, doi:10.1109/MP.2002.1044216; R. Bez et al., "Introduction to Flash Memory," *Proceedings of the IEEE* 91, no. 4 (April 2003): 489–502, doi:10.1109/JPROC.2003.811702.

meaning making. What you saw is what you got on the page. On the screen, what you see is but a small part of what you get. The content—all that is contained on a page—shifts beneath the projected image. In print, content can be gleaned from the surface. There is nothing but surface on a page. The screen is a layered surface. Sandwiched between panes of glass, liquid crystal moves in response to electrical modulation. The ebb and flow of electricity in turn reflects yet another layer of codification, inscribed onto yet other recondite planes of inscription. A byte, made up of eight binary bits, holds a letter. The string of letters spelling out "hello world" occupies eleven bytes, if you count the space. A file in the Portable Document Format (`.pdf`) containing nothing but "hello world" takes up 24,335 bytes on my system. Encoding accounts for the disparity between plain text and fancy text, the latter defined as "text representation consisting of plain text plus added information".[12]

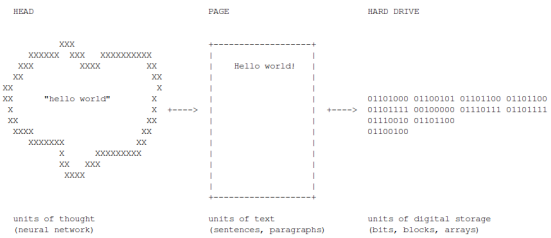

Figure 1 Forms and formats.

In cognitive metaphor theory, the kind of resemblances that we have been discussing so far are called *structural metaphors*. "Structural metaphors allow us to do much more than just orient concepts," Lakoff and Johnson wrote.[13] Grounded in "systematic correlations within our experience," structural metaphors transfer organizing principles from one domain to another. Thus to say something like "time is money" is to suggest that something in the arrangement of the financial system correlates systematically to something in the arrangement of the temporal system.[14] It is a structural and not just a semantic similarity. If metaphors work by transferring qualities, structure is the quality being transferred in all of the above cases. Structural metaphors organize one thing in the shape of another. They are for this reason key to understanding the transference that takes place in the interface between human and machine.

> a shared books with database metaphor, a reference books metaphor, and a card catalog metaphor in one system that allows large object oriented data bases to be organized and accessed in an exclusive environment and in addition allows access to screen icons, creates a visual hierarchy of related and shared objects, and allows mutually exclusive access to the metaphors within the library.[15]

In the so-called classical view, metaphors are simply a type of figurative language. To say "the day stands tiptoe on the misty mountain tops" is to use the verb "stand" in a novel linguistic context. Days have no literal legs to stand on. John Searle, George Lakoff, and Mark Turner, among others, have

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[12] Unicode Consortium, *The Unicode Standard: Worldwide Character Encoding, Version 1* (Addison-Wesley, 1990).

[13] George Lakoff and Mark Johnson, *Metaphors We Live by* (Chicago: University of Chicago Press, 1980), 61.

[14] Ibid., 65–68.

[15] Henry G. Pajak, "Electronic Library," February 1992, 1, http://www.google.com/patents/EP0472070A2.

argued that metaphors are more broadly a cognitive phenomenon, mapping distinct ontological categories across "conceptual domains".[16] In the modified view, even such basic semantic concepts as "state, quantity, action, cause, purpose, means, modality" are metaphorical in nature.[17] Beyond figurative lyrical language, Lakoff and others have argued that metaphors broadly structure everyday experience. Thus the analysis of common phrases like "things are looking up" and "I can't get that tune out of my mind" reveals underlying figuration like "good things are up" and "the mind is a container." The idea that "good things are up" generates a multitude of metaphors like "profits are going up" and "moving on up," for example[18]

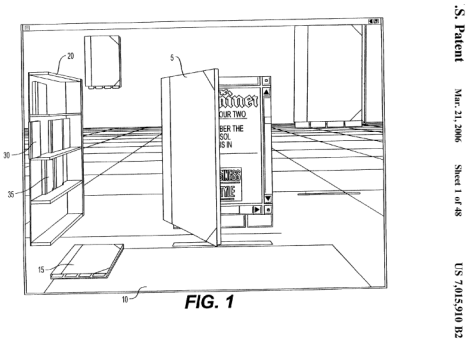

Figure 2 "An exemplary interface for viewing a three dimensional book".[19]

In the cognitive view, the metaphor performs a number of "conventional mappings from one domain to another".[20] Lakoff mentions for example the common trope of "a state is a person," implicit in the ideas of "friendly" and "hostile" states.[21] This metaphor implies that ideas about agency, emotion, and mental life usually attached to people can be extended to state actors. Similarly, to say that someone is "boiling mad," instantiates the common trope of "anger is a hot liquid in a container." In this case, common known properties attached to the domain of physics are mapped onto the domain of emotion. Lakoff further explains that such domain mappings tend to follow a few rules. They are usually partial and asymmetrical. "Mappings are not arbitrary," he writes, "but grounded in the body and in everyday experience and knowledge." Finally domain mappings obey what Lakoff calls the Invariance Principle, by which "the image schema structure of the source domain is projected onto the target domain in a way that is consistent with inherent target domain structure."[22]

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16 Lakoff and Johnson, *Metaphors We Live by*; Mark Turner, *Death Is the Mother of Beauty: Mind, Metaphor, Criticism* (Chicago: University of Chicago Press, 1987); George Lakoff, "The Contemporary Theory of Metaphor," in *Metaphor and Thought*, ed. Andrew Ortony (Cambridge: Cambridge University Press, 1998), 201–52, **???**.

17 George Lakoff and Mark Johnson, "The Metaphorical Structure of the Human Conceptual System," *Cognitive Science* 4, no. 2 (April 1980): 195–208, doi:10.1016/S0364-0213(80)80017-6; Lakoff, "The Contemporary Theory of Metaphor," 212.

18 Lakoff and Johnson, "The Metaphorical Structure of the Human Conceptual System," 195–98.

19 Stuart Kent Card et al., "Methods, Systems, and Computer Program Products for the Display and Operation of Virtual Three-Dimensional Books," March 2006, 3, http://www.google.com/patents/US7015910.

20 Lakoff, "The Contemporary Theory of Metaphor," 239.

21 Ibid., 243.

22 Ibid See also Mark Turner and Gilles Fauconnier"Conceptual Integration and Formal Expression," *Metaphor and Symbolic Ac-*

Another Section

The principles of metaphor-driven design contain an implicit model of human–computer interaction, which implies that humans prefer to manipulate digital information stored on computational media by the means of familiar mediating structures—paragraphs, pages, files, and folders—associated figuratively with the affordances of print media. We know, in other words, what paragraphs, pages, files, and folders can do on paper and we would like for digital images of paper to behave in a similar way. For example, one affordance of paper is that it can be folded. It therefore becomes possible to "earmark" a page by folding a corner. The fold enables subsequent recollection of text that has been previously read. By these means, a reader marks a notable place in the text in order to return to it later. The digital medium cannot be folded in the same way as it offers a set of physical affordances that differ from actual paper. Readers are not familiar with "what can be done" digitally, however; consequently, the affordances of digital media are presented through metaphor. Thus a virtual "earmark" on a "page" represents a numerical pointer to a specific address in the computer memory. A "page" stands for a range of related addresses that correspond roughly to the information visible on an analogous page in print. Similarly one "drops a folder into a trash bin" or "drags and drops a file" or "bookmarks a page" on a screen. Such metaphors rely on habituated insight with one medium extended into another. We do not literally "drag" or "drop" bits, but we use metaphors of paper and trashcan to help us manipulate bits and bytes as if they were household objects. The metaphor opens figurative possibilities, but it also obscures the actual physical contingencies of interacting with bits and bytes, logic gates and magnetic traces.

The affordances of the physical medium differ from those of the simulated one. We manipulate bits and bytes differently from files and folders, pages and paragraphs. The metaphorical substitution encourages readers to extend the facility they have with manipulating one sort of media (paper and ink) to another (screen and pixels). What readers gain in facility, they lose in critical faculty. Alienated from the actual physical structures of information storage and retrieval, readers gain access to the metaphor alone. Thus we go through the motions of turning the page but actually redraw the screen. We "highlight a passage," an action that may also send information about the highlighted passage to a data aggregation service. We "share a book" which means really assigning a temporary license to another user. The structures of governance do not reveal themselves in the metaphor. Where did the text go? someone asks when downloading a paper from an online journal.[23] It is in your "home" I answer. But unless one of us is familiar with the material contingencies of file storage, neither has a mental map of any physical location corresponding to the "home" directory, the default location of personal files on many systems. When confronted with the actual affordances of digital text, the user grasps for neutered metaphors. We "reside" in such homes, "own," "share," and "create" only in the simulacrum.

Metaphors of human-computer interaction conceal the structure of computation. Print offers

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tivity 10, no. 3 (September 1995): 183–204, doi:10.1207/s15327868ms1003_3; Francisco José Ruiz de Mendoza Ibáñez"On the Nature of Blending as a Cognitive Phenomenon," *Journal of Pragmatics* 30, no. 3 (September 1998): 259–74, doi:10.1016/S0378-2166(98)00006-X; George Lakoff"The Invariance Hypothesis: Is Abstract Reason Based on Image-Schemas?" *Cognitive Linguistics* 1, no. 1 (2009): 39–74, doi:10.1515/cogl.1990.1.1.39.

[23] The notion of "digital text" itself is a metaphor. Files do not really hold texts. The idea of "text" identifies a segment of stored memory coupled with control codes that govern layout and projection in specific material context. Together, these diverse signals and physical affordances create the illusion of a single text.

a relatively static and stable medium for knowledge transmission. Ink and paper do not change in transit. By contrast, the vessels of computation are capable of altering the content dynamically. Imagine me asking you to read Shakespeare's *Hamlet*, for example, by lending you a copy of the text. In the case of a paper book, I may be sure that the text in my hands will remain the same as I pass it into yours. But the computed sign also has the capability to adjust itself to new contexts. For example, the simulated *Hamlet* may adapt to the new reader's geographic location, mood, or consumption habits. In fact, most texts we consume today come to us in such computationally constructed way. The front page of the New York Times viewed in Beijing will differ from the front page viewed in New York. The two "pages" or "sites" are in some sense two completely different texts. But in another sense, the "front page" identifies the same location of the same text, in two diverging and dynamically composed versions. They feed off of the same sources. The same source code gives rise to both texts.

The key to understanding "the loss of resemblances" that accompanies ubiquitous simulation lies in the inner dynamics of metaphor machinery. A functioning metaphor, if you would recall from Lakoff, is one which ferries the schematic composition of one domain into another. Thus to say "life is a stage" is to transpose something about theater onto life. In literary terms, the theater is "tenor" where "life" is "vehicle" of the composite figure.[24] Simulations work differently. Where the tenor of the literary metaphor crosses several semantic and cognitive domains, the computational metaphor substitutes the "signs of the real for the real".[25] It is a subtle difference that engenders not-so-subtle effects. For example, it is one thing to say "you are the apple of my eye" and quite another to actually confuse apples for eye pupils. Baudrillard gives us the example of a map that no longer corresponds to any territory. He calls such a condition of pure simulation without a referent *hyper-reality*. We expect a digital simulation to attain a measure of correspondence between representation and the thing being represented. For example, in theory, a weather simulation should be capable of modeling observed meteorological conditions. But would it be a weather simulation if the model was broken in some way, or, in the extreme, if it had no correspondence to the physics of clouds, wind, and water? The hyper-real breaks further still by usurping the underlying reality. The model does not merely obscure, it takes place of the thing being modeled. In other words, it begins to simulate itself, according to its own rules, similar only to itself. The simulation no longer corresponds to any situation "on the ground." Severed from its referent, the symbol itself attains the status of reality. Thus hyper-reality: a symbol that folds onto itself. It is a weather simulation confused for weather.

We know that physical affordances of liquid crystal displays (LCDs) and magnetic storage differ drastically from those of paper, goat skins, or parchment. Yet digital surface representation maintains the illusion of self-similarity. We are faced with what is called *skeuomorphic* design, by which screen reading resembles print. In this way, an electronic book reader simulates the bent corner of a well-thumbed book. The skeuomorphic resemblance itself constitutes a metaphor worthy of critical examination. The principles of skeuomorphic design extend a visual metaphor from one medium to another. The reader already knows how to turn pages of a book. A book device therefore simulates pages to ease the cognitive burden of transitioning from paper to pixel. Instead of issuing unfamiliar commands to the computer to turn the page, readers perform the more habitu-

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24 I. A Richards, *The Philosophy of Rhetoric* (New York; London: Oxford University Press, 1936).

25 Jean Baudrillard, *Simulacra and Simulation* (Ann Arbor: University of Michigan Press, 1994), 2.

ated motion of swiping across the screen. The gliding motion enacts a kinetic analogy—a type of a metaphor—transposing properties of paper to glass.

The interface metaphor similarly exchanges one referent for another. Simulation should, by definition, "assume a form resembling that of something else" (@_simulation_2015). Metaphor machines assume the form of one thing, while structuring another. To drag and drop a document into a trashcan on the screen, for example, should in theory correspond to an analogous set of data manipulations on the disk. Yet, "discarding a file" in this manner does not necessarily include deletion of data from the storage medium, as expected. The representation of the document may disappear visually where the inscription endures. Such "loss of resemblances" could be insignificant. Does one care whether a file was actually erased or not when performing deletion? Perhaps not in many cases. But in some cases, when it really matters—under the threat of censorship or prosecution, for example—the incongruence exposes the frailty of our alienation from the material contexts of digital knowledge production. We want the thing to stay deeply deleted. Our grasp on the medium weakens the more convincing the simulacrum.

Readers bear the burden of conceptual transference. In pretending to turn virtual pages, we lose sight of the mechanisms producing the simulation. If we hope to practice anything like interpretation or close reading at the level of discourse, we must certainly also practice them at the physical site of discourse formation. A truly materialist poetics would reach beyond representation towards the object. More than superficial embellishment, the skeuomorphic metaphor enacted at the surface of the digital literary device structures all meaning-carrying units: from individual letters, to words, paragraphs, chapters, pages, and books. We know that there is nothing inherently page-like about rigid slabs of glass and silicone. The metaphor of "turning the page by swiping across the screen" conceals the structural rift between media.

Why would readers engage in such a charade? Why not simply make use of novel interfaces afforded by new technology? The literature from the field of human–computer interaction suggests a formalist answer: habituation.[26] The initial effort it takes to learn to read in a new environment may discourage potential readers from adopting a new technology. Smart designers therefore rely on acculturated practice, the turning of pages in our case, to minimize the "friction" of adoption. Although an "electronic book reader" contains no pages as such, it extends the metaphor of pages to electronic reading. The perceived facility of use comes at a cost of critical engagement. The structures of governance, like those embedded in a Portable Document Format, remain for the most part inaccessible to analysis. A digital poem, a novel, a physician's script, or a legal contract resembles their paper counterparts to enable familiar actions. But while imitating paper pages, the reading *appliance* also monitors, adjusts, warns, and controls.

Simulation conceals structuring principles large and small. Some of the concealed details may remain inconsequential, like the limit on how many keys can be pressed at once without overwhelming the circuitry of keyboard when typing. Other concealed details are of paramount importance, like digital rights management chips and censorship filters. Electronic books are governed and internalize governing structures in ways that are often purposefully hidden from the reader. For example,

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[26] J.M. Carroll and John C. Thomas, "Metaphor and the Cognitive Representation of Computing Systems," *IEEE Transactions on Systems, Man and Cybernetics* 12, no. 2 (March 1982): 107–16, doi:10.1109/TSMC.1982.4308795; J. M Carroll, R. L Mack, and W. A Kellogg, *Interface Metaphors and User Interface Design* (San Jose (etc.): IBM Thomas J. Watson Research Division, 1987); Joel Spolsky, *User Interface Design for Programmers* (Berkeley, CA; New York, NY: Apress, 2001).

the US Digital Millennium Copyright Act prohibits the physical circumvention of copyright protections.[27] This means that if an electronic book is encrypted in some way to prevent copyright infringement, the reader may also be prevented from examining modes of accessibility, preservation, or freedom of speech embedded into the device.

The material affordances of text at that bottom-most, meaning-bearing medium influence all higher-level functions of interpretation.[28] Still, most available theories of interpretation build on properties and assumptions attached to print media. For example, in Hans-Georg Gadamer's seminal conception of art, the free play of the artistic mind transforms into material structure (*Gebilde*) that is both "repeatable" and "permanent".[29] Similarly, in his *Interpretation Theory*, Paul Ricoeur writes about the "range of social and political changes" related to the invention of writing. For Ricoeur, human discourse is "fixed" and thereby "preserved from destruction" in writing.[30] The electronic literary device offers no such permanence. What is meant by "fixed," "permanent," and "repeatable" changes with the medium. Such properties come to us under the guise of surface representation, which obscures the flows of code and codex. Nothing is guaranteed in the passage of electronic text from one pair of hands into another. Digital formatting expands its purview far beyond typographical convention. The erasure of words, word substitution, automatic summarization, wholesale generation of discourse by algorithmic means—the command and control layer contains all such possibilities. What does it mean to read and to interpret a dynamic text, which changes depending on its context? How can literary analysis—close reading, philology, hermeneutics—persist without the fixity of print?

Consider the commonplace task of "turning pages" in the act of writing or reading digital texts. In cognitive linguistic terms, the idea of paper pages should somehow extend into the domain of manipulating digital information. In literary terms, the projection of a page on the screen carries the tenor of paper pagination. In this way, the turning of simulated pages implies a certain familiar arrangement of matter. Readers know what to do with paper pages. They understand their affordances. The metaphor encourages readers to extend their knowledge of the physical world

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27 Vicky Ku, "Critique of the Digital Millenium Copyright Act's Exception on Encryption Research: Is the Exemption Too Narrow," *Yale Journal of Law and Technology* 7 (2004): 465, http://heinonline.org/HOL/Page?handle=hein.journals/yjolt7&id=467&div=&collection=; Jane C. Ginsburg, *Legal Protection of Technological Measures Protecting Works of Authorship: International Obligations and the US Experience*, SSRN Scholarly Paper (Rochester, NY: Social Science Research Network, August 2005), http://papers.ssrn.com/abstract=785945; Aaron Perzanowski, *Rethinking Anticircumvention's Interoperability Policy*, SSRN Scholarly Paper (Rochester, NY: Social Science Research Network, September 2008), http://papers.ssrn.com/abstract=1224742; David Fry, "Circumventing Access Controls Under the Digital Millennium Copyright Act: Analyzing the Securom Debate," *Duke Law and Technology Review* 2009 (2009): 1, http://heinonline.org/HOL/Page?handle=hein.journals/dltr2009&id=65&div=&collection=; Fred Von Lohmann, *Unintended Consequences: Twelve Years Under the DMCA* (Electronic Frontier Foundation, 2010), http://eric.ed.gov/?id=ED509862.

28 For example, see Paul Ricoeur writing on the change in media from speaking to writing: "The most obvious change from speaking to writing concerns the relation between message and its medium or channel. At first glance, it concerns only this relation, but upon closer examination, the first alteration irradiates in every direction, affecting in decisive manner all the factors and functions" Paul Ricœur, *Interpretation Theory: Discourse and the Surplus of Meaning* (Fort Worth: Texas Christian University Press, 1976), 25.

29 Hans-Georg Gadamer, *Truth and Method* (New York: Seabury Press, 1975), 110.

30 Ricœur, *Interpretation Theory*, 26–28.

into the projected, virtual world. For example, paper pages can be turned. We know they usually proceed one another, sequentially. And we are attuned to expect the same attributes to hold true in the vehicle—the domain receiving the tenor of the metaphor. The action of turning virtual pages should, in theory, set off a series of corresponding actions in the target, digital domain. In other words, turning the page on a screen should correspond to a similar action on the disk. But the action does not necessarily meet our expectations. The arrangement of information stored on the disk affords different physical actions from the arrangement of information on the page. For example, an English-language character occupies eight bits on a disk where a print character occupies one. The disk can tolerate millions of rewrites, where the paper medium wears out after only a few. The paper inscription is visible to the naked eye where the digital inscription is not.

The simulation is perhaps necessary, because the reading and writing of digital data can involve processes far outside of everyday experience. For example, in reading data from solid state (FLASH) memory a circuit imparts electrical charge through quantum tunneling onto a connected series of floating gate transistors.[31]

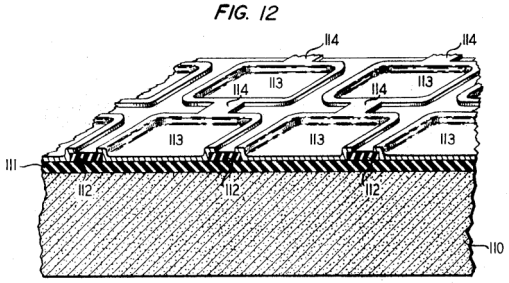

Figure 3 Formal structures at the site of the inscription. "Perspective view of a portion of a charge translating device illustrating a preferred electrical contact arrangement. A quantum of charge carriers, representing an information bit (...) can be translated along the semiconductor (...) sweeping the minority carriers with it. The quantum can be detected by a simple capacitive couple, e.g., a floating gate FET".[32]

Whatever the complexities of solid state storage architecture, the difference in arrangement of information between pages and floating gates—at the root of modern "sold state" storage—is apparent. The structure of one has only an arbitrary connection to the structure of the other. Consequently changes in the structure of one domain do not necessitate changes in the structure of another: to "erase a word" on a projected, virtual page thus may not have the corresponding effect on the level of the storage medium. The information may persist despite the intended erasure. As dwellers of simulated worlds, we hope that the analogy between paper and pixel achieves a level of verisimilitude. Turning the page or erasing a word on the screen should do something similar on the disk. However, we also know that not to be the case. As in Baudrillard's map, the metaphor is broken in that it no longer reflects any terrain. The computational metaphor simulates the familiar but absent affordances of the print artifact. The simulation suggests a structuring of one kind, while enacting a structure of another.

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[31] Pavan et al., "Flash Memory Cells-an Overview"; Bez et al., "Introduction to Flash Memory.".

[32] W. Boyle and G. Smith, "Information Storage Devices," December 1974, http://www.google.com/patents/US3858232.

Tables

Table 1 Demonstration of simple table syntax.

Right	Left	Center	Default
12	12	12	12
123	123	123	123
1	1	1	1

In these novel conditions, the task of the literary scholar must include, among other things, a practice of microscopic reading that corresponds to the kind of micromolecular writing suggested by Baudrillard and Frederich Kittler.[33] The full extent of the simulated figure must be made available for interpretation. What happens in the metaphorical transference between the book as a work of art and the apparatus simulating the book? Estrangement, the exegesis of the metaphor, reveals mechanisms of governance shaping mental experience. It apprehends the revealed mechanics of computational reading. Materialist poetics subsequently allow one to consent, or, conversely, to resist elements of imposed structure.

[33] Friedrich A. Kittler, "There Is No Software," *CTHEORY* a032 (October 1995), www.ctheory.net/articles.aspx?id=74.