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Rhetorics and Technologies

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Among Texts

Johndan Johnson-Eilola

This will to truth, like the other systems of exclusion, relies on institutional support: it is both reinforced and accompanied by whole strata of practices such as pedagogy—naturally—the book-system, publishing, libraries such as the learned societies in the past, and laboratories today. But it is probably even more profoundly accompanied by the manner in which knowledge is employed in a society, the way in which it is exploited, divided and, in some ways, attributed. (Foucault 219)

Ambient informatics is a state in which information is freely available at the point in space and time someone requires it, generally to support a specific decision. Maybe it's easiest to describe it as the information detached from the Web's creaky armature of pages, sites, feeds, and browsers, and set free instead in the wider world to be accessed how and where you want it. (Greenfield 24–25)

Contrary to a deeply rooted belief, the book is not an image of the world. It forms a rhizome with the world, there is an aparallel evolution of the book and the world; the book assures the deterritorialization of the world, but the world effects a reterritorialization of the book, which in turn deterritorializes itself in the world (if it is capable, if it can). (Deleuze and Guattari 11)

This essay examines *reading texts* in the postmodern sense that any object, collection of objects, or contexts can be “read” by tracing and retracing the slipping, contradictory network of connections, disconnections, presences, absences, and assemblages that occupy problematic spaces (both conceptually and physically)

at the margins (transgressive like a pun) of what it means to write and read texts, within texts, and among texts.

This tangled space has many ways into it; one is shown in figure 2.1.

If postmodernism assumes that any object can be treated as pages of a book, Geoffery Rockwell's image inverts that question: "What if we treat pages as matter?" Rockwell's images (fig. 2.1 is part of a series)—grainy, monochromatic, and simultaneously kinetic and ponderous—show books variously cut apart, drilled, sanded, and otherwise mutilated. These are not the ways most of us are comfortable using books. Books are things to be consulted for their wisdom. The cultural history of books weaves strands of literal religious reverence and scholarship, beginning with monastic scholarship, accelerating with the Gutenberg Bible, and continuing into the construction of libraries as contemplative spaces (fig. 2.2).

But if the library at the Strahov Monastery (Morroia) suggests the still-current image of books as religious, contemplative, quiet objects—the image *works* for contemporary users because it plays on still-functional forces that construct all libraries as religious spaces—other emerging cultural forces push against that particular articulation.

Although the history of books may have been partially structured as an appreciation of sacred objects, that history also includes other social and technical forces: book as functional object, book as conversation, book as commodity, book as distribution of knowledge. These shifts may seem to us very recent, but the seeds of these shifts have been present for quite some time—arguably for the whole history of books. The meaning of texts has long been contentious—not merely the literal meaning of books as objects, but the social meaning of literacy itself. The social upheaval enabled by the mass production of the Christian Bible, one of the most discussed examples in our culture, involved (among many other things) seismic shifts in what it meant to be a scholar. Access to sacred texts afforded access to thinking with sacred texts: no longer simply told what rare texts meant by religious authorities, the growing literate population could now examine texts in detail and arrive, potentially, at conclusions that contradicted the official positions of churches.

Although my thumbnail sketch of the cultural and technological history of religious thought is almost laughable in its broad strokes and omissions, I think these rough outlines are enough to help us understand how we have come to our somewhat contradictory impulses in how we understand and use texts of nearly any type: simultaneously revered and used, worshiped and put to work.

Agostino Ramelli's "book-wheel" (fig. 2.3) was sketched by an Italian engineer who worked for King Henry III (Goodall). One source gave this amusing description of the device: "This is a beautiful and ingenious machine, very useful and convenient for anyone who takes pleasure in study, especially those who are indisposed by gout. For with this machine a man can see and turn through a



Fig. 2.1 Image from “Text in a Machine” series. Photograph courtesy of Geoffrey Rockwell



Fig. 2.2 Strahav Monastery library. Courtesy of Creative Commons Attribution 2.0 Generic (Morroia)

large number of books without moving from one spot. Moreover, it has another fine convenience in that it occupies very little space in the place where it is set, as anyone of intelligence can clearly see from the drawing” (qtd. in Basbanes 291).

The book-wheel, opposed to the cathedral library, highlights the ways scholars have long struggled to force books to move in more fluid ways in support

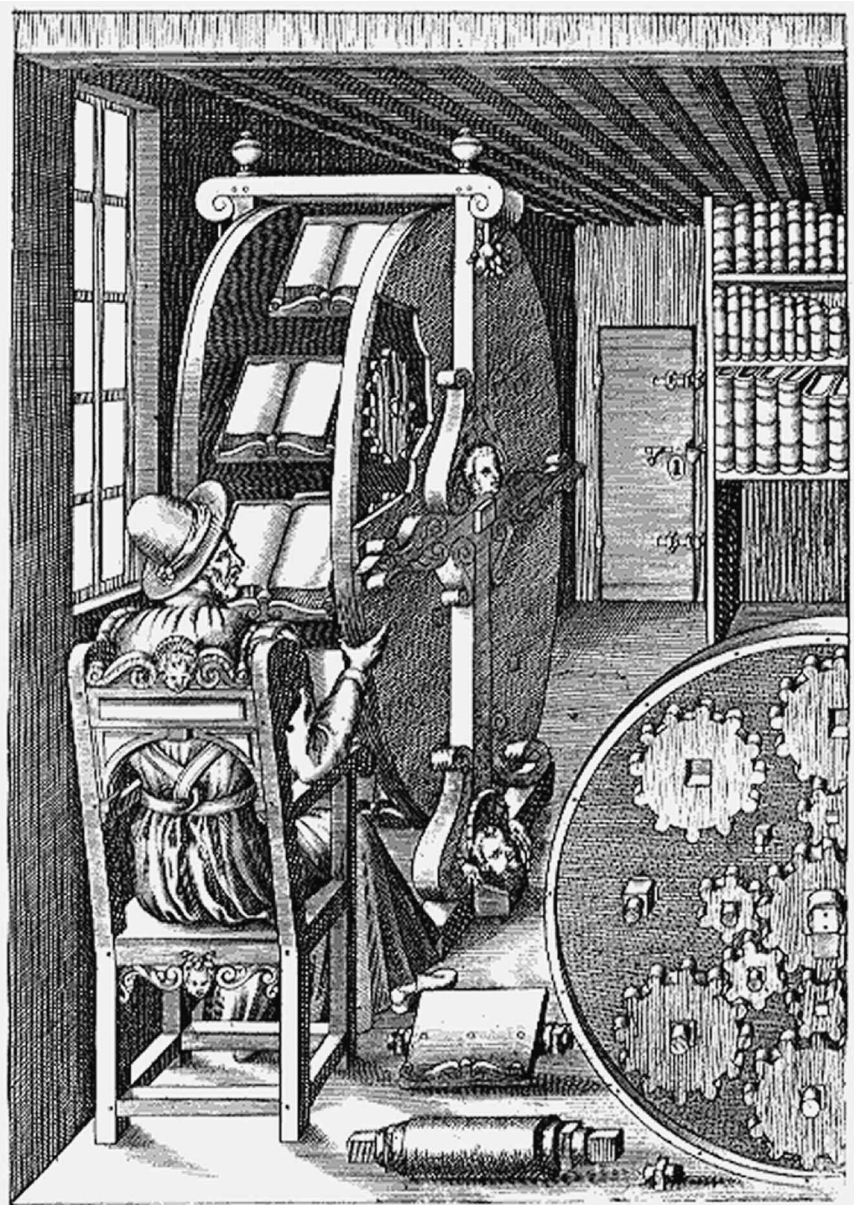


Fig. 2.3 Ramelli's book-wheel

of intellectual work. Books are wondrous things, but ultimately they do not do what we want them to do.

Texts, Work, and Agency

The book-wheel reminds us that we have long felt a contradictory need to not simply *appreciate* texts but also put them to work: becoming literate is a complicated, often contentious activity. The terrain has obviously shifted in the last several decades, with examinations of dramatic and mundane changes in what it means to be literate in an extensively mediated, networked culture.

These examinations suggest how complicated our relationships to texts have become recently, but I would like to push this question slightly further into the technical sphere to ask, What happens when our texts become *actively* social? It is one thing to read a multimedia, networked text with leaky boundaries; it is another to read a text that itself has intentions and agency that do not so much leak as roll like a river and babble like a brook. I am not suggesting that writers and readers have no agency, but only saying that the whole issue gains an extra level of intractable complexity when texts themselves are not merely *out there*, as objects, but also in motion, gathering other texts around them, responding to their environments in ways both simple and complex, making connections that their authors or readers are participants in, rather than simple agents of—intertextuality with teeth.

We can be forgiven for not having adjusted or even remarked much on the idea of texts as agents. The signs we thought would mark this event are based on other, flashier technologies: the panoptic, sterile eye of HAL in *2001: A Space Odyssey*, animated buckets and brooms in *The Sorcerer's Apprentice*, the golem. What these agents all share is the spark of language in one form or another: Dr. Chandra programming HAL, Mickey's bumbling the recitation of spells from the sorcerer's book, Rabbi Löw inscribing the word of God on a tablet and placing it under the golem's tongue: "And the Lord God formed man of the dust of the ground, and breathed into his nostrils the breath of life; and man became a living soul" (Gen. 2.7, King James [Authorized] Version).

If texts have power, we are often reminded that texts can also have too much power: autonomous texts slip human control and eventually turn on their masters. We are already partway there: databases, computer forms, video games, and many other things we regard provisionally as texts have already begun to gain agency. Such semiautonomous texts are still relatively isolated and only slightly active: they respond to our touch, they provide spaces where we talk to one another (and to the texts), they record some small portion of our actions. But what will it mean when these texts become more aware of their surroundings, of the other texts that they bump up against?

Here I take a substantial detour into a sketchy history of one class of manufactured objects, documented by writers such as Bruce Sterling ("Dumbing Down";

Shaping Things) and Adam Greenfield (*Everyware*). This history focuses on the textual nature of objects, particularly certain increases in agency as some mass-produced objects become more aware of and active within their surroundings.

A Brief History of Spimes: Artifact, Product, Gizmo, Spime

To map better the trajectory and shape of the changing nature of texts, I draw heavily on Bruce Sterling's account of the rise of one type of communicative object, the "spime." Spimes are simply objects that are aware of their own contexts and communicate about those contexts, usually using relatively cheap, wireless, networked sensors.

Sterling's examples include a spimelike tennis shoe that theoretically could track simple activities like a user's gait, impact patterns, wear patterns, and other activities over time. The spime-enabled shoe could then, using cheap wireless chips, transmit information about itself to networked computers, mapping gathered data over time against variables such as improvements or declines in ability, changes in terrain or exercise regimen, health, and other factors. Additionally a spime-enabled shoe could communicate information that allows manufacturers to gather usage data that could assist in redesigning shoes, suggesting to users specific changes in exercise patterns, and so on.

This example is intentionally mundane but also very powerful: tracking small changes among a large number of variables can be extremely helpful in assessing and improving performance. The key to spimes is exactly their applicability in mundane situations: spimes are both very cheap (on the order of a few dollars or even far less) and very small (at the sub-millimeter level). Because they generally communicate wirelessly, using very low (or no) built-in power, they can be inserted into an enormous range of objects, even subdermally into adventurous users to allow them to unlock their car and apartment doors with a wave of their microchip-enhanced hands (Graafstra).

The cultural history of technology is rife with examples of seemingly minor objects inserted into existing objects and situations in transformative ways: the transition from manuscript to print (and the corresponding increase, through economies of scale, in print literacy), the invention of the transistor, the spread of accurate clocks, the rapid adoption of HTML and HTTP protocols (which many experts discounted as clumsy, limited versions of already existing network communication protocols). Transformative technologies, of course, can transform situations or cultures through massive, highly visible methods or small, under-the-radar ways and, in some cases, methods both large and small, slow and fast. Skyscrapers and mass transit both have origins in much more mundane activities (building small dwellings; herding cattle) that, over time, led to much larger infrastructural developments. Spimes, at this point, are still at the thin and dispersed edge of infrastructural change and therefore work (socially

and technically) when they are inserted into already existing technologies and patterns of use.

Sterling's brief but sweeping history of spimes illustrates how spimes can act on existing technologies by accelerating tendencies built into various objects over long periods of time. Spimes offer possibilities because they redirect already existing tendential forces. In recounting his history, I view Sterling's account (which offers an enormous range of technologies, including the tennis shoe described earlier as well as wine bottles, shampoo containers, and more) through the lens of the development of texts as technologies, beginning with the manuscript and moving forward through networked texts.¹ Table 1 provides a quick summary of key points.

Text as Artifact

Texts were initially handmade objects: markings on cave walls, clay counters, and illustrated manuscripts (fig. 2.4). They were made individually, often laboriously, and used in the same way: carefully, slowly, and for very specialized situations.

At this stage, texts have very isolated (although still possibly very important) uses in specific situations. Using an artifactual text is a relatively special event. Texts do not communicate with each other except by human intervention (an aspect that will continue through many stages of the evolution of texts): a person reads one text and in some cases copies some portion of it into another text. In the case of duplicating manuscripts, scribes copy the full manuscript and attempt, with various degrees of success, to avoid introducing errors or other unintentional changes to the original. In one way of thinking, every artifactual text is an isolated, original, static object. Using artifactual texts—literacy—represents a profound shift in work flow and thought process, both individually and socially. Compared to later textual technologies (products, gizmos, spimes),



Fig. 2.4 Text as artifact: petroglyphs in Chilas, Pakistan. Courtesy of Creative Commons Attribution 2.0 Generic (Morroia)

Table 1

Four of Sterling's Technology Types

| <i>Stage</i> | <i>General Characteristics</i> | <i>Examples</i> | <i>In Text Format</i> |
|--------------|--|---|--|
| Artifact | Hand produced, used by hand using rules of thumb or local conventions/crafts. Very static, one-to-one usage. | Cave drawings, hand-milled screws, other crafted objects. | Illuminated manuscripts, handwritten letters. |
| Product | Mass-produced, widely distributed. Very static, one-to-one usage, but habits of use are systematized (in informal or formal education). | Automobiles, shoes, television sets, point-and-shoot cameras. | Trade market books, textbooks, logos on clothing. |
| Gizmo | Mass-produced but to niche markets. Complex workings. Users rely on both formal documentation and experimentation (extensive and ongoing: the bleeding edge). | Linux-enabled smartphones, Tenori-on musical instruments, Linux computers. (Actual examples change over time as more people adopt a technology and the "edges" are worn off through refinement and training.) | Tinderbox, Web pages (to some extent), Delicious Library book-tracking system, Google Analytics. |
| Spime | Mass-produced and widely distributed. Often operate automatically with occasional intervention/reference by manufacturer and user. Also allow gizmo-like experimentation and change. | Nike shoes with embedded sensors, RFID-enabled badges. (Not currently a very well-developed stage.) | Texts tracking their own readings, citations, quotations; texts gathering emerging new texts on related topics; texts noticing how they are used in relation to other texts (virtual or physical). |



Fig. 2.5 Masses of mass-produced books

however, artifactual texts seem very clumsy. Everything is relative, though, and artifactual texts still retain value, even as later types are adopted: most knowledge workers still keep handwritten notes and journals and make marginal notes (modern palimpsests) on later types of texts.

Text as Product (Rise of Mass Production)

As texts began to be used more widely, the economies of scale and time supported by institutions such as monasteries brought about situations in which coordinated, repeatable communication was necessary: the hierarchal organization of religious institutions, with outposts scattered in increasingly wide ranges, created a need for mass duplication of texts. (Talking about agency in a one-way fashion in technology development presents serious problems: it is a moot point whether the spread of religious institutions *created* a need for mass-produced texts or whether the tentative adoption of mass-produced texts *created* the possibility of wider-spreading religious institutions.)

The point here is that transformative technologies can emerge relatively slowly by their gradual adoption and their integration into existing patterns of work and communication. At this stage, texts are still slightly awkward objects in terms of work flow: less difficult for knowledge workers to use than artifactual texts but of limited help in tracking, organizing, sorting, and storing product texts (fig. 2.5). Much of the work life of a knowledge worker involves the administrative-clerical work of simply moving things around. There is some inherent value, undoubtedly, to the physical and spatial movement of texts:



Fig. 2.6 Workspaces: (left to right) Johndan Johnson-Eilola, Dennis Jerz, Charlie Lowe. Photographs courtesy of Dennis Jerz and Charlie Lowe

juxtaposition, chance, memory, and creativity often emerge in the midst of this seemingly mundane work. But we might question whether or not we could do less of it, or make it easier to do, in order to focus on other things. I am not sure how much of my own appreciation of printed books is simply nostalgia—certainly not all of it, but just as certainly *some* of it.

Due to the benefits of widespread literacy education for many, the immediate use of books is relatively straightforward: one sits and reads.² But for symbolic-analytic workers who work with texts, the activity of *using* a book involves not simply reading but also collecting, arranging, synthesizing, and filtering all of the texts one reads. And as anyone who works with texts for a living knows, the full effort of actually *using* a text in a productive way frequently takes place in immensely complex and inefficient (if much-cherished) environments, such as the ones shown in figure 2.6.

For many who work with texts, isolated and physical texts are still one of our primary environments. This is true even for many people who spend much of their productive time online, given (a) the sheer amount of important information that is still primarily available in print, and (b) the relatively slow pace of change in academia, which still values isolated printed texts.

Text as Gizmo (Power Users, Tinkering)

Sterling's gizmo category includes, as the name suggests, objects that are remarkable for their cunning and complex nature. Operating them usually requires some effort and learning, and not a little experimentation, on the part of users. Gizmos malfunction and they break down. They are powerful and fun, but also frustrating. They are often thought of as "cutting edge"; they are "sharp" both in the sense of being stylish and of being somewhat dangerous. As the sharp edges are worn away (both through technological refinements and through broader, easier cultural adaptations), they tend to become products but may also become spimes. So a gizmo is, culturally speaking, an object that tells its own story about its potential future: hiding its flaws, flaunting its power, hoping for continued technological development that will allow it to achieve the fiction that it is trying to tell.

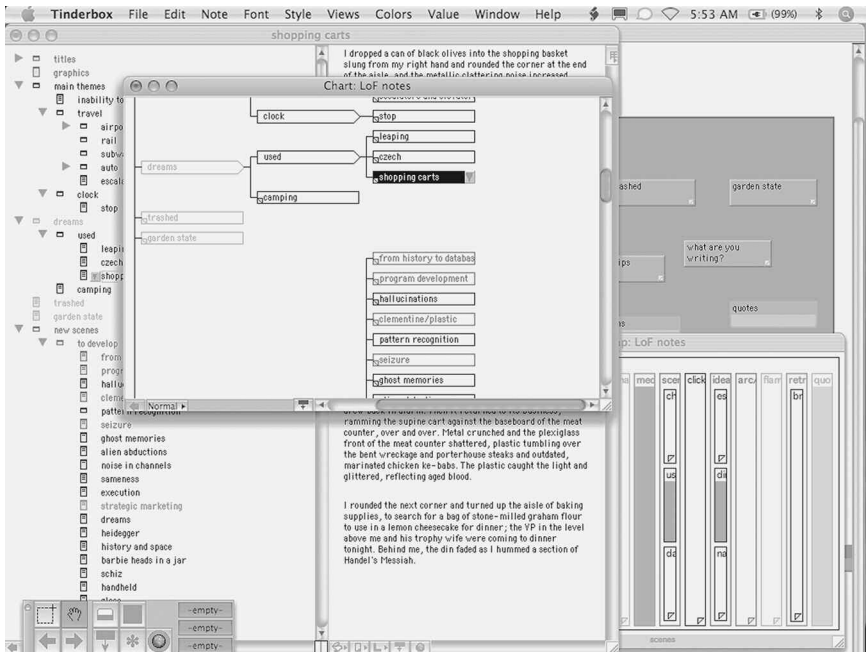


Fig. 2.7 Text as gizmo: Multiple views of one text in Tinderbox

Paradoxically, gizmos are both highly visible and commented upon but relatively rare compared to products or artifacts. Media tend to fixate on them because they are noteworthy and promise much power; their failures are not often publicly discussed, at least initially (the degree to which the failures do become public corresponds to the likelihood that the gizmo will disappear: a terminating branch in development).

Text in the gizmo format represents a dramatic departure from text as product, although we are still—after decades—coming to grips with that transition. (The pace of this shift, however, is much faster than the previous transition from artifact to product.) As gizmos, texts are highly unstable and user-alterable in ways that printed texts are not: They can be moved around, recombined, and transformed in useful and sometimes surprising ways.

But as with other types of gizmos, these texts are often awkward and difficult to use: Users are on the bleeding edge of technology, where things break down frequently and sometimes abruptly. Programs running such texts crash or perform in ways we had not anticipated. Files are overwritten, data lost, information mangled beyond recognition. But when they work—extremely cool.

Not surprisingly, users of gizmos tend to be relatively rare, given the amount of effort (and risk) entailed. Learning how to use a gizmo such as a Tinderbox text (fig. 2.7), for instance, involves a steep learning curve, with frequent reference to

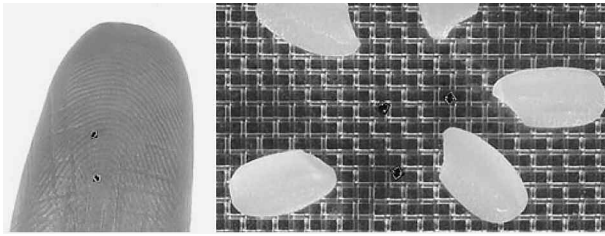


Fig. 2.8 Two views of Hitachi's μ -Chip (0.4mm x 0.4mm)

manuals and online resources (including discussion lists and wikis, themselves textual gizmos).

Summarizing Tinderbox succinctly is nearly impossible. Eastgate Systems, the developer of Tinderbox, describes the program as “a personal content assistant that helps you visualize, analyze, and share your notes.” The program possesses characteristics of database, text processor, information visualization program, and brainstorming tool, among other things. Highly programmable, Tinderbox provides a free-form database for storing, arranging, and filtering chunks of media (words and images). In the hands of experienced users, Tinderbox documents can gather and rearrange information according to rules written by users. In the hands of novices, Tinderbox can be a little baffling. Tinderbox, then, is a gizmo for people who work with texts. At the same time, Tinderbox can also be an environment for developing spimes.

Text as Spime (Semiautonomous, Networked)

The transition to spimes involves a shift toward semiautonomy. Spimes communicate about themselves, gathering data about use and then sending and receiving data from a larger network. We might classify current technologies such as cell phones and computers as near spimes, because in some cases they are able to gather data about their surroundings (GPS location, motion, visuals, and so on) and then communicate that data automatically to other locations while downloading new information at the same time.


Such uses seem relatively routine at times, but the dramatic miniaturization of computer chips and network technologies now allows spime capabilities to be embedded in objects very different from what we are used to. Chips and antennae, such as Hitachi's μ -chip (fig. 2.8), which measures 0.4 millimeter across (including an embedded wireless antenna), allow the use of radio frequency identification tags (RFIDs) in a much broader range of objects. The parallel reduction of cost—simple RFIDs are already available for ten cents or less—means that everyday objects, including disposable items, are beginning to enter the spime realm.

Much of the public discussion about the development of spimes has focused on use of the technology in these ubiquitous consumer and household products.

Sterling's examples include the tennis shoe discussed earlier and bottles of wine. Such developments may have a large impact on our daily lives via small but transformative uses. But for academics and others who work in symbolic information, spimes may dramatically increase the flow of metainformation across physical and virtual realms in ways that disrupt our current work patterns. As with many technical developments (particularly in media), spimes remediate their technical ancestors: When we look at our old-fashioned print books and journals, we sometimes lament their static, immobile, dead nature. In other spheres, parallel developments have addressed the gaps between physical products and networked texts in ways that bridge each: Is it difficult to physically, manually count boxes of lightbulbs to enter them into the online product inventory database? Fine, we will add a wireless chip to each box so that it can shout out its name to the database when it enters or leaves the warehouse or the store. Product becomes partially virtual; information becomes partially physical. For texts, scanning a barcode or typing a title into the search field of Amazon or Google functions as a precursor to spimes: the object-as-information becomes both physical and virtual.


In fact, books are already well on their way to becoming spimes, thanks mostly to Amazon.com. A book listed on that site is much more than the words between its covers. It looks, feels, and behaves like an ordinary book, yet in short order, you can find out its cost, publisher, and printer; whether other editions have been published and what they look like; what other books the author has written; what readers think of the book and what other books those readers have bought; what other publications quote the book; and so on. And, beyond Amazon.com, you can learn about the composition of the paper, how long it will last before yellowing, and what kinds of products it can become when the book is recycled. Some of this information might be contained in the pages, and some might be conjured on the Web via, say, an RFID tag—but in practice, it won't make much difference. The upshot is that the object's nature is transparent: an open book. (Sterling, "Dumbing Down")

Apart from this tenuous but still productive connection between physical object and information object, we have already started to work with self-aware, completely networked, and virtual objects in areas such as Weblog TrackBack, 'bots, and server log tracking. In a post at the Weblog run by Seth Godin (fig. 2.9), for example, readers see not only comments by other readers, but an extensive amount of information about what readers have done with Godin's post: the number of times it has been posted to Digg (a social ranking system that gathers links to interesting articles), saved to Delicious.com (a site for saving and sharing bookmarks to Web sites), reviewed at StumbleUpon (a site for sharing




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SETH GODIN

The New York Times Best Seller. Make your Business remarkable.



The Big Red Fez: How To Make Any Web Site Better
SETH GODIN

What's wrong with your site (and how to fix it.)

and it offers more than just a linear reading experience. When that happens, though, when thousands of writers start using this portal to reach millions of readers, it becomes a killer app. Not until then, though.

A lot has been written about how cool the screen is. It is cool. A lot has been written about the offbeat interface (not so good) and the seamless downloading (a wonder.) This is all irrelevant to me. What's worth commenting on is how close the Kindle comes to revolutionizing the way ideas are sold and spread, and how short it comes out in the end (for now.) My bet is that this is just round one. Round five could be/should be powerful indeed.

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Fig. 2.9 Partial listing of reader activity on a Weblog post by Seth Godin

brief reviews of Web content), and linked to other Weblogs via the TrackBack system. Notably such information is automatically gathered and updated by many current Weblog publishing systems, making the act of tracking conversations *about* a specific text a relatively automatic process. These activities suggest some of the possibilities of making physical texts more spimelike.

Despite the rapid growth of Weblogs over the last decade, the genre still covers only a tiny sliver of important (and mundane) information being produced. In addition to the invisibility of a wide range of Web-based information, tracking search engines such as Technorati cannot possibly track the massive amount of information still being published in print (let alone the immense existing print archive) or information published in unindexed databases or behind pay firewalls. Many savvy scholars have hacked together methods for filling in a few of the gaps—RSS (Really Simple Syndication) Web feeds of Google searches to follow new items added in other areas of the Web, manual searches of proprietary citation databases, occasional Amazon searches for new citations, and so on.

But as Bruce Sterling points out (“Dumbing Down”), hacking things together is a gizmo activity; spimes are what we get after the kinks are worked out and the information gathering and sharing are routine, widely used, easy, and at least semiautomatic.

Implications of Texts as Spimes

To understand what text spimes might afford us, we need to step back and consider a couple of the key ways that academics in rhetoric and composition currently use text. The following abbreviated list suggests a few of the key areas. We take in a wide range of textual sources:

- print books and journal articles
- online journal articles and (increasingly) books
- calls for papers, submission guidelines, and so on
- database search engine query results (both public, such as Google, and private, such as those accessed via libraries)
- PowerPoint, Keynote, and other presentation formats from conferences (either ones we attend or those we scavenge from other sources)
- video and audio feeds and clips (conference podcasts, archival footage, automated search query updates)
- RSS feeds or other automated notifications

Those working in more deeply online areas can likely extend the list substantially in that realm, and those working in more traditional archival areas might include a much larger number of print resources as well as emerging online archival tools.

Along with this list, our workflow and work environment will likely also include the need to work with (by referring to, creating, and manipulating) additional textual information:

- notes about work being planned in computer files, paper notebooks, scraps of paper, whiteboards
- annotations written in printed texts (books, journals)

- clippings and photocopies
- digital photographs and video of primary research
- working drafts of articles, chapters, presentations, in print or online
- annotations written on physical drafts and in online documents

Again, this list is very sketchy. Note that to this point the lists have only touched on communications that are relatively less immediate. A similarly long and yet still incomplete list of texts emerges when we begin to consider communications that involve relatively direct collaboration:

- email messages
- instant messages
- phone messages
- feedback on plans, drafts, revisions
- written comments on plans, drafts, revisions
- notes about face-to-face or phone discussions in handwritten or online format
- Twitter, Facebook, other social media updates

The point of this long, still-partial list is merely to suggest that the majority of us work extensively with an enormous range of material in diverse formats and physical locations. Together these somewhat tedious lists highlight something we seldom think about: Maybe we could make some aspects of this work a little easier and more efficient. We could determine which aspects of our practices we might want to change in light of these technologies and which we want to keep.

In implementing this effort, consider that merely collecting the sources listed is itself a monumental task (even if we rarely notice it, we devote a great deal of effort to it). But the actual *work* with this information involves symbolic-analytic work of a second order. This last, short list is the important one:

- filtering
- sorting
- connecting
- synthesizing
- sharing

In other words, an extremely important part of our work involves making these disparate pieces of data aware of one another.

What spine texts might offer to this work environment and work flow is at once very simple and very powerful: an informational bridge across the spaces separating these disparate bits of information. Given the relatively low cost of spine technologies, it is well within the realm of possibility to consider a work environment in which many if not all of these pieces of information are aware of one another and able to note when one piece of information is stored or moved (physically or virtually) within the proximity of another:

- books collected on a desk for a project could always remember that they were stored together at a certain point on a certain day when a certain topic was being researched
- a book could remember how long a reader spent on a certain page, as well as what other pages were read before and after (either in that book or in another source)
- authors could be given raw or summarized data on reading and usage patterns for their work: how long people spent using certain sections, what other texts they also referred to at about the same time, and whether or not any of those texts were used in secondary work by readers
- an article or Weblog post would know when someone else, somewhere in spinspace, read it, quoted it, or cited it (and the context in which it was read, quoted, or cited)
- an in-progress draft could gather emerging new discussions about a relevant topic posted in other spaces (books, journals, online discussion spaces, Weblogs)

On one hand, this sort of discussion seems hopelessly utopian. On the other, stranger things have happened. I am not suggesting that we abandon printed books or handwritten notes or software. I am suggesting that we think about what we are doing in light of a different, still-emerging set of possibilities in order to identify positive and negative aspects and to discuss things we might want to try out.

Simple spine technologies involving RFIDs are already emerging (often driven by large organizations such as Wal-Mart, which use them for inventory control, and airports, which use them to track luggage). Furthermore, this emerging information sphere is, in many cases, driving economies in new directions, for example, sharing data using consistent formats such as XML for easier movement of information across organizational boundaries.

Other rudimentary forms of these capabilities are emerging, albeit in fragmentary and incomplete ways. The Technorati search (fig. 2.10) is one example. This view of the Technorati search is one I rarely see, because I have configured my account on the service to allow me to automatically gather new entries as they appear and display them in NetNewsWire, my RSS feed client, along with feeds from several hundred other Weblogs and Web sites. One part of this RSS feed includes saved Google queries on key topics I am researching so that as new Web sources emerge, I am notified of them in a single window on my screen. Similar spimelike capabilities are available in a wide range of sources—discussion boards routinely offer automated notification systems to alert users to responses to specific threads; and news sites such as Google News allow users to save keyword searches and be notified when news items are posted that include those keywords.³



Fig. 2.10 Ego surfing via a Technorati search

The bridge between virtual and physical spaces is also suggested by products such as Delicious Library (see fig. 2.11) that provide a rudimentary way for organizing information about physical objects in a virtual space. Delicious Library relies on the Webcam called into service as a simple, handy UPC scanner. Users hold up a book, DVD, CD, or other physical item (anything with a UPC⁴), which is then scanned and used to download a product description and a digital image of the scanned item from Amazon's database. After gathering this information, Delicious Library users maintain databases of their texts and other materials, using the database assembled by users to track physical location (home or office), borrower, or other details. Delicious Library is not, obviously, completely spimelike, because it relies on a great deal of human intervention; the objects themselves are not tagged or otherwise self-aware. Scanning the UPC is a small, witty way to bridge a gap that spimes might eventually fill.

Development of such technologies does suggest the usefulness of even more-advanced technologies. Spimes at a micro (page) level would allow me to gather rough information about time spent per page by my large (okay, small) group of users, giving feedback about what is seen as useful, important, or offensive. I already have a limited version of this available using Web server logs to track users, but activities of my own texts in the print world—in other words, what readers are doing with the print texts I have written—are comparatively invisible to me.



Fig. 2.11 Scanning physical items into Delicious Library

Text spimes could also provide us with a platform for enacting database writing. Texts become assemblages of other texts: very leaky assemblages that can be “borrowed” from various sources and recombined with other text fragments without regard for clumsy, manual citation systems. The act of reading a text then includes the ability—something the Web and hypertext promised us but never delivered—to move from quotation to source to quotation, back and forth. Theodor Nelson worked out a system for all of this in the 1960s and 1970s called Project Xanadu, which unfortunately never really made it off the ground, leaving us with a relatively limited Web space that works great due to its simplicity—but is still hampered by its old-fashioned approach to writing and reading.

Most of us do not know who reads our work, unless readers initiate a conversation and tell us something they liked or disliked about a specific passage via face-to-face discussion, email exchange, or explicit citation that we happen upon in our own reading. How can we increase the conversation? In a fully spimed, textual world, other users’ spine texts would automatically generate feedback if the users cited or referred to one’s own texts (much as a Technorati RSS feed or a Google search does, but wider).

Readers of spine texts would also be involved in a more explicit ecosystem of textuality: Reading is no longer the invisible consumption of text but a semipublic performance, a form of distributed applause or hissing, less active than actually voicing a response but still an indication of something. Reading becomes transmissive and performative rather than simply privately receptive, at a functional level. And reading itself gains new status: a social action in addition to a cognitive one. Currently my most explicit and immediate evidence of how

well my books are doing emerges in sales records, followed secondarily by crucial things like citation, quotation, and discussion. But if readers of spine texts are made more visible, they become more explicitly active and present. This does not discount the primary importance of discussion and use but provides a better bridge to those activities.

When spine functions are fully implemented, readers might be more encouraged to enter fully into conversations, writing their own texts to support their acts of reading.

An Incomplete List of Concerns

If the spine text world described here seems obviously utopian, it also brings with it a fairly strong set of dystopian concerns. For example, although many users of the Web are not aware of it, most traffic on the Web is tracked in a multitude of ways, even outside of covert government surveillance. Services such as Google Analytics provide very simple-to-implement systems for Web site authors to track (in most cases) which specific computers access a Web page, including details such as the geographic location of the accessing computer and details about the computer (operating system, display resolution, and so forth), as well as the link that a user clicked on to arrive at a specific page. In many institutional settings, computers are often assigned semistatic addresses that make connecting this data to a specific user fairly simple.

For my own Weblogs, I use eXTReME and Google Analytics to track aggregate data such as how many users have viewed certain posts. The reports generated, though, also include items such as Google and Yahoo searches that lead users to my Weblog. Anyone who has skimmed through such search logs knows that there are a lot of people out there looking for some alarmingly bizarre things. I have avoided the temptation to track down identifying information about search engine queries ending up on my site, although doing so is certainly feasible.

Not surprisingly, tracking the movements of users in online spaces for surveillance reasons is increasingly common. A 2005 survey on electronic monitoring and surveillance by the American Management Association found that 76 percent of reporting workplaces monitored which Web sites employees visited; 26 percent of reporting companies had terminated workers for inappropriate use of the Internet.⁵ And within the context of teaching, most courseware allows instructors to track such details as time spent by students looking at specific pages on the course Web site, the number of students who have accessed materials, and the length of time taken to complete some types of assignments. All of these activities may certainly have laudable pedagogical goals, but the ease with which they are adopted by many teachers suggests that not enough attention is being paid to issues of online privacy.

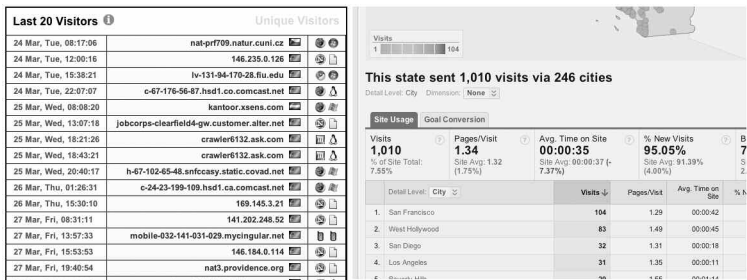


Fig. 2.12 Tracking who accesses Web sites via eXTReME (left) and Google Analytics (right)

Even more difficult are pedagogical issues that would normally encourage us to watch over our students as they work in careful and detailed ways. Consider, for example, how much more useful a portfolio would be if it allowed instructors to track a student’s research in much more detail than currently afforded by the submission of notes, outlines, and drafts for commenting—to see what texts students read online, which they bookmark and quote from, how they arrange bits of information in various windows on-screen. Do they open multiple windows in ways that allow them to scan across diverse resources? Do they work on high-level issues such as rhetorical argument and arrangement before turning to surface-level revisions? When they are gathering facts from Web sites to use in an argument, do they click the “About Us” link to see who is behind the information?

Or to spin this in a slightly different direction, if you are reading my article, do I have the right to know that you have read it? That you have passed it on to someone else with a snarky comment? That you have quoted it in a text you are writing, agreeing or disagreeing with me? What ethical obligations does a reader have to an author? To the community? As Ben Vershbow observed, we are entering an era in which “the book is reading you.”

Evaluating the ethical dimensions of contemporary technologies such as spimes, like evaluating computers or automobiles or vaccines, challenges us in productive ways. Although we long for the comfort of Google’s famous corporate guideline, “Do no evil,” the world is a complex place. Technologies are neither neutral carriers of intentions nor completely autonomous agents. Instead, technologies are articulations: ongoing, collaborative constructions being played out functionally, socially, and politically.

Are spimes good or bad? Yes. Both. Maybe neither. All of the above. Sometimes. The question is unanswerable without bracketing out so many aspects that the question itself becomes meaningless. They will be what we make of them, in particular instances and among particular sets of designers and users.

Spimes are, in addition to everything else, conceptual objects—moments of articulation that can, with some effort, help us call into question what we are doing and what we want to do.

Notes

1. I am skipping an additional stage in Sterling's history: between artifact and product Sterling positions the machine. There are important technical and social reasons for including this stage in a wider account, but for texts, "machines" are, to some extent, not developed until the gizmo stage (but see the earlier discussion of Ramelli's book-wheel).

2. Only alluded to here is the immense amount of effort put into literacy education (individually, economically, and socially), which makes even this "straightforward" activity an immense barrier, even in "developed" countries.

3. At one point, my Bluetooth-enabled cell phone changed the Instant Messenger status on my laptop to "Available" when I was within ten feet of the computer or to "Away" when I was farther away. This eventually seemed like a little too much public location awareness.

4. Unfortunately, the UPCs on wine bottles are not unique to individual categories of products in the way that they are for things like books, so Delicious Library cannot yet be used to organize wine collections—ironic given that one of Sterling's main hypothetical examples in *Shaping Things* is a spine-enabled bottle of wine.

5. Law in this area is somewhat in flux: In 2008, the U.S. Ninth Circuit Court of Appeals found in favor of employee privacy when employees use third-party text-messaging services paid for by an employer (Morphy).

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