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A Review of Matthew Kirschenbaum, *Mechanisms: New Media and the Forensic Imagination* Cambridge, MA and London, UK: MIT University Press, 2008

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Abstract

This is a review of Matthew Kirschenbaum's *Mechanisms: New Media and the Forensic Imagination* (Cambridge, MA and London, UK: MIT University Press, 2008).

A haunting spectre of loss and recovery hovers over Matthew Kirschenbaum's compelling study of the workings of digital media. Timing and circumstances account for this in part. The research began with the author's youthful enthusiasms and finishes in the more mature moments of sobering historical events. In framing the work, he begins with a description of the staged disappearance of evidence in William Gibson and Dennis Ashbaugh's 1992 experimental project *Agrippa*. The pages of that book-object were treated with photosensitive materials that would cause it to fade on exposure to light while the Gibson text was encrypted in a once-only readable format. But the closing bracket for Kirschenbaum's project came from witnessing the task of data recovery from the black box hard drives of computers damaged in the September 11 events at the World Trade Towers. These two tales spin out in different directions, the spiral arms of forensic investigation into the social conditions of production and material workings of digital devices. 1

In *Mechanisms*, Kirschenbaum sets out to expose in detail the many elements of the "material matrix governing writing and inscription" at work in electronic textuality, including the cultural networks of reception that are part of that matrix. He combines his training in literary and bibliographical studies, engagements with critical and cultural readings in media, and a wonderfully self-confessed geek-enthusiasm for figuring out exactly how things work. The result is improbably readable in its details and compellingly suggestive and significant in its overall argument. The book is also an exemplary demonstration of scholarly method for the emerging field of digital media studies. I'd make it required reading for any class in this field because of its interdisciplinary approach and rich documentation of sources. Among scholars and peers, it will advance certain arguments. The lucid clarification of important concepts is centered in the distinctions Kirschenbaum establishes between forensic and formal materiality. Whatever other insights (and they are many), or anecdotal tales, or case study points may be gleaned from this book, this initial distinction is a crucial one for continuing discourse on digital work. 2

That distinction is made in the introduction and first two chapters. Kirschenbaum begins by stating the need for a forensic approach to counter some of the misunderstandings and vague mythifications that have been performed by over-emphasis on reading the formal appearances of works in digital media. He refers to this under the rubric, "medial ideology". This is the seductive tendency to read "the digital event on the screen" as if it existed independent of the specific technological mechanisms on which it depends (p. 2). Kirschenbaum's research takes him into an interesting range of sources. For instance, to shape his own terminology, he draws on the work of Kenneth Thibodeau, Director of Electronic Records Programs at the National Archives and Records Administration. Not exactly the usual MLA fare or seminar citation. This dogged archival work is essential for the field, and its presence distinguishes this study. Adopting and modifying Thibodeau's "tripartite model for defining digital objects" Kirschenbaum establishes the critical foundation for his own terminology (p. 3). Thibodeau describes digital artifacts as available to three levels of description as *physical*, *logical*, and *conceptual* objects. Though the distinctions among these aspects are an intellectual device as 3

much as a description of three different levels of operation or ontological distinction, they provide a useful framework for Kirschenbaum. He summarizes the three as follows: *physical* ("signs inscribed on a medium"), *logical* ("data as recognized and interpreted"), *conceptual* ("the object we deal with in the real world"). (I find the latter term a bit awkward, associated as it is in art history with notions of dematerialization or ideality, but that is a trivial issue.) As Kirschenbaum goes on to say, the strength of the model is that it allows these different levels to be distinguished for the sake of "accounting for many of the unique complexities of new media artifacts." This is precisely the use to which Kirschenbaum turns them in going on to make his own terminological (and substantial) distinctions, emphasizing that the focus of critical work in the field has been on the *conceptual* or phenomenological level, and only sometimes taking the *logical* data-structures into account as well.

4 The reason for this, though Kirschenbaum is too polite and too politic to say so, is that the phenomenal aspect is easy to get hold of – and the "reading" of a digital artifact in terms of its screen expression extends habits of reading that are endemic in film studies or cultural studies when the mechanisms of textual production (at physical and logical levels, as well as social ones) are simply left out of the reading approach. What you see is what you critique. What I find marvelous about Kirschenbaum's method is his reading of the usually *invisible*, the inscriptional text unavailable to the unassisted eye. This decision to "read" digital artifacts through the detailed understanding of their production is highly informative. His descriptions of the "nanoscale interval between the drive's floating read/write head and the surface of the platter" or of litho ink conducted to the surface through the channel of a condensed water droplet offer a microscopophilic pleasure to a reader like myself to whom such details have never been explained. A feeling of satisfaction comes from being shown the workings of these mechanisms, akin to the thrill of finding out how the Loop of Henley distills body fluids or transfer RNA couples with a polypeptide chain. Why? Because it provides assurance that the world actually operates on a physical-material level through processes that are governed by predictable rules and behaviors that inscribe human communication and understanding (however eccentric) in a recoverable record.

5 Kirschenbaum refines Thibodeau's model and offers two terms in a contrast between forensic and formal materialities. No text, after all, exists outside of an instantiation, and so all reading takes place in the physical, material world. *Forensic materiality* is based in "the principle of individualization". This wonderfully powerful concept, abstract and provocative as a critical notion, has a useful concrete history in modern criminal science. There the idea that "no two things in the physical world are ever exactly alike" served as the very foundation of discriminatory investigation of traces, remains, debris, and any and all other material evidence (p. 10). Kirschenbaum's fascination with the forensic record drives him to the elaborate detailing of the tiny (300 micron) clockwork mechanisms of state of the art encryption, but also to the reading of traces and remains on floppy disks, old drives, and files in machine language. *Formal materiality* he defines as the "imposition of multiple-relational computational states on a data set or digital object." Supplementing this description with the example of an image file, he shows the way the multi-layered aspects of its data can be made accessible through different readings (machine and human) and displays that are in part produced by "shifts from one set of software logics to another" (p. 13). Formal materiality is display and appearance, as well as structure and perceptible expression.

6 Kirschenbaum demonstrates the power of this distinction by using it to form the case studies in his book. His readings of artifacts make clear that a set of physical conditions interacts with a set of protocols in the creation of any digital expression. Such distinctions are as fundamental to digital operations as Emil Benveniste's distinction between the planes of discourse and reference are to the analysis of literary or linguistic works. They allow us to make necessary critical moves that separate one aspect of the articulation of digital media from another, showing these are different in design and structure as well as in function and behavior. Such a distinction is absolutely essential if digital media studies are to advance beyond that condition of medial ideology and its (too) easy analysis of apparent effects.

7 He is reading the forensic features of his three case study objects as works of writing and machine inscription. So he approaches their analysis through a focus on when, where, and how each stage in the lifecycle of their production and reception left a trace in the digital media. So the really early, rather primitive, *Mystery House* online game disk from 1980, a pre-web artifact of quite-limited but exhilarating-at-the-time features, turns into an excuse for a detailed analysis of disk sectors and the careful retracing of mysterious elements that show up on particular individual disks. The result is a trail of evidence that shows a user's history and patterns of storage and gaming reconstructed in a manner worthy of

Sherlock Holmes. In fact, one of the great things about Kirschenbaum's book is that he manages to turn his own fascination with the process of discovery into tales of mysteries that get solved. *Afternoon*, Michael Joyce's early 1980s hypertext fiction, was a product of and platform for demonstrating the capabilities of Storyspace. Tracking its history offers a chance to go to the archives at the Ransom Center at University of Texas and find one of the few, rare pieces of paper remaining from the design process – one stained with coffee, no less. If this feels a bit (to this reader) like excess fetishizing, it is still charming to share the detective's engagement with the implications of such traces within a larger argument about the recovery of textual production (bibliographical methods again) in a digital world that has often been held as without such remains or a useful way to recover them. The final study, of *Agrippa*, serves as a means to explore the social and cultural conditions of production and reception of a now cult work and to expose some of the mythmaking apparatus of its creation. (Who hacked what when and where and who knew what when — all this is information to be tracked and written about through scrutinizing the date stamps of emails and electronic trails.)

8 The combination of technical knowledge, scholarly conscientiousness, and imaginative critical insight in this book and the sheer readability produced by the author's enthusiasm for his material and method make this a highly informative work. But the importance of the book is in its demonstration of method as well as in the substance of its argument. The task of recovery in the humanities, the serious preservation of cultural record, belongs to the world of digital objects as textual objects of cultural inscription. Memory is a collective project of trace and reading, a forensics of cultural imagination and production as well as of texts examined in phenomenal form or isolation.

9 What are the implications of this book and approach? Surely we don't imagine that from this point on every critic or scholar of digital media artifacts will scrutinize the hard drives and machine code of the works they study? Knowing that this level of production is a component of the work makes the point, but as technologies shift and change, knowing how these workings produce the work will continue to be an important aspect of the intellectual productions themselves. If organic memory chips or living organisms get integrated into circuitry, can we simply read the logical and conceptual levels of a piece without attention to this physical fact? Of course not. But Kirschenbaum's point — that the reading of computational media as *immaterial* has been largely the result of a lack of engagement with the actual workings of its operations — is now made, and serves as a reference within the discourse of digital media.

10 My only quibble with this has nothing to do with the author or his arguments, but with the state of the field of digital productions. Paying close attention to the incunabular work of Michael Joyce is all very well from a historical perspective. Likewise the close reading of the primitive, almost pre-historical *Mystery House* and the elaboration of fan frenzy in hacker communities in the *Agrippa* tale are justified by the novelty of these curiosities. But do any of these works have literary qualities that merit our critical engagement? If these weren't digital texts would we read them as literature? For all my respect for these folks, I doubt it. Have any works appeared in digital media whose interest goes beyond novelty value? Not yet. A similar problem exists in the field of artists' books, where production values tend to interfere with literary ones because of the energy required to actually make the things. Paradoxically, the generative tension between transparency and resistance to media that form the right conditions for a higher level of aesthetic production may arise only when the geek-culture necessity for technical engagement disappears. Then these peculiar code products will appear as what they are, early and self-conscious works whose reflection on production is part of their textual condition. In that regard they served their author admirably, and he them, but for the future close readings will require richer texts or we will be trapped in a cycle where only the techne and not the poetics express our imagination in the aesthetic realm of digital artifacts.