The Circuits of Reading the Digital: Some Models

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Abstract

In theorizing the digital text, I will take a two-pronged approach, considering a) what aspects of reading cannot be accounted for by the types of digital textual analysis done so far in the digital humanities, and b) how can technology (be "used" to) account for such possibilities? To answer the second question, we need to stop seeing the computer as a "means" (i.e., we "use" a computer), and start thinking about the computer itself as a part of the literary process. This perhaps blurs the distinction between e-literature and media studies on the one hand, and digital humanities on the other; however, it presupposes that technology is not something to be feared (as "tampering" with the text), but that it is rather something intrinsic, to be conceived of in its own terms. Indeed, the computer can enhance the literary experience and highlight aspects of the text that were not noticed before, and vice versa, in a sort of feedback circuit, bringing with it hermeneutic questions that hitherto have been only indirect. What might we discover from exploring the symbiotic relationship between the text and the machine, and about the minds and bodies that encounter these? Such encounters occur not only through visualization, but through sonorization and through the body. Such hybrid encounters require a broader view of language than that provided by information theory, which has apparently dominated digital literary studies. I will use my own digital humanities project on the visualization of French poet Stéphane Mallarmé's works (http://mallarme.uvic.ca) to explore models of reading the digital.

Keywords

Digital humanities; Hypertext; Hypermedia; Reading; Mallarmé

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Human reading?

When I was a graduate student at Queen's University (Canada), I worked as a research assistant for a SSHRC-funded group called TopoSCan (2002-2006). This was an ultimately positive experience, although I would not have thought so at the time. The group was undertaking an immense project of creating a repertoire of prerevolutionary French narrative topoi – the topos being defined by our group as a recurrent narrative configuration (to be a topos, using made-up example such as "hero loses all his money," there must be at least one occurrence in three different authors or texts). The way to do this automatically was through the then newly growing corpus of electronic texts online, most of which were scattered on different sites (whereas today, there is pretty much everything on gallica.bnf.fr, Project Gutenberg and wikisource). Loaded with these texts, the group determined ways to data-mine them, based on its working definition of the topos. The best way to do this was to use a syntacticalsemantic metalanguage, as well as synonym sets, to search the texts. So, for the madeup topos phrase "hero robs magnate by gambling" (this way, the topos can be classed with other incidences of "robbery"), along with synonyms (and sometimes excluding of some categories because of proper names or place names), we used categories such as agent (e.g., knight, or proper names), action (robs, cheats, steals, etc.), patient (magnate, "fermier général," bourgeois, or proper names), and manner (gambling, ruse, etc.) or circumstance (e.g., Paris, Palais royal, Easter, etc.). From then on, in order to automatically locate similar occurrences, it was a case of letting the semantic filters do the work of searching the database, with the right paradigmatic substitutions (synonyms, quasi-synonyms, etc.). These filters were based, for instance, on the past historic versus the imperfect, since the latter is more likely to describe states instead of events. Based on a "toposcore," the computer knew what to ignore and what to focus on, and the preliminary results were very impressive.1

In the end, however, the group was divided on the results. On the one hand, the "computer people" (excuse the term) were very excited because they had taught a computer (which "only has two neurons," as one lead researcher would say) how to read. The consequences for digital literary research were great. At the very least, there was a systematic way to discover patterns in French literary history. So why were the "literary people" not so impressed? It was as if there was a huge downer, as if they were asking "so what?" Or else, deeper still, it was as if the computer might have pulled the rug from under them; or perhaps, worse still, that all that effort amounted to a nihilistic moment, a sort of Heideggerian destruction of inauthenticity, which is a confrontation with death. For me, it was a sort of jubilation. I was steeped in deconstructive theory as a grad student and was always trying to critique, from an onto-epistemological perspective, the approaches to literature that were being taken. How could they submit literature to such categorization? The humanities were not the pure sciences. In the end, the "failed success" of the project (it never went anywhere, directly anyway) was a confirmation that machines could never account for what actually happens in literature (I have since gotten wiser).

But this got me on the trail of a different line of question. What if the computer was equipped with Gérard Genette's brain? That is, what if the machine knew everything the famous narratologist knows in terms of structuralist terminology and could apply these to a work of fiction? What if the machine could systematically analyze entire sets

of literary corpora (Google Books was in the air then) better than the brightest human minds could? This thought experiment led me to the conclusion that the machine still would not understand a single thing that was going on in the texts, and that human understanding of the literary is an entirely different thing than simply identifying structures exhaustively and systematically, thereby challenging the literary institution and critical traditions. It led me to think that actually, maybe human reading was everything the machine was not (I have since gotten somewhat wiser).

What this anecdote is trying to get across is that, despite our methods and procedures, our hypotheses and proofs, there is still something fundamentally lacking in the assumption that getting to the text requires the sort of scientific rigour that we see in the pure sciences. It not only forgets what Roland Barthes called the pleasure of the text, for whom this pleasure is both textual and sexual (Barthes, 1973). In this sense, reading is eminently human, an activity that can bring about a pleasure that will suspend or upturn one's scientific, ideological, historical, cultural, and psychological foundations, one's tastes, values, and memories, and can put into a sort of crisis the relationship to language (Barthes, 1973). However, this involves a deeper element still. If we are to believe contemporary thinking on the matter, human reading will eventually resemble everything else that is human; narratives, for example, are both biologically bound and technologically bound. Our ways of reading are not only institutionally informed (which makes it the product of institutional technologies), but also biologically so, by way of memes and genes. This is what we often call the posthuman condition, which Ollivier Dyens (2008) has called the "inhuman condition." Dyens defines this condition as humanity's inability to define itself, since technological reality renders the world foreign to our common perceptions of it, and the information we obtain from the world by technological means, which includes biological information, is "at best partial and at worst a simulacrum" (translation, "l'information que nous saisissons . . . est au mieux partielle, au pire un simulacre," Dyens, 2008, p. 16). We have no idea where to start, and all our attempts at getting at the object only compound this problem.

So, if we are no longer able to determine either the nature of text or textual interaction, except perhaps through some sort of libidinal and primordially memetic process, we are at a loss as to why we are doing this sort of thing in the first place, especially in digital humanities (DH). DH are getting closer to the social sciences, in that they are mapping, charting, and calculating data for statistics in order to get a better picture of literary history (cf. Franco Moretti's ground-breaking work on this in Graphs, maps, trees, 2005). Yet, in this latter sense, why bother with the literary text, and not simply focus on all texts? Why have departments of literature, then? This resembles a sort of institutional crisis that plays out in various ways in many humanities' departments. DH are also getting closer to the pure sciences in that they require working hypotheses that need to be tested, which are changing the way scholars have to think – always a good thing - and the way they work, encouraging greater collaboration. In addition, they are taking an encyclopedic turn, which brings an exponentially more sophisticated version of the critical editions of written works and other media. The literary corpora are increasingly in need of methods to account for their vastness; yet, DH methods are also useful on the micro scale, that is, in the detailed analysis of smaller sets of texts, whether through single word searches or syntactical analysis. Moreover, there is an

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increasing tendency toward analysis of interface and visual design and the acknowledgement that these are intertwined (cf. Drucker & Nowviskie, 2004; Ruecker, Sinclair & Radzikowska, 2011; Emerson, 2012).

There is, however, a huge risk in this. Methodology is a difficult question in literary studies, since a great part of twentieth century thought and its legacy have challenged method and provided some early warning critiques. This is crucial for DH, and there is an awareness of how the digital can "tamper" with the textual experience. Jacques Derrida already warned about the implied "encyclopedic" reader in reference to Joyce's *Ulysses*, in *Ulysse gramophone* (1987). Derrida (1987) argues that we have to hear Joyce's polyglot texts, and warns of an impending, encyclopedic literary archive that will overdetermine the literary experience. J. Hillis Miller (1992), in Illustration, makes a similar warning when he discusses the then very innovative Thoreau Project. Despite the democratic potential of such a project, the database would presuppose, for example, that in order to understand Walden, we need to hear the songs and see annotated pictures of the birds that Thoreau mentions. This would depend on the critic's interpretive goals, and Miller pointed out that this project embodied "a set of assumptions about the way scholars do work and ought to work" (1992, p. 40). Similarly, Jacques Attali's (2009) "hyperlivre", Le Sens des choses, published in 2009, allows flashcodes to be scanned with a smartphone that take the reader to interactive media associated with the book.

These possibilities are truly innovative and exciting, and they are changing the way we read. They are also changing the way we think about text. We should not stop this, but we should be aware of how it is happening and the ways in which we presuppose how the reading experience is lived. For example, if it is assumed that an encyclopedic knowledge will optimize the reading of a given text, this does not take into consideration that reading without such knowledge could bring about an equally powerful and informative experience. What underlies such assumptions is that language is information rather than an experience. To understand such a difference, thinkers like Ivan Illich (1996) have looked at previous changes, such as those that preceded Gutenberg. Even with the indexing and compartmentalization of texts, the nature of the text was transformed from an experience of a labyrinth to one reducible to what Illich has called "an optically organized text for logical thinkers" (1996, p. 8). Effectively, this cartographic view of text changes the way we think about the text because, from the Middle Ages on, we have seen it as having content subdivided into chapters and indexed for reference. For medieval scholars, books were named after their incipit; you would then take the journey into it, and this journey was tied to memory. It was important for these scholars to have great memories, whereas we can simply look up information in the index, and now through word searches on the computer.

Though DH are not any more overdeterministic than other disciplines and previous approaches, we tend to forget that computers are oriented toward text as information to such a greater degree that we lose sight of the experience of language. As we have seen with the TopoScan anecdote, approaches to the electronic text assume that the text is "information," and so apply linguistic computing models to it, whilst failing to adequately distinguish between data and information (cf. Whitelaw, 2008). The information theory model of language and communication (see MacKay,

1969; Shannon & Weaver, 1949) is inadequate, however, when it comes to a fuller understanding of language. It is well known that poetry cannot be translated because there is much more to a poem than the simple communication of ideas. If the Enlightenment saw nothing but danger, because of poetry's rhetorical nature (e.g., de la Motte, Fontenelle) or because of futility in the poetic text (e.g., Montesquieu) – some even went as far as saying that anything in poetry could/should be expressed in prose (Pons) – , then the 19th century Romantics and the Modernists that followed them were a reaction to such a limited view of language (cf. Bertrand & Durand, 2006). In this respect, there is little distinguishing the Enlightenment view of poetry from the information theory view of language, since both presuppose that language use does not alter content and fail to acknowledge that content is inseparable from the form it takes. Such a restrained view of language has perhaps contributed to the widespread rejection of poetry in modernity in favour of the novel and so-called constative discourse. Yet, poetry and poetic prose represent in often extreme ways aspects of communication that go beyond words as information. These aspects must be taken into consideration in the context of an increasing digitization of the literary.

The literary text – and there has been a lot of debate as to what this actually is, starting with the Russian formalists in the 1920s – especially poetry, can highlight the problem of language in special ways since a poem has layers of (often conflicting) meaning and ambiguity that cannot be captured by the usual linguistic-semantic structures, nor can the signals and codes of information theory compute the effects of such things as rhyme, rhythm, or enjambment within information theory's own notion of communication. Furthermore, the experience of reading also entails much more in terms of association. One thinks in particular of Rimbaud's famous poem, Voyelles: since the reader can associate colours with vowels, what else happens when a reader encounters a synaesthetic language that is rich with imagery and in which the senses are evoked in polyvalent ways? Indeed, poetic language from the mid-nineteenth century on is increasingly rich in this sense, and has moved the linguistic experience beyond straightforward notions of language. Yet, computing is rich in potential and can help us to see the text differently, even when we can only see the limits of such technology. Looking at the poetry of Modernism, which challenges the common-sense notion of communication, is helpful for expanding our view of what the digital-literary experience could be. The goal is to find new ways to explore the text with digital technology without limiting this digital reading experience.

Much work has recently been done in terms of interface and display (cf. Drucker & Nowviskie, 2004; Ruecker et al., 2011; Emerson, 2012), and some with metrical and sound patterns using phonetic transcription (Plamondon, 2006). What are some of the ways of displaying poetry that allow us to see the text differently? In determining the aspects of reading that cannot be accounted for by most of the encoding done in DH, it is actually to technology that we can go for assistance. The first question in our abstract (what aspects of reading cannot be accounted for by the types of digital textual analysis done so far in the digital humanities?) is primarily from a negative perspective: the computer is used in the wrong way, unless a better understanding of language can be attained; linguistics and information theory are inadequate to the task of properly understanding the dynamics of the literary experience. From that perspective, it is nevertheless important to develop a more constructive approach, bearing in mind that computers are not only here to stay

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but offer exciting opportunities. Once a thorough examination of the theoretical problems associated with the transfer from the analog to the digital has been undertaken, a focus on the second question (how can technology be "used" to account for the reading experience?) is possible, and in this, the computer cannot be a "means" (i.e., we "use" a computer), since the computer is itself as a part of the literary process.

The computer as a "non-means," or the circuits of reading

The question of the computer being itself a part of the literary process says that technology is not a problem or something to be feared, rather it is the people that use it. There is nothing new to this. Whether we are using computers or not, we still have to think about the problems of interpretation (of hermeneutics – the horizons of expectation of interpreting), since computers only add another layer of interpretability to the question. One could say, along with Braudillard's notion of mimesis, that the analog text was itself a simulacrum. On the other hand, the computer could enhance the literary experience and highlight aspects of the text that were not noticed before through visualization and sonorization, and even through the body (cf. Noland, 2006; Seaman, 2009). Similarly, we cannot ignore sound when it comes to literature, especially poetry; yet, sound has been embattled by the visual since the literary has been predominantly in print (this problem is behind much of the thrust in recent studies of the auditory in the digital [cf. Whitelaw, 2004]).

Still, literary studies have benefited from the consideration of the visual in the literary, and this "visuality" needs more self-reflexivity. The literary is also an "inter-artial" or "inter-medial" mode; but, the potential of technology can illustrate a "hyper-medial" nature of the literary text, where the text is seen in and for itself (not in comparison with, or as another, art/medium), and is "hyper-" in the sense that the medium exceeds itself. The inter-artial and inter-medial is very important, however, and we cannot split things so easily. On the one hand, we have literary texts that speak about themselves in their own textuality; on the other, these very texts are in a medium (voice, handwriting, or print, and analogue or digital), and this medium becomes "the message," as McLuhan would say. Yet, since the literary text thus does not suffice to itself, to reformulate McLuhan, it is more the case of "the medium" being "the message" about another medium, something that I hesitate to call "remediation" (after Bolter & Grusin, 2000 [1999]) because it is not certain that this hypermediality always involves what Bolter describes as "a struggle for culture recognition" (2005, p. 14). Rather, as per Ollivier Dyens' (2008) thinking, which forwards an unavowed Heideggerianism, it is perhaps more a case of hypermediality signaling the limits of what is knowable in a sort of hermeneutic circuit or feedback loop where we do not recognize the medium's coming into the world. Friedrich Kittler (2004) has cogently argued this is in terms of a crisis facing the humanities, one requiring us to dig deep into the materiality of the communicative means. The question of such a materiality needs to be more thoroughly examined since knowledge, especially in universities, is becoming increasingly dependent upon such media (Kittler, 2004); yet, it is also clear that these media are "appropriating and refashioning the representational practices of ... older forms" (Bolter, 2005, p. 14). This awareness can also contribute to a better understanding of the role of computers. Nevertheless, in seeking to better define the materialities of digital media, where disciplines often overlap – in some cases, we could say that digital humanists are creating e-literature, which in turn brings up questions of media studies – finding alternative visual

models for representing the digital literary experience can be crucial in that these models challenge the common-sense view of language that fits nicely into some research mandates, such as SSHRC's Insight Grants, which favour projects conforming to the digital economy.

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To this end, there are ways of displaying the text that can show us just how dynamic reading is, that can highlight some of the problems of interpretation, and that could ultimately help us to rethink the medium, or at least be aware of its presence, or, its "interface" (cf. Emerson, 2012). In my *Mallarmé Hypertext* project (http://mallarme.uvic. ca)² – which for now has a digitized version of the famous poem *Un Coup de dés jamais n'abolira le hasard* by Stéphane Mallarmé (more will be added, including the *Poésies* and his *Livre* notes) – , we can see that the eye moves in any possible direction and the text is therefore very open, making it an anti-hierarchical and decentered poem. Indeed, it is a prototype of Umberto Eco's notion of "open work" that so characterizes twentieth century art (for Eco on Mallarmé, see Eco, 1962). Interpretation is multiple and the text is as much a visual experience as it is about its content. In fact, this poem highlights the very visual nature of reading, especially of reading poetry. It brings out what was only implicit or latent in the standard forms of poetry, such as the sonnet.

As we can see from the still here taken from the http://mallarme.uvic.ca page, the poem challenges the reader to step out of a linear way of reading:

COMME SI

Une insinuation simple

au silence enroulée avec ironie
ou
le mystère
précipité
hurlé

dans quelque proche tourbillon d'hilarité et d'horreur

voltige autour du gouffre
sans le joncher
ni fuir
et en berce le vierge indice

COMME SI

The word "voltige" is at the centre of a parenthesis – between the two "COMME SI" that are themselves parentheses within parentheses. This word illustrates quite well the architecture of the poem, since we are able to see the other words "fly/flutter/buzz about" it (i.e., the meaning of "voltiger"). The reader can use "voltige" as a "pivotal" centre around which hypertextual connections can be made. Likewise, the reader, beyond having a choice between horizontal and vertical readings (sequentially or across both pages or from the top to the bottom of each page), can also see a "tourbillon" ("whirlpool"), that is at once "hilarious" and "horrifying" (especially for the poet drowning in signs); it is a whirlpool that might swirl in clockwise rotation or in an anti-clockwise rotation around "voltige" (the same thing might be done with the phrase "autour du gouffre"). Here are some of the possibilities (taking into consideration only the first layer of the swirl):

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- Vertical reading: "dans quelque proche voltige simple ..."
- Horizontal reading: "dans quelque tourbillon d'hilarité et d'horreur voltige autour du gouffre ..."
- Clockwise reading: "voltige dans quelque tourbillon d'hilarité et d'horreur autour du gouffre ..."
- Anti-clockwise reading: "voltige autour du gouffre [,] tourbillon d'hilarité et d'horreur [,] ..."

If we take "voltige" literally, it describes a "tourbillon" (swirling, whirling), but also in the sense of "floating here and there" or a "buzzing," and so my own readings are still "linear" in that they favour a directional movement. In any case, the word is an example at once of the form and of a description thereof, insofar as it illustrates its content, and its content speaks of its form. This example shows quite well, in a visual/hypertextual way, the interactive nature of reading a poem. It is thus very important to make the display as open as possible.

Yet, the computer here only represents the text as a collection of links and nodes, which presupposes that the text is simply about linguistic content. An interesting challenge would be to find more sophisticated ways of displaying the text that can account for other aspects of language. But this is where a metaphorical – and ultimately intermedial – sort of logic would come into play. One could, for instance, superpose the Mallarmé text onto Google sky, much like Ollivier Dyens uses Google Earth to superpose fragments of text from his *La Condition inhumaine*, or, as Dyens collects fragments of text and finds interesting ways of visualizing this in his hypertext project *Continent X*. Another model, perhaps better if it could be open-sourced, would be the *Visual Thesaurus*. All of these examples show how text is dynamic, and they manifest visually what happens implicitly in the process of reading.

Reading is much more dynamic than these models permit; and we also have to consider sonority, for Mallarmé's poem is also an aural experience. Actually, it is a poem that subsists on the threshold of poetry as an oral and a visual mode, between the lyrical poet who sings and the poet as a writer. Penny Florence attempted to put the *Coup de dés* to Débussy's music (2000), and this brought out a major problem because it favoured the sonorous, which is a linear medium, and it forces a particular reading order for the text, though Mallarmé's poem is anti-linear and spatial, like architecture. Nevertheless, the sonorous would be radically transformed were such openness exploited through digital media. It is possible to identify sound patterns in the poem and to display these through reordering and different combinations, thereby adding new depth to the poetic and digital experience.

A more "corporeal" or "gestural" understanding of the literary text seems to be on the horizon. The Enactive Criticism group based in Germany is developing what it calls "thinking as bodies," and Carrie Noland has theorized this as it occurs in digital poetry from the perspective of gesture. This corporeality can greatly contribute to a better understanding of electronic textual encounters. Such thinking comes in part from the Nietzschean tradition of the body as inseparable from thought, and stands in contrast to the Western denial of such a connection, such as with Descartes, but that is already present in Plato. Nietzsche, in some ways, goes back to the pre-Socratics to

recuperate the body. In the twentieth century, we have Deleuze and Foucault continuing such a trajectory, but in different ways. For Mallarmé, the experience of language was very much a physical or bodily one (even though he called himself a Cartesian, he saw the failure of mathematics to account for language, especially verse – cf. Murat, 2005), for he recognized that "conversation" exceeds the words being used. In terms of digital reproduction, how is the body implicated in seeing and hearing and are other aspects of the body enlisted that might not be with the print edition? How can we thus develop a hermeneutic and phenomenology of reading in the digital? Finally, if for Rimbaud vowels can have colours, how could the computer display such associations? It would be important to abandon the need for certainty here, and embrace the randomness of literary experience. Once this is done, we could actually get closer to an understanding of a "dialogue" between the literary and the computer. Mallarmé's poem is interesting in this respect, as it is all about "le hasard," or randomness. These points can contribute to a better understanding of the role of computers in understanding to the extent that we can ask what aspects of reading have not been accounted for in digital literary studies.

The computer is thus a valid way of approaching the text if it is involved in a dialogue with the literary. In many ways, it is in being confronted with the limits of the digital that we can better understand reading, as we have seen with the notion of sound as compared to text as hypertext. This way, the computer can function in a feedback loop by informing how we read and then, through its limits, can provoke us to think of new ways to envisage and practice reading. This process is theoretically never-ending. In doing so, as mentioned above, we are blurring the distinction between e-literature, media studies, and DH. In the case of the Mallarmé Hypertext project, there very little difference between these disciplines, just as there is less and less difference between disciplines in general when it comes to the digital. One thinks of Mallarmé, but also of digital poetics, for instance. When my project displays Mallarmé online, there is very little formal difference between this and, for example, if the words were mine and it was a digital poetics project. I have brought an interface and an apparatus that is foreign to the analogue/printed text, one that nevertheless points to its being on an interface, instead of hiding this fact by trying to faithfully reproduce the printed experience.

Knowing, through absolute negativity

I will end where Italian philosopher Giorgio Agamben began his book, *Stanze* (1977), with a question about criticism. If it is normal that a novel or a poem might not deliver on its promises, he says, one certainly expects from criticism that we will get results, or at least have theories to back up working hypotheses (Agamben, 1993). Could this be any more valid of a question when SSHRC, the governing body and chief funding agency in Canada for the humanities, prioritizes research on the digital economy with "the potential to lead to intellectual, cultural, social and economic influence, benefit and impact," thus falling squarely in the trap Agamben describes? For Agamben, when the word criticism first appeared in the vocabulary of Western philosophy, it referred to the limits of knowledge, as "that which can neither be asked nor seized" (1993, p. xv). Far from wanting to resolve these contradictions, Agamben calls for a rejection of Hegelian dialectic and its "magic wand of the *Aufhebung*" (1993, p. xvi), and opens the way for an absolute negativity with no way out that nonetheless allows for the possibility of knowledge:

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If in the human sciences, subject and object necessarily become identified, then the idea of a science without object is not a playful paradox, but perhaps the most serious task that remains entrusted to thought in our time. What is now more frequently concealed by a sharpening of knives on behalf of a methodology with nothing left to cut – namely, the realization that the object to have been grasped has finally evaded knowledge – is instead reasserted by criticism as its own specific character. Secular enlightenment, the most profound project of criticism, does not possess its object. Like all authentic quests, the quest of criticism consists not in discovering its object but in assuring the conditions of its inaccessibility. (1993, p. xvi)

Agamben wrote this in 1977, and it was quite accurate at the time, especially if one thinks of the intellectual upheaval of the day, for example with deconstruction. Now it seems that such a deconstructive, critical awareness of the limits of human knowledge has died with Derrida, at least in some institutional respects. Indeed, it was Derrida who warned about the impending overdetermination of the humanities by the encyclopedic archival "fever" (cf. *Mal d'archive*, 1995).

What I've tried to show is that we are creating knowledge, even if that knowledge is only a sort of self-confirmation of the tools at hand, the "sharpening of knives on behalf of a methodology with nothing left to cut" (Agamben, 1993, p. xvi). As the old adage goes, methods and tools only prove (in the sense of experience, "probare") one thing: methods and tools. But at the same time, these are human knowledge and human experience, and they are thus recoverable. As if echoing such a notion, Drucker and Nowviskie (2004) say of speculative computing that it

extends the recognition that interpretation takes place from inside a system, rather than from outside. Speculative approaches make it possible for subjective interpretation to have a role in shaping the processes, not just the structures, of digital humanities. When this occurs, outcomes go beyond descriptive, generative, or predictive approaches to become speculative. New knowledge can be created.

Notes

- 1. For more information on the theoretical, practical and historical aspects of this project, see Lessard, Sinclair, Vernet, Rouget, Zawisza, Fromet de Rosnay, and Blumet (2004), and Fromet de Rosnay, Lessard, Sinclair, Vernet, Rouget, Zawisza, Blumet, and Graham (2006).
- 2. This project was undertaken with the help of Internal Research Grants and the assistance of the Humanities Computing and Media Centre at the University of Victoria. In particular, I'd like to thank Stewart Arneil and Clifton Dildy (who built the site), and graduate students Katherine Hewko and Lara deBeyer.
- Note that one of the key aims of SSHRC Insight Grants is "to mobilize research knowledge,
 to and from academic and non-academic audiences, with the potential to lead to intellectual,
 cultural, social and economic influence, benefit and impact" (SSHRC, 2012).

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