Twenty Years After the Death of the Book: Literature, the Humanities, and the Knowledge Economy

Allison Muri
University of Saskatchewan

The Death of the Book

Twenty years ago, the book was figuratively laid to rest by artist Dennis Ashbaugh, author William Gibson, and publisher Kevin Begos, Jr. An art book wrapped in a shroud of cheesecloth and placed in a clam-shelled slate-grey case, deliberately distressed, seemingly time-scarred and battered, *Agrippa (a book of the dead)* (1992) evokes a disinterred coffin. Those who encounter the physical object must exhume the book's corpse to read it. Inside the book are traces of texts and images, illegible and faded inscriptions, and, embedded in a niche in the middle, a 3.5-inch floppy disk containing a self-encrypting poem by Gibson about his father, who died when the author was six. The book and the poem examine the inscription of lived sensory experience, books and bodies, memory and technology, loss and decay, the tenuous provisionality of knowledge and understanding. "Agrippa" refers at once to the name of a particular photograph album sold by Kodak in the 1920s (*Agrippa Files*, item #D26) and to the second-century Greek philosopher who formulated the Five Modes of skepticism. Gibson could not have known that Kodak would declare bankruptcy in 2012, but already in 1986 the company had been criticized for its complacency while "silver halide photography, the technology that Kodak invented 105 years ago, is slowly being eclipsed by electronic images" (Taylor and Caminiti).

ESC 38.1 (March 2012): 115–140

Allison Muri is Associate Professor of English at the University of Saskatchewan. Her research interests include digital media studies and the history and technologies of communication. Her current project, "The Grub Street Project," is a digital edition of eighteenth-century London, focusing primarily on print culture and heterotopias of literature and art in contemporary representations of the city.

The modes of Agrippa are known today only because they were recorded by Sextus Empiricus, whose *Outlines of Pyrrhonism* and *Against the Mathematicians* are the only existing detailed accounts of Greek skepticism. He did not name Agrippa, but Diogenes Laertius ascribed the Five Modes to him in *Lives of the Philosophers*. At once, then, the title *Agrippa* indicates the technological obsolescence of various mechanisms humans have used to inscribe and retrieve memory and history, the fragility of those records and the uncertainty of what they tell, and a philosophical skepticism about evidence that questions the possibility of any justified theory of knowledge.

The commentary by Gibson, Ashbaugh, and Begos on the nature of books, digital media, and knowledge are well worth revisiting in this issue on the "Future of the Humanities," with the increasing prevalence of digital "books" (including documents, texts, games, social media, and so on) and digital scholarship. *Agrippa (a book of the dead)* was a reply to increasing speculations on the effects of the book's supposed demise upon the value of literature, the humanities, and knowledge itself with the arrival of networked communications, Bulletin Board Systems (BBSs), Usenet, the establishment of World Wide Web protocols, and graphical user interfaces.[1] The "death" of the book coincided with the rise of the so-called knowledge society, and what *Agrippa* told us at that crucial moment just after the invention of the World Wide Web still speaks to the roles of books and digital works in the discipline of literature and in the humanities in general.

The death of the book had been predicted long before *Agrippa* was published. As early as 1955 Lester Asheim had speculated on it in his introduction to a special issue of *The Library Quarterly* on "New Problems in Plotting the Future of the Book." Musing on the possibility that the library would not necessarily remain primarily a "book agency" (282), Asheim noted

> there is nothing eternal and God-given about the format and dimension of the book as we happen now to know it.... Some of the greatest items in our own cultural heritage, which we

1 Some of the more important of these included Richard Lanham's "The Electronic Word: Literary Study and the Digital Revolution" (1989); Robert Coover's "The End of Books" (1992); *Representations* 42, a special issue on "Future Libraries" (1993), including Geoffrey Nunberg's "The Places of Books in the Age of Electronic Reproduction"; the 1994 symposium "The Future of the Book" held at the University of San Marino, which culminated in the collection *The Future of the Book* edited by Geoffrey Nunberg (1996); Elizabeth Eisenstein's "The End of the Book? Some Perspectives on Media Change" (1995).

> now equate with the book, were not intended for book form and were committed to the page by other hands. (283–84)

Marshall McLuhan echoed predictions of the book's decline in a 1960 interview by Alan Millar of the CBC: "Just as books and their private point of view are being replaced by the new media," he explained, "so the concepts which underlie our actions, our social life, are changing." Further, "Books are what gave the Renaissance its peculiar stamp. We had to see the world and each other through the printed line on the page. Today there are many media of information, many teaching machines. The book's role has diminished because of all the other actors. It's no longer king, but subject" (4:30–5:51). While he did not comment on "the book" itself, Jean-François Lyotard too predicted in *The Postmodern Condition: A Report on Knowledge* (1979) that technological transformations, including communication and cybernetics, computers and computer languages, problems of information storage and databanks, and so on, "can be expected to have a considerable impact on knowledge." Specifically, "The nature of knowledge cannot survive unchanged.… It can fit into the new channels, and become operational, only if learning is translated into quantities of information" (3–4). It was not until the 1990s, however, that the book's death (or its future as something other than itself) began to register as anything other than provocative musings. In *Writing Space: Computers, Hypertext, and the Remediation of Print* (1991), Jay David Bolter famously predicted that "the idea and the ideal of the book will change: print will no longer define the organization and presentation of knowledge, as it has for the past five centuries" (2). Equally famously, and with significantly more pessimism, Sven Birkerts worried that "more than any other development in recent memory, these interactive technologies throw into relief the fundamental questions about knowledge and learning":

> There is a danger with these sexy new options … that we will simply assume that their uses and potentials extend across the educational spectrum into realms where different kinds of knowledge, and hence learning, are at issue. The realms, that is, of *Geisteswissenschaften* ["so-called sciences of culture"], which have at their center the humanities. (135–36)

At the same time, government discussion and position papers adopted metaphors of the new "information highway" as a means toward progress, nation-building, and prosperity founded upon knowledge transfer. The association with knowledge here had little to do with humanities scholar-

ship and much to do with government expectations for and predictions of future labour, business, and profit. The terms "knowledge industries," "knowledge society," and "knowledge economy" had been popularized decades before by Peter F. Drucker in his best-selling book *The Age of Discontinuity* (1969), but they took on a new lustre following the popularization of the personal computer and the World Wide Web. In the United States, nascent policies were articulated in the position paper *Technology for America's Economic Growth, A New Direction to Build Economic Strength* by newly elected President Bill Clinton and Vice-President Al Gore (1993): "International competitiveness depends less and less on traditional factors such as access to natural resources and cheap labor," they predicted. "Instead, the new growth industries are knowledge based" (7). "Accelerating the introduction of an efficient, high-speed communication system can have the same effect on US economic and social development as public investment in the railroads had in the 19th century" (16), they wrote. Further, "Just as the interstate highway system marked a historical turning point in our commerce, today 'information superhighways'—able to move ideas, data, and images around the country and around the world—are critical to American competitiveness and economic strength" (28).

In the following year Canadian Industry Minister John Manley formed the Information Highway Advisory Council (IHAC) to make recommendations to the government on the future of digital communications and innovations in Canada. Industry Canada's discussion paper released in April 1994 outlined the issues upon which IHAC would provide advice and opened with a statement from Manley: "A new knowledge-based economy that is emerging in Canada requires a new advanced infrastructure—the 'electronic highway' " (Industry Canada 1994). As the discussion paper went on to explain, the "Canadian Vision for the Information Highway" was that such an infrastructure would "act as the catalyst for Canada as a vital and competitive knowledge-based society." Borrowing from the rhetoric of Clinton and Gore, it explained:

> The Canadian information and communications infrastructure will be a key factor in Canada's successful transition to an economy in which value, jobs and wealth are based on the creation, movement and application of information. Like the railroads, waterways and roads that formed the transportation infrastructure of the industrial economy, the information highway will carry peoples' ideas and the information services that

> drive the new global information economy. (Industry Canada 1994)

The Canadian government strategy identified three objectives: creating jobs through innovation and investment, reinforcing Canadian sovereignty and cultural identity, and ensuring universal access at reasonable cost.

In its final report, *Preparing Canada for a Digital World* (1997), IHAC noted that the committee's "sense of urgency has not abated":

> These powerful new technologies are becoming the infrastructure for a new 21st-century society, which is based on the exchange of intangibles—ideas, information, knowledge and intelligence. There are many terms for this new world—"information society," "knowledge-based economy," "digital economy," "post-industrial society."
>
> Whatever name applies, the defining features of this new era are always the same.... The creation, manipulation and sharing of information and knowledge will become an overriding human imperative. (Industry Canada 1997, chapter 1, "Toward a Society Built on Knowledge")

The theme of urgency or imperative concerning Canada's new knowledge society continues throughout the report, which concludes in its final chapter, "The Road to the Future":

> Knowledge will become increasingly available to everyone, allowing everyone to make wiser decisions in all aspects of our lives—from business to government to health care to education to work to our everyday existence.... It is urgent that Canada move quickly and wisely to accelerate that transition. (Industry Canada 1997, chapter 9)

Industry Canada's definition of a knowledge society was one that ostensibly did not recognize the value of knowledge expressed through other media. Such rhetoric was understandable, even, perhaps, necessary, to advertise the importance of developing an expensive (and ultimately an invaluable infrastructure), but implicit in these arguments was that other, already existing forms of knowledge, whether oral traditions or humanities scholarship associated with the culture of "the book," the close and sustained studies of past cultures, of history, philosophy, and literature, seemed largely irrelevant.

As William Birdsall has observed, the advisory committee was dominated by industry: of the twenty-nine members of IHAC, almost all were presidents, CEOs, and chairmen of major Canadian firms (fifteen in tele-

communications); "a representative from the arts was added only after that community complained of having no representation when IHAC was initially formed" (Birdsall). The goals of Industry Canada in the 1990s were at one time laudable, impossibly vague, and leaning heavily toward financing an architecture that would engender a lucrative investment in knowledge as industry. What "sovereignty" and "cultural identity" meant in a global digital network went undefined, as did the overall principle of "knowledge." What knowledge—whose knowledge—was the information highway for? What knowledge *is* was presumed to be self-evident.

What knowledge—whose knowledge—was the information highway for? What knowledge *is* was presumed to be self-evident.

Knowledge, Innovation, and the Digital Humanities

While there were noteworthy investments in humanities computing in the 1990s, it was several years before scholarly funding bodies formally recognized the humanities with significant targeted funding and initiatives. Much digital work in the humanities had invested in digitizing physical materials, with textual markup such as the Text Encoding Initiative (TEI) focusing on encoding characteristics of the book, page, lines, stanzas, and so on in a text file. Early digital projects such as the Million Book Project at Carnegie Mellon, Google Books, the Open Content Alliance, the Text Creation Partnership, Hathi Trust, and numerous small archival projects have involved re-inscribing books to digital form, creating digital repositories of past knowledge infrastructures for print and manuscripts, but these activities have also raised questions about what new discoveries or new knowledge digitization has afforded. One prospect of innovation has been, not surprisingly, the quantification of so-called Big Data: "What do you do with a million books?" as Gregory Crane pointedly has asked. The National Endowment for the Humanities (NEH) established the Digital Humanities Initiative (DHI) in 2006, and announced its successor, a new Office of Digital Humanities (ODH), in 2008.

"In the humanities as in the sciences, digital technology has changed the way in which scholars perform their work," the website of the ODH reads (www.neh.gov/divisions/odh/about): "Technology allows humanists to raise new questions and radically changes the ways in which archival materials can be searched, mined, displayed, taught, and analyzed." In 2009 the Digging into Data Challenge was established, with joint funding from agencies in the U.S., the UK, and Canada to "address how 'big data' changes the research landscape for the humanities and social sciences," since, "As the world becomes increasingly digital, new techniques will be needed to search, analyze, and understand these everyday materials. Digging into Data challenges the research community to help create the new research

infrastructure for 21st century scholarship" (www.diggingintodata.org). While the NEH Institutes for Advanced Topics in the Digital Humanities continues to explicitly support qualitative research topics along with textual analysis and data mining (National Endowment for the Humanities 3), the prospect of "big data" has meant that quantification and data mining have gained significant purchase in pecuniary considerations of digital methods and tools. Franco Moretti's proposal for "distant reading" (a method that involves schematic representations such as graphs and trees, statistical analysis, and mapping of texts as opposed to traditional literary "close" readings) holds real promise, especially if it is done in combination with the close readings and explications with which humanities scholars have always engaged.

This question is not, therefore, one of empiricism versus theory—both are valuable in certain contexts—but is, rather, a question of what quantification and data mining or text mining seem to provide. Quantitative analysis and text markup hold the promise that new discoveries can be made in the humanities that have never been possible before in our traditional, print-based processes of methodical reading, study, and rereading of a single text. These new methods also carry the allure of relevance for scholars with expertise in textual and literary studies in a knowledge economy dominated by industry, engineering and computer science, and the sciences.[2]

2 See, for example, the May 2011 report by McKinsey Global Institute, "Big data: The next frontier for innovation, competition, and productivity," which claims that "the potential value from data in the [U.S. health care] sector could be more than $300 billion in value every year.… In the private sector … a retailer using big data to the full has the potential to increase its operating margin by more than 60 percent.… big data can be used to create value across sectors of the global economy.… we are on the cusp of a tremendous wave of innovation, productivity, and growth, as well as new modes of competition and value capture—all driven by big data as consumers, companies, and economic sectors exploit its potential" (2) (www.mckinsey.com/Insights/MGI/Research/Technology_and_Innovation/Big_data_The_next_frontier_for_innovation). In March 2012, the U.S. government announced its "Big Data Research and Development Initiative," claiming that "By improving our ability to extract knowledge and insights from large and complex collections of digital data, the initiative promises to help accelerate the pace of discovery in science and engineering, strengthen our national security, and transform teaching and learning." The six federal departments and agencies that announced over $200 million in new research and development investments included National Science Foundation and the National Institutes of Health ("Core Techniques and Technologies for Advancing Big Data Science and Engineering"), the Department of Defense ("Data to Decisions"), the National Institutes of Health ("1000 Genomes Project Data Available on Cloud"), the Department of Energy ("Scientific Discovery Through

In 2010, for example, Google's Digital Humanities Awards Program (now closed) provided funding to twenty-four projects in the United States and Europe "to support research exploring the intersection of computer science and the humanities" (http://research.google.com/university/relations): from the time computers were invented, wrote Jon Orwant in a post to Google's official blog entitled "Our commitment to the digital humanities,"

> people have envisioned using them to expose the interconnections of the world's knowledge. That vision is finally becoming real with the flowering of the web.... But digitization is just the starting point: it will take a vast amount of work by scholars and computer scientists to analyze these digitized texts. (http://googleblog.blogspot.ca/2010/07/our-commitment-to-digital-humanities.html)

Regrettably, this commitment was for just two years. For the time being, it appears that Google supports solely "academic communities in computer science, engineering, and related fields" (http://research.google.com/university/relations).

In Canada, funding opportunities have increasingly been described in terms of the value of digital data to the economy. Early on, the Image, Text, Sound and Technology (ITST) Research Grant program, introduced by the Social Science and Humanities Research Council of Canada (SSHRC) in 2003, funded investigations into new media, and operative words were "reflect on, interpret, and analyze," "share and nurture ideas," and "facilitate" networks and partnerships to "promote and sustain social sciences and humanities research and resources" (see table). These were laudable goals, but the ITST program was soon replaced by priorities more attuned to strategies focused on the digital economy. The Government of Canada committed to launching "a digital economy strategy to drive the adoption of new technology across the economy" in its 2010 Speech from the Throne: "the relentless pace of technology means that every day there is something newer, faster, better. To succeed in the global economy, Canada must keep step as the world races forward." Subsequently, Industry Canada noted with some urgency:

> Canada is responding to the opportunities presented by the digital economy. But so are other countries like Australia, the

---

Advanced Computing and the U.S. Geological Survey ("Big Data for Earth System Science"; www.whitehouse.gov/blog/2012/03/29/big-data-big-deal).

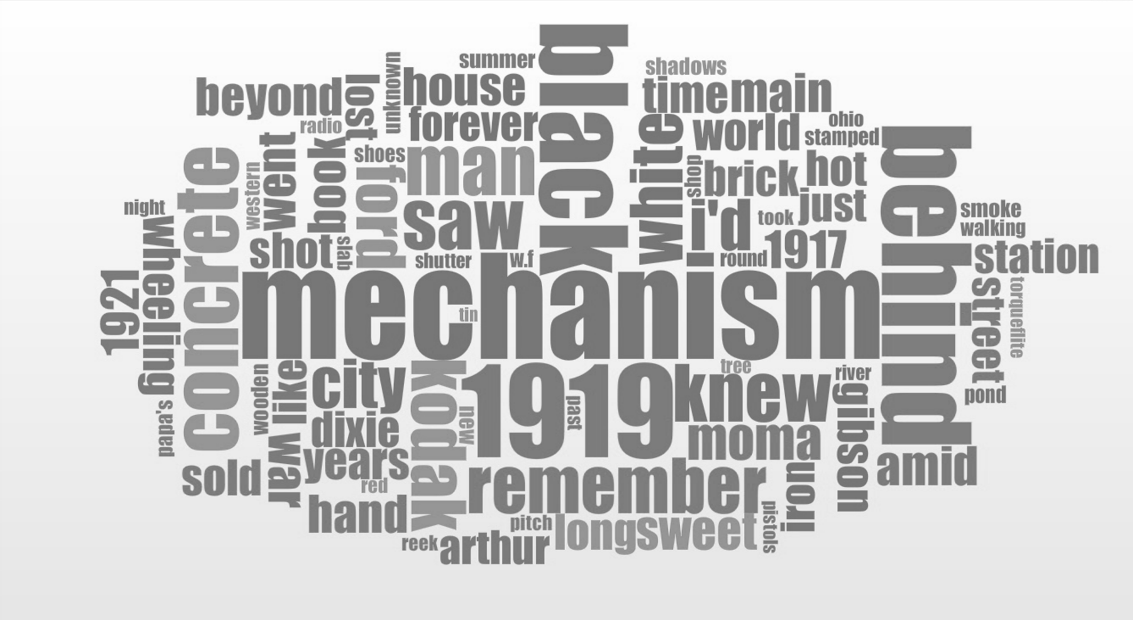
> United Kingdom and the United States.... A strong digital economy will be the backbone of Canada's future prosperity and success. Consequently, we all have a role to play in shaping the future of this key part of our economy and our lives.... Universities, colleges, research institutions and businesses will need to work more closely together to continue to conduct and commercialize research, moving ideas from university and college labs into the marketplace, where Canadians and the global economy can benefit. (*Improving Canada's Digital Advantage: Strategies for Sustainable Prosperity* 8–9)

In 2010, SSHRC named digital media as one of its five priority areas. Its outcomes still explicitly valued humanistic approaches to digital research (see table). In 2011, however, the title of this priority area was changed to "Digital Economy," with a greater emphasis on positioning Canada in a global context, optimizing benefits for Canada, informing policy, especially in terms of business competition, investment, and innovation. Twenty-six percent of the forty-five successful applications for SSHRC's 2011 Partnership Development Grants and Partnership Grants competition selected the digital media priority area (SSHRC, May 2011). SSHRC also invested significantly in the 2011 Digging into Data Challenge, contributing CAN$869,117 of the total project funding of approximately US$4.8 million (SSHRC, January 2012). SSHRC has continued to fund digital humanities projects focusing on historical, cultural, and literary studies, but defining "the most relevant" lines of inquiry, however well intended, subtly demarcates the questions worthy to be asked and can potentially diminish the "value" of the kinds of knowledge we study and express in the humanities. We (all scholars—not just those in the digital humanities) need more dialogue today about how data and digital content both redefine and reinscribe our expectations for knowledge work, more reminders of the instability of "culture" in our attempts to understand it through the lens of big data, and more searching analyses of quantification and knowledge production than we have devoted to date concerning the supposed demise of the book.

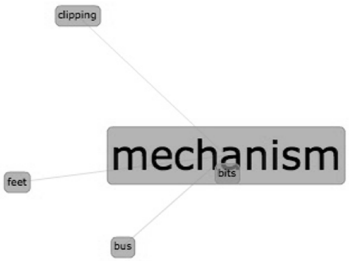
Knowledge, Books, Memory

> Inside the cover he inscribed something in soft graphite
> Now lost
> Then his name
> W.F. Gibson Jr.
> and something, comma,
> 1924

To return, then, to *Agrippa:* what does this work suggest about the death of the book? Gibson's work signals, first, that it does not matter how our knowledge is encoded; at the same time, whether he intended it or not, it points to some necessary changes in interpretive strategies when we examine digital books, which are animated, which can be encrypted, which can die and be resurrected. It reminds us of the necessity to be mindful of the materiality of our books, whether they are paper or digital, and the effects of that materiality on text and context; it reminds us that the reductionism inherent in certain forms of machine reading (the genome, the encryption of a poem) represents just one facet of knowledge. We can use the word cloud and collocation visualization tools created by Stéfan Sinclair and Geoffrey Rockwell, for example, to count and visualize the poem text (see facing page). Such visualizations certainly can be evocative and often result in new questions or new insights, and especially so in longer texts—word frequency and collocation have long been valuable tools in linguistic and literary analysis—but these visualizations also reinforce the incredible limitations of word counts alone, the importance of close reading and qualitative analysis along with treating books, documents, and communications as data. The issue is not so much one of quantification shouldering its way into literary analysis as it is one of in what it is our universities are being asked to invest more and more heavily and what that might mean to perceptions of valid—and valued—knowledge.



"Agrippa" word cloud text frequency visualization (stop words excluded). Voyant Tools: Cirrus. http://hermeneuti.ca/voyeur/tools#Cirrus.



"Agrippa" collocation visualization, showing term frequencies in proximity to keyword (stop words excluded). Voyant Tools: Links. http://hermeneuti.ca/voyeur/tools#Links.

What I want to do now is a provisional close reading of this book and poem to model the difference between the digital analysis or mining of texts stripped of their intended double meanings, allusions, or metaphors, of their material and historical contexts, and the necessary close reading, qualitative analysis, and subjective interpretations that humanistic studies demand. Understanding the materiality of this work, even if only through images and bibliographic descriptions as provided in *The Agrippa Files* (Liu et al.), is crucial to understanding this remarkable and brilliant work, which has received surprisingly little attention in literary studies (perhaps, ironically, because the poem and facsimile pages do not appear in mass market books and anthologies).

Several of *Agrippa*'s pages contain an aquatint print evoking DNA gel electrophoresis, overprinted with antique newspaper and catalogue advertisements for technological artifacts. The overprints were originally intended to vanish with exposure to light or air. The majority of the book's pages contain two columns of forty-two lines, an allusion to Gutenberg's Bible printed in Mainz around 1455, in Latin. While Ashbaugh's text itself is legible, the inscriptions are incomprehensible to human readers: "reading," inscribing, and analyzing a sequence of DNA is possible only through machine preparation and computational analysis. Ashbaugh's prints remind the reader of one of the most important knowledge quests of the twentieth century, an acknowledgement perhaps of the changing tides of "valued" scholarship, literacy, and information. In 1988, the United States Congress had funded the Department of Energy (DOE) and the National Institutes of Health (NIH) to begin work on a plan to sequence the chemical bases of DNA in the human genome, with projected costs of about $200 million per year for approximately fifteen years (Human Genome Project). The project to transcribe the so-called blueprint for life inspired enthusiastic rhetoric concerning the future of knowledge, the sciences, and the economy (for example, DeLisi 488; on the Human Genome Project and the Book of Life or Book of Nature, see also Muri); the rhetorical implication was that we would understand humanity once machines had read, inscribed, and quantified life itself.

It was this intersection of faith in the promise of technology and science, the meaning of the book, and the attainability of knowledge about humankind to which *Agrippa* asked us to attend. The pages of *Agrippa* then establish a number of thematic elements: knowledge and what it means at the beginning and the "end" of the printed book is illustrated here but also the electronic trace of memory, playing through just once before the text is encrypted. In such a read-through of this poem, the moments

Gibson describes are transient and all-too-soon forgotten like the life that they evoke and then are lost forever (this is clearly the intent of the encryption, though Gibson has since republished the poem on his website). Like the lives more enduringly inscribed in his grandfather's signature in a "broad smooth slab of poured / concrete" (part III) or the limestone lining the banks and courthouses, fossilized records of fragmented animal shells and skeletons (part IV), this book provides for its readers only an attenuated and partial history in the material artifacts of lives once lived. "Mechanism" and "concrete" are the two most common nouns in this poem and in this art book, but ambiguity itself, elusive descriptions and characterizations, metaphor and analogy are where meaning coalesce.

Gibson's poem, like Ashbaugh's images, examines the themes of mechanical obsolescence, sensory perception, memory, inscription, records, and knowledge. While it is impossible to say that his intention was to exemplify each of the ancient philosopher Agrippa's five modes or grounds of doubt concerning the attainability of knowledge in the first five sections of *Agrippa*, Gibson seems to make just such a series of allusions. The first of Agrippa's modes, for example, concerns dispute, or undecidable dissension with respect to some matter: this dispute prevents us from choosing or ruling out anything, so that we must fall back on suspension of judgment (Annas and Barnes 41). In this section Gibson juxtaposes the "eerie Kodak clarity" of photographs pasted in the album against the degradation or erasure of the inscriptions identifying the images. "Aunt Fran and [obscured]" or "Ford Sr.?" or "either Ford or Arther" or "On the roof behind the barn, behind him, / can be made out this cryptic mark: / H. V. J. M. [?]," all point to the dispute between indecipherable labels and a moment recorded by the camera in perfect, focused, clarity. What the narrator or the reader can know about the image is an elusive history. In the photograph a man is clear, or a culvert, but that moment is lost, that name, sometimes even that place, and the photographer's connection and intent are all effaced. The editorial hand here evident in the square brackets emphasizes the dissension between the clarity intended by the photographer and collector, and the gaps acknowledged in the annotations.

Section II begins:

> The mechanism: stamped black tin,
> Leatherette over cardboard, bits of boxwood,
> A lens
> The shutter falls
> Forever
> Dividing that from this.

Even if reliable, memory can never establish credibility without further evidence.

This section, foregrounding images of "mechanism"—the camera separating a moment from its inscription, the gun separating life from death—might recall the second of Agrippa's five modes, which derives from arguments that throw one another into infinite regress. What is brought forward as proof itself needs another proof to make it credible, and so on to infinity: we have no point from which to establish anything and so must suspend judgment. Is "Mama" here the same person as "Moma" in section 1? Would these four photographs of Moma and Mama provide proof enough where the identifying text differs, or would we require more evidence of identity? Moreover, what does this particular archive, "Commemorative / montages of the country's World War dead" found in the bottom drawer of a bureau *mean*? What history do these works convey to a son who barely knew his father and has such tenuous knowledge of this family history? The narrator can derive meaning only from a related memory: "just as I myself discovered / one other summer in an attic trunk" a gun and ammunition, "real little bits of war." Memory is faulty, however: "I took it up / and turning, entranced, down the unpainted / stair, to the hallway where I swear / I never heard the first shot." Even if reliable, memory can never establish credibility without further evidence. If he were making an argument about guns, or war, or his own journey from youth to maturity, only a semblance of credibility is conferred by the stated memory of vivid sensory experience. A reader would require further evidence of that recently fired copper slug "so hot, stilled energy, / it blistered my hand," or of the salt container long since thrown away, or of a grazed banister possibly extant in an old house, to know if this text should be read as an autobiographical record and not poetic licence (even then, could we know that the gouge was caused by a bullet, that the gun was fired by that boy?). A related page in *Agrippa* is meant (so we are told) to call attention to the material degradation of ink and paper, as if to provide further fleeting evidence through the mechanism of print, itself a fleeting technology. In Ashbaugh's illustration there is a gun that looks rather like a Derringer, which the narrator says he traded away, but the image is from an advertisement for a "Photogenic Pistol … / For instantaneous photography at night" (item #D37). Ashbaugh intended the image, like the memory and the poem, to fade away, perhaps before readers could possibly check the visual reference, before they could attempt to determine whether the implied mechanism for these memories was likely to be the physical experience of a gun or an unreliable memory triggered by the fleeting moment captured in a flash of light by camera: "I swear / I never heard the first shot" echoes "'Arthur and Ford fishing 1919' / Shot by an adult" in the first section. Even

while the book with its fading ink concept seems to evoke the death of the book and print as mechanisms of evidence, the ink remains permanent and the art book carefully preserved in a number of libraries, while the concept of the ink fading was realized only in a digital simulation created by an unnamed designer and posted on *The Agrippa Files* site.

Section III sees a change in perspective, from describing and attempting to decipher the photographs to a memory prompted by a photograph of his parents' house in 1921. The lines change to free verse, falling into the rhythm of speech and evoking something closer to a natural speaking voice. Agrippa's third mode refers to arguments from relativity: "The existing object appears to be such-and-such relative to the subject judging and to the things observed together with it, but we suspend judgment on what it is like in its nature" (Annas and Barnes 41). In this section, Gibson moves away from the detached, almost bibliographical descriptions of the photographs in the first section and the uncertain sensory memories of the second, drawing instead on an apparent certainty in his own interpretations of his family. The subjective position, however, always presents a particular view from a limited perspective. "They have moved down from Wheeling and my father wears his / city clothes," he writes, but only the narrator or Gibson knows the precise meaning of "city clothes." The subject position of the boy with his gaze on the unpaved Main Street and its electric street lamp presents a different reality from what his parents might describe. There is a story in that move from Wheeling but no certainty in the claim that "My grandfather [...] believed in concrete and plywood / particularly."

Agrippa's fourth mode, hypothesis, begins from someone making an assumption without providing proof. Hypotheses can be false, or opposite hypotheses can be formulated, and so on, so we suspend judgment. Section IV begins, "He made it to the age of torqueflite radio / but not much past that." How is the reader to interpret this line? Torque Flite was Chrysler's three-speed automatic transmission, introduced in 1956. "Torqueflite radio" comes from the transcription of a torn clipping advertising a DeSoto Firedome in the previous section of the poem: "torqueflite radio, heather and power steering and brakes." *Heather*, meaning *heater*, suggests Gibson is calling attention to an error-filled advertisement, which should also have a comma after "torqueflite," but the original text extracted from the encrypted disk by Freek Wiedijk (*Agrippa Files*, item #D54) actually reads "heater." The idea of "original text" further problematizes surety, since the text was extracted from the disk image by a process of "dumping" the whole memory of an early Mac emulator process into a file and then cut-

ting the poem from the junk text in that file (item #D54). Leaving that bibliographical conundrum for now, the question is: Has Gibson deliberately produced a variant text to aid interpretation, a common enough practice of authorial revision and correction? Or is *heather* an ordinary problem of inadvertently introducing changes due to careless editing and thus only seems to point to a particular interpretation? In any case, if we assume "torqueflite radio" is a deliberate mistake, then the passage can be read as another indication of the impossibility of arriving at certain knowledge; if we assume the mistake is not intended, then I have achieved nothing other than establishing a fairly shaky argument concerning Gibson's intentions. However, Gibson also writes in this section of "the mystery untold, the other thing, / sensed in the creaking of a sign after midnight" and of "indian-head pennies undisturbed since / the dawn of man," arguably representing other hypotheses clearly false or lacking in evidence. Even the material (literal) sign, the empirical sensory evidence verifiable by observation or experience, can establish the grounds for a false hypothesis and a dubious claim on certainty.

Finally, section V of *Agrippa* contains Gibson's first expression of certain knowledge:

> There it was that I was marked out as a writer,
> [...] and, yes,
> I knew then, knew utterly,
> the deal done in my heart forever,
> though how I knew not,
> nor ever have.

The reciprocal mode is Agrippa's fifth and final mode: it occurs when "what ought to be confirmatory of the object under investigation needs to be made convincingly by the object under investigation; then, being unable to take either in order to establish the other, we suspend judgement about both" (Annas and Barnes 41). Surely the object under investigation is the semi-fictional narrator (or Gibson's autobiographical self-reconstruction) and thus demonstrates the circularity of the reciprocal mode: "how [I knew] I knew not," he seems to be saying.

The final section sums up the former five, much as Sextus Empiricus's summary of Agrippa's modes does: "That all objects of perception are relative is clear: they are relative to those perceiving them.… And objects of thought are relative too: they are called objects of thought relative to the thinker" (Annas and Barnes 42–43). "There must have been a true last time / I saw the station but I don't remember," Gibson's final section

begins. The bus station is now torn down and the narrator displaced to the present moment in a distant place: "I'm walking through Chyoda-ku / in a typhoon […] / umbrella everted in the storm's Pacific breath […] laughing / in the mechanism." The ambiguity of these final words again accentuates the impossibility of interpreting even the most eloquent inscription: to me, they suggest that this impressionist image of the narrator's reaction to the defeated mechanism of the umbrella captures a memory as close to the lived moment that might be possible in a written work, and still we know very little about this man, his life, his thoughts, his transitory presence in the world. "Laughing in the mechanism," in the moment, also suggests a ghost in the machine, the living trace of a human life captured in digital memory. Interpretation is elusive; knowledge about this man's exploration of life and family is ambiguous at best.

Is this poem a skeptical demonstration of the uncertainty of knowledge? The argument I have demonstrated concerning this poem and book is a shaky one to be sure. There is tenuous but plausible evidence in the text, partial, obscured, and figurative though it may be; there is also a great deal of subjective interpretation on the part of our narrator and on my own, and there is an inexplicable departure from the so-called original text that may support but at least does not refute my premise. What we know from this digital text, as with printed poetry and history, is partial, subjective, indeterminate, and yet, given the evidence we have and the interpretation of which we are capable, still compelling, telling, humanizing.

The End of the End of the Book and the Future of (Digital) Humanities

In an interview a year after *Agrippa: A Book of the Dead* had been released, Gibson explained: "I'm in the vanguard of the death-of-print crowd.… I love books, and books as objects, but when you think about it, a library is just a pile of moldering organic material—it's literally rotting. Soon enough the library will become something at the end of a modem" (Killheffer). Gibson is right: there is no particular loss of knowledge and literature, no particular threat to the humanities with the rise of digital books, even while we must be mindful of the specific questions posed in considering media, culture, history, and knowledge. For some scholars of digital texts, the relevance of the question of "the death of the book" has receded in the face of more pressing questions. "What do you do with a million books?" is one aspect of this changing research landscape. Jerome McGann has argued in his 2001 book *Radiant Textuality: Literature After the World Wide Web* that "We have to break away from questions like 'Will the com-

puter replace the book?' So much more interesting are the intellectual opportunities that open at a revelatory historical moment such as we are passing through" (xii). Alan Liu archly suggested in 2009 that "The digital is just the end of the end of the book" (np) and later argued in a paper presented in the panel on "What is a Book?" at the "Unbound Book Conference" at the Hague in 2011, entitled "This is Not a Book: Long Forms of Shared Attention in the Digital Age," that neither e-books nor the Gutenberg Bible are in fact books. The idea that a book is a material object, he argued, "is a Trojan horse that inserts into the codex a whole tradition of ontological, epistemological, and cultural, that is to say, canonical assumptions about the nature of the book." He suggested further that "the book" is something more like a cultural desideratum: "A long form of attention intended for the permanent, standard, and authoritative—i.e., socially repeatable and valued—communication of human thought and experience (usually through narrative, argumentative, or other programmatic organizations of bound-together-yet-discrete textual, graphic, and haptic elements)" (2:58–3:50). In analyzing the digital documents we have before us now, it is the "culturally significant attributes" of the book that we need to attend to, the "long-form attention that we as a culture crave and value. That's what we need to be able to find in the future, and we don't have the instruments to find it now." What we will need, he says, are methodologies to discern patterns, clusters, or "long-form swirls of self-stabilizing clusters of knowledge" and patterns of reading, the ability to visualize the social networks of authors and documents over time (28:00–28:19). This need is not in doubt: the incomprehensibly vast array of digital texts, whether archival or "born digital"—the messy unstructured texts of Google Books documents, the highly structured texts created by individual scholars and such groups as the Text Creation Partnership, or new forms of creative writing, jokes and storytelling, chronicling, and creating personal archives through Twitter, Imgur, YouTube, Reddit, Facebook, a variety of blog platforms, dynamic or static texts and multimedia on websites, all demand new approaches to studying humankind; how this is accomplished, what texts will comprise a canon, and what it will mean in terms of "knowledge," however, is still very much in flux.

Textual scholars have invested heavily in an approach that relies on adding hand-coded structured markup to the texts of archival books and documents, while significantly larger unstructured corpora such as Google Books inspire studies relying on statistical analysis. Because the tools are so new, and the methods as yet tested in limited circumstances controlled by a small team of researchers, many articles on the digital

humanities argue that the tool or method does not necessarily provide definitive answers but, rather, "prompts new questions." The questions we need to ask now are, do they prompt the best questions? Or, perhaps, could we improve on the kinds of questions digital tools prompt us to ask?

As McGann has cautioned, "Digital technology used by humanities scholars has focused almost exclusively on methods of sorting, accessing, and disseminating large bodies of materials, and on certain specialized problems in computational stylistics and linguistics.... the work rarely engages those questions about interpretation and self-aware reflection that are central concerns for most humanities scholars and editors" (*Radiant Textuality* xi–xii). How will databases and quantitative analysis produce "knowledge"? As Susan Schreibman, Laura Mandell, and Stephen Olsen explain with reference to my own Grub Street Project, even Robert Darnton, a proponent of digital libraries and of the value of digital monographs, has reservations about the assumption that a new argument on an old subject can be expressed through images and database:

> Robert Darnton ... responded to Allison Muri's Grub Street Project by insisting that Pat Rogers had, in a book published in 1972, already made the argument proposed by her database. Darnton thus articulated a skepticism that we all feel as to whether any database, granted the "richness of detail and technological originality, [could] carry the argument further." ... Are database and archive building simply a refusal to select, come to the point, and make an argument? (128)

This is a very good question, perhaps *the* question, facing digital humanities projects today. Certainly digital projects require more of us: we become managers; we spend more time requesting funding for expensive infrastructures; we make decisions about infrastructure, programming functionality, and interface, all decisions that in fact are a form of interpretation; we learn how to communicate our goals to collaborators in the computer sciences and to effectively collaborate with them; we assemble datasets; and we are then faced with the task of editing, cleaning, and normalizing the data. Geoffrey Rockwell notes in this issue how "Alan Galey, Stan Ruecker, and the INKE Team have presented case studies in 'How a Prototype Argues' of how experimental design prototypes could be evaluated as reified arguments. They look at how a design presents an argument, how it handles objections, how it is an original contribution, and how it is part of a research trajectory" (158), and provides some direction of "things to discuss" in terms of evaluation. I agree. We certainly need to consider

The questions we need to ask now are, do they prompt the best questions? Or, perhaps, could we improve on the kinds of questions digital tools prompt us to ask?

these costly investments of time, energy, and output when we evaluate digital scholarship in tenure and promotions cases. But we need to make the distinction between a "contribution" for the sake of evaluation (where the exploratory nature of our work often impedes our ability to make new discoveries or observations) and an "argument," the traditional format for presenting and interpreting the results of our scholarship. Is a prototype an argument? I think it is not. If we want to move digital humanities into an arena where our work is perceived to be relevant, both by non-humanists and non-digital-humanists alike, we need to start making the arguments about our discoveries—and arguments about (and frank evaluations of) the new questions our programs and visualizations provoke. We need to articulate these to our colleagues, and we need to articulate these to those outside our fields.

I am not saying anything new when I say that text mining, quantitative analysis, and markup do not solve the problem of interpretation, of context, of history, culture, and the material conditions of a work's production. Every digital humanist understands this. A problem that we encounter in reconfiguring the work of the humanities as data-driven, however, in embracing the scientific epistemology of quantitative and empirical modeling of information, in accepting that industry, innovation, and business should drive research, is that these assumptions about knowledge values tend to efface—or at least displace, and certainly defer—the more qualitative humanistic methods and interpretations that have so far distinguished disciplinary research in the humanities. This is not at all to say that quantitative analysis of data does not belong in the humanities; rather, it is to say that quantitative analysis applied to questions about literature, history, culture, and language needs, so often, to be *more* than just the numbers or the visualizations.

This is why, twenty years later, *Agrippa: A Book of the Dead* remains such a powerful exposition of media and knowledge: the various representations of DNA inscribed upon those pages evoke the power of quantification and computer analysis of big data. That genetic code inscribed upon the material body, a code we can count and analyze and upon which we could make conclusions about a life and a body, can never resurrect what we recognize as human: the evocative and ambiguous moment of laughter in the rain. The fact that the genetic sequences in *Agrippa* were transcribed from the Drosophila genome perhaps emphasizes how little the code itself means in comparison to the creative object as a whole: "The intent was never to reproduce a specific sequence in type or images," according to Begos. The messy ambiguities of human experience simply

cannot be counted, ordered into arbitrary hierarchies or schema, and then be made legible. No markup scheme or quantification of this book and the text inscribed on the computer disk inside could tell us about the meaning of this work, either in isolation or as part of a set of a million books. And while Schreibman, Mandell, and Olsen are absolutely right to suggest "This is a period of experimentation with scholarly form, and some of the most useful work will not look like anything else that we recognize as scholarly.… failure is to be expected and valued" (165), we have important arguments to make about the "knowledge economy" and the humanities' contributions to it. How we engage with visualizing and disseminating new knowledge—as subjective, indeterminate, and contingent as ever—remains to be seen. How we claim our position in the so-called knowledge economy remains to be seen. There is no question that we have obstacles to overcome now that books in print are being eclipsed by digital books in all their forms, but we cannot, as Sven Birkerts implored so many years ago, "refuse it." We need to understand and engage with digital books and tools; we need editors; we need to clearly articulate the continued provisionality of the knowledge and tools used in digital humanities studies; we need to see the value in mistakes and discoveries as we encounter "big data"; we need to make explicit arguments about our tools, and about our visualizations of this data; we need to assert our position in the "digital economy," even if it's to say, repeatedly, and obviously, knowledge is more than all that.

Evolution of SSHRC's Digital Research Strategies

ITST program, introduced 2003	**Digital Media Priority Area, introduced 2010**	**Digital Economy Priority Area, introduced 2011**
Digital Research Grant Objectives / Priority Area Expected Outcomes		
• reflect on, interpret, and analyze new digital media, multimedia, and text-based computing technologies, and integrate these into humanities and social sciences research; • bring together theorists, experimentalists, and technologists from different disciplines to	• insights and expertise generated on digital media and its impact on culture, the economy and society; • new digital media, multimedia, and text-based computing tools reflected on, interpreted, analyzed and integrated into humanities and social sciences research;	• deepen our understanding of: ○ the evolving digital economy, its opportunities, challenges, and impacts on society, industry, individuals and the environment; ○ the role of digital technologies and media;

• share and nurture ideas and methods that challenge research to advance through the use of audio-visual and text-based technologies; and • facilitate the creation of national and international networks of, and partnerships ... that will promote and sustain social sciences and humanities research and resources worldwide.	• increased sharing and nurturing of ideas, and methods that advance research through the use of audio-visual and text-based technologies ...; and/or • national and international networks of, and partnerships ... that will promote and sustain social sciences and humanities research and resources worldwide.	○ the changes in behaviour and ways of learning and working that would optimize benefits for Canadians; and ○ how to position Canada in a global context; • inform policy and actions through evidence, analysis, and insights on key issues and problems, including how policy and regulatory frameworks affect citizen integration in the digital economy and business competition, investment and innovation in key sectors; • promote engagement in research and sustained relationships with policy-makers, practitioners, professional associations, community organizations, and end users of research; and/or • provide new research insights on individuals and their societies through the creation and use of digitized content (text, graphics and images, audio, video) as a method of research inquiry and through innovation in research.

Possible topics and areas to be addressed / Potential lines of inquiry		
• electronic editing and publishing; • e-literature; • Web programming; • immersive and virtual environments in multimedia research; • textual analysis; • 3D imaging technology; • creativity, culture, and computing; • digital image design; • information aesthetics; • computer gaming; and • knowledge transfer of research results to fellow researchers, decision-makers and the public at large. (SSHRC, "Image, Text, Sound and Technology Research Grants")	n/a (SSHRC, "Priority Area: Digital Media")	• Capacity to innovate using digital technologies • Building a world-class digital infrastructure • Growing the information and communications technology industry • Creating Canada's digital content advantage • Building digital skills for tomorrow • Research in the digital era (SSHRC, "Priority Area: Digital Economy")

Works Cited

Annas, Julia, and Jonathan Barnes, eds. *SextusEmpiricus: Outlines of Scepticism*. Second edition. Cambridge: Cambridge UP, 2000.

Ashbaugh, Dennis, William Gibson, and Kevin Begos, Jr. *Agrippa (a book of the dead)*. New York: Kevin Begos Publishing, 1992.

Birdsall, William. "Policy and Participation on the Information Highway." *First Monday* 4.3 (1999). http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/653/568.

Birkerts, Sven. *The Gutenberg Elegies: The Fate of Reading in an Electronic Age*. Boston: Faber and Faber, 1994.

Bolter, Jay David. *Writing Space: The Computer, Hypertext, and the History of Writing*. New York: Routledge, 1991.

Clinton, William, and Albert Gore. *Technology for America's Economic Growth, A New Direction to Build Economic Strength*. Washington: White House, 1993. 22 March 1993. www.eric.ed.gov/PDFS/ED355929.pdf.

Coover, Robert. "The End of Books." *New York Times Book Review*. 21 June 1992: 1, 23–25.

Crane, Gregory. "What Do You Do with a Million Books?" *D-Lib Magazine* 12.3 (2006). www.dlib.org/dlib/march06/crane/03crane.html.

DeLisi, Charles. "The Human Genome Project: The Ambitious Proposal to Map and Decipher the Complete Sequence of Human DNA." *American Scientist* 76.5 (1988): 488–93.

Eisenstein, Elizabeth L. "The End of the Book? Some Perspectives on Media Change." *American Scholar* 64.4 (1995): 541–55.

Gibson, William. *AGRIPPA (A Book of The Dead).* www.williamgibson-books.com/source/agrippa.asp.

Human Genome Project. "Understanding Our Genetic Inheritance. The First Five Years: Fiscal Years 1991–1995." (National Institutes of Health, 1990). www.genome.gov/100014777.

Industry Canada. *Improving Canada's Digital Advantage: Strategies for Sustainable Prosperity*. 2010. http://publications.gc.ca/collections/collection_2010/ic/Iu4-144-2010-eng.pdf.

———. *Preparing Canada for a Digital World: Final Report of the Information Highway Advisory Council*. September 1997. http://web.archive.org/web/19990117001335/http://strategis.ic.gc.ca/SSG/ih01650e.html.

———. *The Canadian Information Highway: Building Canada's Information and Communications Infrastructure.* April 1994. http://web.archive.org/web/20000816065044/http://strategis.ic.gc.ca/SSG/ih01091e.html.

Killheffer, Robert K. J. "Interview with William Gibson." *Publishers Weekly* 240.36 (6 September 1993): 70–71.

Lanham, Richard. "The Electronic Word: Literary Study and the Digital Revolution." *New Literary History* 20.2, issue on "Technology, Models, and Literary Study" (1989): 265–90.

Liu, Alan. "This is Not a Book: Long Forms of Shared Attention in the Digital Age." Presented at the "Unbound Book Conference," The Hague. 20 May 2011. http://e-boekenstad.nl/unbound/index.php/media/session-2-unbound-book/#unique-indentifier.

———. "The End of the End of the Book: Dead Books, Lively Margins, and Social Computing." *Michigan Quarterly Review* 48, special issue on "Bookishness: The New Fate of Reading in the Digital Age" (2009): 499–520. http://quod.lib.umich.edu/cgi/t/text/text-idx?c=mqr;c=mqrarchive;view=text;rgn=main;idno=act2080.0048.404;cc=mqr;xc=1;g=mqrg.

Liu, Alan, Paxton Hehmeyer, James Hodge, Kimberly Knight, David Roh, and Elizabeth Swanstrom, eds. *The Agrippa Files*. 9 December 2005. http://agrippa.english.ucsb.edu. For references to particular materials, see the itemized inventory: http://agrippa.english.ucsb.edu/category/study-tools-subcategories/item-inventory.

McGann, Jerome. *Radiant Textuality: Literature After the World Wide Web*. New York: Palgrave Macmillan, 2001.

McLuhan, Marshall. Interview by Alan Millar. *Explorations*. CBC. 18 May 1960. www.cbc.ca/archives/categories/arts-entertainment/media/marshall-mcluhan-the-man-and-his-message/world-is-a-global-village.html. 23 January 2012.

Moretti, Franco. *Graphs, Maps, Trees: Abstract Models for a Literary History.* London: Verso, 2005.

Muri, Allison. "Virtually Human: The Electronic Page, the Archived Body, and Human Identity." *The Future of the Page*. Eds. Peter Stoicheff and Andrew Taylor. Toronto: University of Toronto Press, 2004. 231–54.

National Endowment for the Humanities. "Institutes for Advanced Topics in the Digital Humanities [Program Description]." www.neh.gov/files/grants/advanced-topics-digital-humanitites-march-6-2012.pdf.

Nunberg, Geoffrey. "The Places of Books in the Age of Electronic Reproduction." *Representations* 42, special issue on "Future Libraries" (1993): 13–37.

Nunberg, Geoffrey, ed. *The Future of the Book*. Berkeley: University of California Press, 1996.

SSHRC. "Eight international funders announce the winners of the 2011 Digging into Data Challenge." 3 January 2012. www.sshrc-crsh.gc.ca/news_room-salle_de_presse/press_releases-communiques/2012/data_winners-gagnants_des_donnees_numeriques-eng.aspx.

———. "Digital Economy." 11 July 2012. www.sshrc-crsh.gc.ca/funding-financement/programs-programmes/priority_areas-domaines_prioritaires/digital_research-recherche_numerique-eng.aspx.

———. "Digital Economy: Research in the digital era." 12 July 2012. www.sshrc-crsh.gc.ca/funding-financement/programs-programmes/priority_areas-domaines_prioritaires/digital_research_6-recherche_numerique_6-eng.aspx.

———. "Digital Economy: Creating Canada's digital content advantage." 12 July 2012. www.sshrc-crsh.gc.ca/funding-financement/programs-programmes/priority_areas-domaines_prioritaires/digital_research_4-recherche_numerique_4-eng.aspx.

———. "SSHRC News." 5 May 2011. www.sshrc-crsh.gc.ca/news_room-salle_de_presse/latest_news-nouvelles_recentes/sshrc_news_may_2011-nouvelles_crsh_mai_2011-eng.aspx.

———. "Priority Area: Digital Media." 16 July 2010. http://web.archive.org/web/20101001003206/http://www.sshrc-crsh.gc.ca/funding-financement/programs-programmes/priority_areas-domaines_prioritaires/digital_research-recherche_numerique-eng.aspx.

———. "Image, Text, Sound, and Technology Research Grants." 17 June 2010. http://web.archive.org/web/20100707102618/http://www.sshrc-crsh.gc.ca/funding-financement/programs-programmes/itst/research_grants-subventions_recherche-eng.aspx.

Taylor, Alex, and Susan Caminiti. "Kodak Scrambles to Refocus." *Fortune Magazine* (3 March 1986). http://money.cnn.com/magazines/fortune/fortune_archive/1986/03/03/67214/index.htm.