How We Think: Digital Media and Contemporary Technogenesis
by N. Katherine Hayles (review)

Jenell Johnson

Book Reviews

N. Katherine Hayles, *How We Think: Digital Media and Contemporary Technogenesis.* Chicago: University of Chicago Press, 2012, 296 pp. $80.00 cloth, $25.00 paper.

Like most academics, I have watched the growth of the digital humanities in the last decade with interest. However, instead of venturing out into the unfamiliar terrain of codes and databases, I have remained content to shelter with my print-based kin. While foregrounding my position as a digital outsider might seem strange to begin a review of N. Katherine Hayles's *How We Think*, it makes sense when one understands that one of the book's many achievements is to persuade print-based scholars like me to start paying closer attention to the digital humanities. Avoiding the hyperventilating panic and breathless paeans that tend to accompany discourses of the digital, *How We Think* offers scholars and teachers a clear-eyed view of the landscape quickly unfolding before us. It is at once an account of the theoretical and technical development of the digital humanities, an argument for its symbiotic relationship to traditional, print-based scholarship, and a demonstration of how its analytical affordances can help us to think differently about texts, as well as the scholars who seek to interpret them. Led by the title, I first entered the book expecting to find a sustained commentary on the relationship between our technics and our—that is to say, *human*—cognition, but exited convinced that the titular "we" really means "humanities scholars." Hayles opens the book with a call for a field of comparative media studies, which would "provide a rubric within which the interests of print-based and digital humanities scholars can come together to explore synergies between print and digital media" (p. 6). Positioned at the beginning rather than the end, Hayles's proposal presents the book as an illustration of what research in that field might look like and, even more importantly, what implications it would have for the humanities in general.

How We Think is divided into three sections prefaced by three interludes, which provide the text with a nice conceptual cohesion. The first section maps the field of the digital humanities in its present state with commentary on contemporary digital culture and media, and includes a chapter with interviews with some of the leading scholars and a tour of the places in which they work. For those familiar with Hayles's previous work, this move toward ethnography is unexpected, but it is a wise move, considering the chapter's necessary work to define the field and the cultural moment in which it is developing. For this reason, this section is an essential read not only for those invested in the digital humanities, but also for those invested in disciplinary gate-keeping. To wit: these chapters should be required reading for anyone sitting on a tenure and promotion committee who remains skeptical about the scholarly merits of computational techniques in the humanities.

How We Think is anchored by the concept of *technogenesis*, the idea that humans and technics have coevolved. Philosophers and anthropologists have long considered tool use as a definitional capacity that makes humans *who* we are; yet, tool use also has the power to make us *what* we are. The idea that our technics might have physical effects has generated concern to the point of panic, most vocally by critics like Nicholas Carr and Mark Bauerlein, who have argued that digital media are making us dumber at the individual, social, and cultural levels. While Hayles does not deny that our use of digital technology is changing the way that we think (and the way we read—the subject of chapter 3), she challenges the claim that the physical, cognitive, social, and educational changes occasioned by contemporary technogenesis are necessarily for the worse. But neither are these changes necessarily for the better. Like evolution, technogenesis "is not about progress" and "offers no guarantees that the dynamic transformations taking place between humans and technics are moving in a positive direction" (p. 81). Likewise, the reading styles associated with different technical mediations—the close reading cherished by traditional print scholars, the hyper-reading typical of screen-reading, and the machine reading generated by algorithms—are not to be vaunted or vilified; each has "distinctive advantages and limitations," Hayles argues (most pointedly to teachers of literature), "but can be made to interact synergistically with one another" (p. 74).

In sections 2 and 3, which are devoted to temporality and spatiality, respectively, Hayles demonstrates what research in comparative media studies looks like, offering the rich analysis that readers of her previous work have come to expect. In chapter 4, she advances the claim that technical objects are not static entities, but "temporary coalescences in fields of conflicting and cooperating forces" (p. 86). To explore this idea, the reader is treated to a close reading of Steve Tomasula's multimodal masterpiece *TOC: A New Media Novel* (2009). Hayles introduces the analysis by exploring the theory of extended cognition, building on the work of Andy Clark. Unlike other models of cognition that place human cognition at the center, the extended model "tends to place the emphasis on the cognitive system as a whole and its enrollment of human cognition as a part of it" (p. 93). As a result, human agency is decentralized and distributed and becomes but one "player among many 'influential forces' that form flexible, self-organizing systems of which it is a part" (p. 94), an approach exemplified by *TOC*. This blend of bodies and technics dovetails well with chapter 5, a vivid portrait of nineteenth-century telegraph codebooks and their entanglement with human bodies, information, economic pressures, and cultural affect. In this chapter, Hayles shows that while the intermingling of bodies and information characteristic of contemporary technogenesis may be contemporary, it is not new.

The final section tackles the relationship between narrative and database, beginning with a theoretical exploration of the differences between the two, which are likened to different species. Hayles argues that the common assumption that narrative and database are "natural enemies" is fundamentally mistaken, explaining how these two cultural forms are instead "natural symbionts" (p. 176), spiraling back to the book's synergistic focus. To illustrate this idea, chapters 7 and 8 wrap up the book with two more chapter-length analyses (Steven Hall's *The Raw Shark Texts* [2007] and Mark Danielewski's *Only Revolutions* [2007]), which use the texts to ruminate further on the relationship between database and narrative, temporality and spatiality, human and machine.

The symbiosis that Hayles claims of narrative and database might be extended to the relationship between print and digital approaches to the humanities more generally. While interested in synergy and transdisciplinarity, comparative media studies is not envisioned as a pan-humanist mush in which the different approaches blend

together. Hayles urges scholars not to lose their unique perspectives on the world, nor to give up the perspectives our respective media provide us. In a particularly beautiful moment at the close of chapter 7, she exhorts us not to mourn the passing of the age of print. In its wake, she writes, books and other written documents have been "relieved of the burden of being the default medium of communication." Now free of this responsibility, they "can kick up their heels and rejoice in what they, and they alone among the panoply of contemporary media, do uniquely well: tell stories in which writing is not just the medium of communication but the material basis for a future in which humans, as ancient as their biology and as contemporary as their technology, can find a home" (p. 219). Ultimately, *How We Think* pushes humanists of all stripes to appreciate the epistemological homes we have made and the critical comforts they afford us, but most importantly, it also invites us to co-create a common space in which the future of the humanities resides.

Jenell Johnson
University of Wisconsin–Madison

Alan Sondheim, *Writing Under: Selections from the Internet Text*. Morgantown: West Virginia University Press, 2012, 216 pp. $19.99 paper.

There has been no shortage of theorists discussing the nature of electronic text,[1] yet as relatively traditional academic arguments, their work has not approximated the actual feel of digital, networked writing. While they have discussed the mutability and changing nature of writing on the web, they do so through particularly traditionally organized texts and print books. These theorists also focus on the nature of the finished products of digital texts, without much attention to the digital nature of the composition process, and the tools through which these texts are composed. Paul Prior and Julie Hengst note this absence in new media scholarship, stating that most of the theories of multimodal composition, like those mentioned above, result from the study of multimodal artifacts, not the writing processes used to create them.[2]

Alan Sondheim's *Writing Under: Selections from the Internet Text*, while still published in a traditional print format, better approximates these theories of the nature of digital writing and text in its exploration of both the process and the products of digital composing. Sondheim's born-digital "Internet Text," began in 1994, is a sprawling collection of short writings, poems, and theory produced for and presented online. The Internet Text is Sondheim's real work, containing hundreds of discrete selections written in plain text and presented online, unchanged from the format he used before the web. As Sandy Baldwin describes in the foreword to Sondheim's text, the Internet Text is comprised of work written for a networked, digital medium, but it functions as a *synecdoche*, a section of and representative of the internet as a whole (p. 9). *Writing Under* poses a question central to new media scholarship: How might we attempt to represent the internet in its entirety? The book represents a selection of writings from the Internet Text, compiled and arranged by the author. While framed

1. See, for example, Jay David Bolter, *Writing Space: Computers, Hypertext, and the Remediation of Print,* 2nd ed. (New York: Routledge, 2001); and Lev Manovich, *The Language of New Media* (Cambridge, MA: MIT Press, 2002).

2. Paul Prior and Julie Hengst, "Introduction: Exploring Semiotic Remediation," in *Exploring Semiotic Remediation as Discourse Practice,* ed. Paul Prior and Julie Hengst (New York: Palgrave Macmillan, 2010), pp. 1–23.