Articles

The Documentary Moment in the Digital Age: Establishing New Value Propositions for Public Memory*

DANIEL J. CARON and RICHARD BROWN

RÉSUMÉ Nos vies sont sans cesse documentées par la surveillance et la *sousveillance*; de façon constante et instantanée, nous documentons aussi nos activités au travail, nos moments de loisir, nos conversations publiques et privées et nos relations professionnelles et sociales. Devant l'abondance de cette production et consommation de l'information surgissent deux questions de base liées à la conservation actuelle et continue des ressources de l'information et du savoir : quelle est la pertinence des professionnels de l'information dans une telle société à forte intensité d'information? Comment cette pertinence se manifestera-t-elle? Ce texte explore certains aspects de ces questions en lien avec le processus de la mémoire, plus particulièrement le moment précis dans le continuum de l'espace et du temps où des communautés deviennent conscientes de l'instabilité, de la fragilité et de la nature éphémère de la mémoire et où elles se confrontent à cette réalité. C'est le moment où les collectivités doivent enfin – de façon délibérée et consciente – s'engager dans la préservation de l'information, d'abord comme capital social et économique, et ensuite comme un bien civique accessible de la mémoire publique, capable de donner un sens à long terme à la société. Afin de mieux cibler cette question, ce texte se penche sur la nature et les dimensions de l'expérience critique de prise de décision, ce que plusieurs professionnels de l'information appelleraient typiquement l'évaluation ou l'acquisition, mais que nous nommerons le *moment documentaire*.

Notre vision du moment documentaire à l'ère numérique est que les archives et les archivistes, en lien avec d'autres – travaillant dans le domaine des ressources d'information traditionnelles ou à l'extérieur – peuvent continuer à jouer des rôles importants et à s'acquitter de responsabilités clés tant maintenant qu'à l'avenir. Les auteurs explorent l'option de mettre l'accent sur le bien public et sur la préservation de nos biens civiques fondamentaux – les documents originaux de nos décisions et de nos actions, l'information contenue dans nos livres et nos ressources documentaires dans d'autres médias, ainsi que nos artefacts – qui sont nécessaires pour qu'une société puisse articuler, exprimer et partager des buts, des suppositions, des valeurs et des éthiques communs; de fournir aux individus et aux groupes les capacités

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d'alphabétisation sociale nécessaires pour leur permettre une participation démocratique dans des communautés; et d'assurer une administration publique imputable et une gouvernance responsable sous l'État de droit. Ce texte porte donc réellement sur l'identification et la préservation de la *causa materialis* documentaire de la société.

ABSTRACT Our lives are constantly recorded through surveillance and *sousveillance*; we also continuously and instantaneously record ourselves at work, at play, in public and private conversation, and in our business and social relationships. In the midst of all this production and consumption of information, two basic questions are emerging in relation to the current and continuing preservation of information resources and knowledge: What is the relevance of information professionals in such an information-laden and information-intensive society? How will this relevance be manifested? This essay explores aspects of these questions with reference to the seamless moment of time and space within the remembering process when communities become aware of, and confront, the instability, fragility, and ephemeral nature of memory. This is when collectivities must finally – very deliberately and self-consciously – invest in, and provide for, the preservation of information initially as a social or economic asset, and subsequently, as an accessible civic good of public memory bringing meaning to society over time. To focus the discussion, the essay reflects upon the nature and dimensions of the critical decision-making experience, what many information professionals would typically term appraisal or acquisition, but what we will call the *documentary moment*.

Our sense of the documentary moment in the digital age is that archives and archivists, in conjunction with others – those within and beyond traditional information resource domains – can continue to play prominent roles and fulfill key responsibilities both now and into the future. This essay will explore the option to focus on the public endowment and preservation of our foundational civic goods – the original documents of our decisions and actions, and the information in our books and other documentary media and artifacts – that are required within society to articulate, express, and share common goals, assumptions, values, and ethics; to provide individuals and groups with the capacities of social literacy necessary to enable their democratic participation within communities; and to ensure accountable public administration and responsible governance under the rule of law. In effect, this essay is about the identification and preservation of society's documentary *causa materialis*.

Introduction

Today, we live in a world that is becoming quintessentially self-documenting. Our lives are constantly recorded through surveillance and *sousveillance*; we also continuously and instantaneously record ourselves at work, at play, in public and private conversation, in our business and social relationships (Twitter, Facebook, MySpace, YouTube, etc.). Our society has become fully

conscious and aware of information as a social,[1] economic,[2] and memory utility,[3] and moreover, information resource processing and media literacy[4] have become fundamental to learning, knowledge, and progress.[5] As individuals, groups, and organizations, we create, provide, ingest, and store information[6] at previously unimagined rates and levels, and, collectively, we are voracious information resource producers and consumers. Now, in the midst of all this production and consumption, two basic questions are emerging in relation to the current and continuing occupational relevancy of the professions (and their institutions) traditionally associated with the cultural management and preservation of information resources and knowledge, i.e., archivists, librarians, and

1 The social utility of information has become a subject and terrain of major "substance and complexity." See Robin Mansell, *The Oxford Handbook of Information and Communications Technologies* (Oxford, UK, 2007), p. 18. In this field of study, one of the seminal statements that has contributed to, and influenced, the development of this paper is provided by Peter Drucker in his essay, "The Age of Social Transformation" originally published in *The Atlantic Monthly* (November 1994). From the early days of McLuhan, Drucker, Bell, Machlup, etc., a critical mass of scholarship has now accumulated around the notion of "information" as a knowledge resource and a socio-economic enabler. Excerpts of this scholarship have been recently assembled and presented in an encyclopedic collection with a critical introduction in Robin Mansell, ed., *The Information Society*, 4 vols. (New York, 2009).

2 See for example the following reports: Industry Canada, "Improving Canada's Digital Advantage Strategies for Sustainable Prosperity," in *Consultation Paper on a Digital Economy Strategy for Canada* (Ottawa, 2010), http://de-en.gc.ca/wp-content/uploads/2010/05/Consultation_Paper.pdf (accessed on 5 May 2010); Organization for Economic Cooperation and Development (OECD), *Shaping Policies for the Future of the Internet Economy* [Report prepared for the OECD Ministerial meeting on the Future of the Internet Economy taking place in Seoul on 17–18 June] (Paris, 2008), http://www.oecd.org/dataoecd/1/29/40821707.pdf (accessed on 11 November 2008); OECD, *Digital Broadband Content: Public Sector Information and Content* [Directorate for Science, Technology and Industry, Committee for Information, Computer and Communications Policy, Working Party on the Information Economy, No: DSTI/ICCP/IE/(2005)2/FINAL] (Paris, 2006).

3 D.J. Caron, *Shaping our Continuing Memory Collectively: A Representative Documentary Heritage* (Ottawa, 2010), http://www.lac-bac.gc.ca/lac/012007-1000.001-e.html (accessed on 31 May 2010).

4 D.J. Caron, *Memory, Literacy and Democracy* [Speech given 11 March 2010 at the National Arts Centre, Ottawa] (Ottawa, 2010), http://www.lac-bac.gc.ca/lac/012007-1000.002-e.html (accessed on 3 June 2010).

5 See for example: W.H. Dutton, Brian Kahin, Ramon O'Callaghan, and Andrew W. Wyckoff, eds., *Transforming Enterprise: The Economic and Social Implications of Information Technology* (Cambridge, MA, 2005), in particular, W.H. Dutton, "Continuity or Transformation? Social and Technical Perspectives on Information and Communication Technologies," pp. 13–24.

6 See D. Coldewey, "NSA to Store Yottabytes of Surveillance Data in Utah Megarepository," *Crunchgear* (1 November 2009), http://www.crunchgear.com/2009/11/01/nsa-to-store-yottabytes-of-surveillance-data-in-utah-megarepository/ (accessed on 31 May 2010); and E. Nakashima, "DHS Cybersecurity Plan Will Involve NSA, Telecoms," *The Washington Post* (3 July 2009), http://www.washingtonpost.com/wp-dyn/content/article/2009/07/02/AR2009070202771.html (accessed on 31 May 2010).

curators.[7] These are: What is the relevance of these information professionals in such an information-laden and information-intensive society? How will this relevance be manifested?

This essay explores aspects of these questions with reference to an experience familiar to all archivists: the seamless moment of time and space within the remembering process when communities become aware of, and confront, the instability, fragility, and ephemeral nature of memory. This is when society must make decisions about the communication, capture, treatment, and management of its information resources in relation to perceptions or understandings of their continuing purpose, value, utility, impact, or legacy. This is when "collectivities" must finally, very deliberately and self-consciously, invest in, and provide for, the preservation of information initially as a social

7 This paper is written from the perspective that sees memory institutions (e.g., libraries, archives, museums, galleries, etc.) and those working within them, as situated within a broad societal context. In order to enrich the understanding and development of the role and function of memory institutions in society, this paper supports the premise that knowledge and awareness of the principles of critical theory, must be embedded in the theoretical foundations underpinning memory institutions, and re-articulated in new theoretical frameworks as a means to provide a solid theoretical foundation from which to inform the *raison d'être* of memory institutions, and enhance the relevance of their business practices, so as to ensure their continuing relevance to the societies in which they are situated.

The paper builds upon the concepts developed as part of the Government of Canada Assistant Deputy Minister Task Force on Recordkeeping (chaired by Library and Archives Canada), to develop a standardized, yet customizable, regime based on record-keeping documentation standards and the identification of the business value of information resources in the Government of Canada, to support Deputy Minister accountabilities, and improved business performance. Drawing on this initiative, this paper supports the premise that archivists, librarians, and curators are equally engaged and responsible for information resource development and management in society. The paper employs the definition of *information resources* as defined in the Government of Canada's *Directive on Recordkeeping* (Ottawa, 2009), that is, "Any documentary material produced in published and unpublished form regardless of communications source, information format, production mode or recording medium. Information resources include textual records (memos, reports, invoices, contracts, etc.), electronic records (e-mails, databases, internet, intranet, data, etc.), new communication media (instant messages, wikis, blogs, podcasts, etc.), publications (reports, books, magazines), films, sound recordings, photographs, documentary art, graphics, maps, and artefacts."

Moreover, it should be noted that this paper does not distinguish between information in general, and information as documentary evidence. Rather, it employs the term *information resources of business value* as defined in the Government of Canada's *Directive on Recordkeeping*, in other words, "published and unpublished materials, regardless of medium or form, that are created or acquired because they enable and document decision-making in support of programs, services and ongoing operations, and support departmental reporting, performance and accountability requirements." Within this context, archival value constitutes a subset of the continuum of the business value of records. See also Library and Archives Canada, "Appendix III: Record Keeping Value Continuum" found on the LAC website at http://www.lac-bac.gc.ca/government/news-events/007001-5103-e.html (accessed on 31 May 2010).

or economic asset, and subsequently, as an accessible civic good of public memory bringing meaning to society over time.

To focus our discussion, we will reflect upon the nature and dimensions of this critical decision-making experience, what many archivists would typically term appraisal or acquisition, but what we will call the *documentary moment*. In particular, we would like to relate the concept of the documentary moment to the construction of public memory by dedicated institutions within the digital environment.

The Evolution of the *Documentary Moment*

Until very recently, memory institutions like archives have exercised a *de facto* monopoly over the constitution and mediation of public memory; the operating circumstances of this monopoly have largely allowed archives to approach the identification, appraisal, and preservation of heritage information resources as post-creation or post-production memory functions. Generally, archivists have been able to wait – sometimes for very long periods of time – until after information has been created or produced and used before applying methodologies, typologies, and criteria to determine its potential status and value as a component of public memory.

Through the course of the twentieth century and beyond, a variety of appraisal strategies has emerged, including the application of value taxonomies[8] to "information products" and forms of structural functional and documentary analysis of information creators and their "production contexts."[9] Among the most sophisticated concepts with successful applications have been documentation strategy, and especially, macroappraisal.[10] Typically,

8 In this paper the term "value taxonomies" refers to the determination of the archival or historical value of government records based on intrinsic information criteria inherent in the records themselves. In North America and elsewhere, the seminal and most cogent expression of these criteria was developed by American archivist Theodore Schellenberg in the 1950s and early 1960s, whose thinking and ideas influenced the content of many of the appraisal manuals produced in the United States and elsewhere during the 1970s and after. Principally, Schellenberg's value taxonomy (*Modern Archives: Principles and Techniques* [Chicago, 1956] pp. 133–160) proposes evidential, informational, historical research, legal, fiscal, and other secondary values, even including their apparent "intrinsic" value, as indicators of archival value, rather than, as is asserted in this paper, archival value as constituting part of the continuum of the business value of records (i.e., their primary administrative value as business records to an organization).

9 Much of this is conveniently and critically summarized in Terry Cook's fine essay, "What is Past is Prologue: A History of Archival Ideas Since 1898, and the Future Paradigm Shift," *Archivaria* 43 (Spring 1997), pp. 17–62.

10 The literature on documentation strategy is too substantial to reference in detail here; see the summary by Doris J. Malkmus, "Documentation Strategy: Mastodon or Retro-Success?" *The American Archivist*, vol. 71, no. 2 (Fall/Winter 2008), pp. 384–409. The literature on macroappraisal is similarly vast. Aside from the many articles on the subject by Terry Cook,

these approaches have been conceived to enable memory institutions to satisfy roles and responsibilities around the provision of continuously evolving memory capacity as a public good; arguably and with few exceptions, most of them represent *post facto* forms of cultural or historical mediation. In effect, the substance of their declarations have largely been framed and purposed within cultural models of interpretation, or what might loosely be called the development of "historical memory." In this sense, they have often been culturally subjective and constructive within the nature of their intention and intervention,[11] and coincidentally, conceptually formulated from the perspective of hindsight, even in instances where memory value is either to be anticipated or predicted through research and analysis.

The application of hindsight to the appraisal of information resources in the determination and construction of public memory has been possible for several reasons. First, the information resources under examination have been analog, i.e., information communicated via physical media and objects (e.g., books, textual documents, photographs, audio-visual recordings) that have relative durability and stability over time. While these media will not necessarily last forever – even paper has its limitations – and conservation technique is required to maintain stability in the longer term, there is an interval of survivability *de facto* encoded into analog media, which permits a hindsight vantage point. Second, the volume of the information resources available for memory consideration has been comparatively limited to the extent that there have been opportunities for institutions to let the passage of time factor into the notion of memory value; or there has been time to undertake granular investigations of their potential utility according to taxonomies of subjective and ostensibly objective criteria;[12] or else there has been time to research and analyze creator contexts and corresponding information production and to ruminate upon,

who pioneered the macroappraisal approach at the former National Archives of Canada (now Library and Archives Canada), see also: Richard Brown, "Macro-Appraisal Theory and the Context of the Public Records Creator," *Archivaria* 40 (Fall 1995), pp. 121–72; and the special volume of *Archival Science* (nos. 2–4, 2005) on macroappraisal, in particular, Candace Loewen, "Accounting for Macroappraisal at Library and Archives Canada: From Disposition to Acquisition and Accessibility," pp. 239–59 and Terry Cook, "Macroappraisal in Theory and Practice: Origins, Characteristics, and Implementation in Canada, 1950–2000," pp. 101–161; see also John Roberts, "Macroappraisal Kiwi Style: Reflections on the Impact and Future of Macroappraisal in New Zealand," *Archival Science* 5 (2005), pp. 185–201.

11 "As memory institutions, archives preserve what society deems worthy to remember; this is not universal across time and space." See J. Schwartz, "'We Make Our Tools and Our Tools Make Us': Lessons from Photographs for the Practice, Politics, and Poetics of Diplomatics," *Archivaria* 40 (Fall 1995), p. 62.

12 "Examples of historians who have ordered archival documents to their own devices, and mechanics of one kind or another who have schematized order and destroyed integrity, are not hard to find." See Terry Eastwood, "What is Archival Theory and Why is it Important?" *Archivaria* 37 (Spring 1994), p. 127.

and arrive at, acquisition conclusions. Alternatively, some memory institutions have decided not to make any decisions about the memory value of information resources by simply engaging in comprehensive collecting within specified domains, or by announcing their institutional intention to do so as an organizational declaration of public memory default.[13] This kind of non-discriminatory approach to acquisition has been considered entirely feasible within the analog environment.

The identification, appraisal, selection, and declaration of analog information resources as civic goods of public memory – in the broadest sense – have essentially been conducted within a long documentary moment of decision making largely because of their relative endurability and limited volume. These activities have mostly taken place within an anachronistic time and space, in some instances, four or more evolutionary stages away from the first contexts of their human agency or intention (i.e., the identification, appraisal, selection, and declaration of analog information resources is far removed from what could be called the social sequence of their original significations of situation, experience, and meaning). Within this "long moment" of anachronism, and considering the corresponding literature and ongoing debates, it is fair to say that memory institutions and archivists have struggled with the concept of memory value, the identification and selection of memory content, and the creation of appropriate memory preservation methodology and criteria.[14] Addressing these questions and issues has been exacerbated by the fact that there is no universally accepted archival appraisal theory to frame these challenges, only local domain theory and practice.

This is not so surprising. With the original "event horizons" and social contexts faded or fading over variable periods of time, and corresponding information resources inevitably filtered through various treatments and interventions (i.e., writing, reading, storing, arranging, describing, organizing, explaining, interpreting, historicizing),[15] a myriad of factors, interpretations,

13 The Library of Congress' analog collection development policy has carried over into the digital age. See Library of Congress, "Twitter Donates Entire Tweet Archive to Library of Congress" (15 April 2010), http://www.loc.gov/today/pr/2010/10-081.html. Also, their Digital Preservation Program is undertaken in collaboration with multiple stakeholders, including archival and academic institutions; see http://www.digitalpreservation.gov/partners/partners_alpha.html#n (both accessed on 19 April 2010).

14 For decision analysis concepts relating to memory, see Jean-Paul Metzger, "Temps, mémoire et document," in *Problématiques émergentes dans les sciences de l'information*, ed. Fabrice Papy (Paris, 2008), pp. 87–109; and D. Fallis and D. Whitcomb, "Epistemic Values and Information Management," *The Information Society: An International Journal*, vol. 25, no. 3 (2009), pp. 175–89, http://sirls.arizona.edu/files/14/TIS_fallis_whitcomb.pdf (accessed on 11 December 2009).

15 See Part IV of G. Pessach, "[Networked] Memory Institutions: Social Remembering, Privatization and its Discontents," *Cardozo Arts and Entertainment Law Journal*, vol. 26, no. 1 (2008), pp. 73–149, http://www.cardozoaelj.net/issues/08/pessach.pdf (accessed on 11

opinions, and views are possible, especially when they are being considered primarily within cultural or historical frameworks.[16] In fact, some institutions have simply resorted to collecting and organizing information sediment about society as comprehensively as possible within the scale and means of their capacity, or they have developed *ad hoc* criteria of public memory value on a generational basis linked to existing *post facto* orthodoxies of contemporary understanding and/or current user interests. Not only has the documentary moment become very long in memory institutions owing to its largely interpretive and cultural context of operation, but the perception of the intervention as something entirely monumental and fundamentally complex has necessarily positioned institutional decision making around the constitution of public memory within rigorously detailed examinations of memory residue through selection and other processes.

Whether or not these long, contemplative approaches to the documentary moment and its related strategies and methodologies have served public memory well in the past is not at issue here, and opinions would vary on this point in certain instances of application. More immediately important from our perspective is that the arrival of the digital age has completely transformed the contextual phenomena previously associated with the documentary moment, contracted or reshaped its contemplative time-space, and brought many new factors forward into our decision making around memory value.[17] In the process, the digital age has effectively undermined many of our assumptions and approaches around the construction and constitution of public memory. In other words, the circumstances and the environment of the documentary moment have substantially changed to the extent that some of our former value propositions and acquisition outcomes are no longer appropriate.

This would include the option of simply collecting information resources.[18] For example, initial attempts to apply analog collecting strategies to cyberspace – typically in the form of web-harvesting – are already being called into question for a variety of reasons; memory institutions are now beginning to recognize the enormously complex scope and scale of the paradigm shift

December 2009).

16 See Jan Assmann, "Collective Memory and Cultural Identity," (2006), http://www.fritzbauer-institut.de/gastprofessur/weissberg/06_Jan-Assmann.pdf (accessed on 11 December 2009) and Catherine Belsey, "Reading Cultural History," in *Reading the Past: Literature and History*, ed. Tamsin Spargo (Palgrave, 2000), pp. 103–117.

17 See concepts of power structures within a networked society in Manuel Castells, *Communication Power: Communication in the Digital Age* (Oxford, UK, 2009), and also Christian Fuchs, "Some Reflections on Manuel Castells' Book 'Communication Power'," *tripleC - Cognition, Communication, Co-operation*, vol. 7, no. 1 (2009), pp. 94–108.

18 As signaled by Richard Cox in "The End of Collecting: Towards a New Purpose for Archival Appraisal," *Archival Science* 2 (2002), pp. 287–309.

represented by the transition from analog to digital communication.[19] Indeed, the first institutional encounters and attempts to grapple with the Internet as a very large series of publications – because the information involved was ostensibly in the public domain, and websites were initially considered to be published manifestations of information resource – both fundamentally misread and misunderstood the communications ethos of the Web as a completely new information environment and social dimension, and could not relate and adapt a memory collecting mind-set to its almost constant state of evolution and metamorphosis. Moving forward, both the dynamic nature of the new "memory marketspace"[20] within networks and digital transformation require a new form of memory archaeology focused on the documentary excavation of contemporary non-physical sites, environments, and networks continuously producing and streaming live information, knowledge, and cultural resources in "timeless cyberspace."[21]

In the digital world, the documentary moment is entirely active, strategic and present in the immediate "now," yet it potentially also projects and elongates – rather than simply contracts – its time and space forward into continuous decision making and provisioning for preservation, i.e., things may not be as conceptually or contextually straightforward as they might initially appear. In their analysis of cyberspace and its "infosphere," for example, some observers have noted a transition wherein memory as "registration and timeless preservation" (the Platonic view) is being replaced by "memory as accumulation and refinement," notably in the Participatory Web 2.0 and Cloud Computing environments. In these environments, time adds value, and information resource applications typically "get-better-by use," improve with age, or in some instances they diminish in value, the nature and context of value being

19 For example: National Archives and Records Administration (NARA), "Web Harvest Background Information," (15 April 2008), http://www.archives.gov/records-mgmt/memos/nwm13-2008-brief.html (accessed on 18 April 2008).

20 Drawing on the use of the term "marketspace" as coined by Jeffrey F. Rayport and John J. Sviokla ("Managing in the Marketspace," *Harvard Business Review*, vol. 72, no. 6 [Nov/Dec 1994], pp. 141–50), to distinguish between electronic and conventional markets. In a marketspace, information and/or physical goods are exchanged, and transactions take place through computers and networks. In this paper the phrase "memory marketspace" indicates the availability and transaction of "memory" in a virtual, computer network, rather than that of a physical, analog one.

21 Luciano Floridi, "The Semantic Web vs. Web 2.0: A Philosophical Assessment," *Episteme* 6 (2009), pp. 25–37; L. Floridi, "Information Ethics: On the Theoretical Foundations of Computer Ethics," *Ethics and Information Technology*, vol. 1, no. 1 (1999), pp. 37–56; L. Floridi, "Understanding Information Ethics," *APA Newsletter on Philosophy and Computers*, vol. 7, no. 1 (2007), pp. 3–12; and L. Floridi, "On the Intrinsic Value of Information Objects and the Infosphere," *Ethics and Information Technology* 4 (2002), 287–304. See also, notes 1 and 17.

of participatory dimension rather than linear in evolution.[22] Alternatively, Web 1.0 and the Semantic Web are considered "time unfriendly" in terms of knowledge and memory potential within their corresponding information space and time because of their inherently static and artificial nature. The evolution of the Web in the space-time context of memory is highly complex and enormously challenging. When and where will archivists and institutions intervene in the interests of continuing memory preservation? Are such memory interventions by archivists or others actually required? If yes, what kind of interventions? None of these questions are especially new, but we must now address them in practical terms.

Let us have a very brief look at some of the other elements and factors redefining and reshaping the space and time of the documentary moment in the digital age, and how these will potentially impact and influence the composition and preservation of the civic goods constituting public memory in the future.

Social Transformation

First, a broad merger of technology, economics, information, organizations, and people is leading to social transformation and fundamental changes in the perception and utilities of information and knowledge.[23] The economic and social dimensions of this convergence are clearly of a systemic nature, with information and communications technology as the common economic denominator and social enabler. In effect we are witnessing the transactions of human activity in all of their variable forms transitioning from a physical to a non-physical dimension of social communication within networks.[24]

For memory institutions, among the most significant impacts of this socio-technology convergence are the increasing demands for information resources

22 See note 21.

23 Both John Law and Langdon Winner offer compelling views into the relationship between technological innovation and social development. Winner proposes a framework based on the political nature of technology, and presents valid insights into the role power plays in technological systems. Law takes a more network-based approach in a discussion of heterogeneous engineering, and applies the principle of generalized symmetry to system elements. See John Law, "Technology and Heterogeneous Engineering: The Case of Portuguese Expansion," in *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*, eds. Wiebe Bijker, Thomas P. Hughes, and Trevor Pinch (Cambridge, MA, 1987), pp. 111–34; and Langdon Winner, "Do Artifacts have Politics?" in *The Whale and the Reactor: A Search for Limits in an Age of High Technology* (Chicago, 1986), pp. 19–39.

24 A comprehensive introduction to the socio-economic contexts and implications of "networks," briefly intimated at within this paper, is provided by Manuel Castells, "The Information Age: Economy, Society and Culture," in *The Rise of the Network Society*, vol. 1, 2nd ed. (Oxford, UK, 2000).

and their corresponding commodification and commercialization within a new information resource marketspace; new sets of consumer expectations around the timely accessibility of information resources; a massive proliferation of information service providers and distributors; and the removal of traditional information resource filters and their substitution with networks of information resource intermediaries, consumers and "prod-users" (or "produmers").[25] This new information resource environment is both redistributing and complicating the development of public memory far beyond the confines and semantics of analog information resource intelligence and learning experience. It is shifting the context of information resource and memory development from relatively formal, controlled, and ordered relationships to the informal, uncontrolled, disordered, experiences and unlimited communications relativity of cyberspace. And it has effectively ended the public memory monopoly once exercised by archives, libraries, museums, and others.

Part of this new complexity is linked to the nature and dimensions of information itself, insofar as the innovation of digital media and networks is also transforming information. In some limited circumstances, older, traditional forms remain constant and intact, but most of our familiar modes and means of information and communication are undergoing a metamorphosis, and assuming new capacities and utilities. We are also witnessing the genesis and proliferation of wholly new forms of information production and media with no foreseeable innovation end in sight.[26]

The primary issue is that archives have little or no experience with "rich" communications and social media, neither in terms of the technology involved, nor in terms of the documentary products being produced, including: their characteristics; the extent of their distribution or the nature of their repurposing or reuse; and especially not in terms of the potential memory value of the information resource inputs and outputs. To put it simply, there are really no precedents or antecedent reference points for memory value within the digital context of social media. At the same time, archives are beginning to recognize that: (1) the world of information and communication has almost entirely transitioned into the transactional marketspace of the Internet; and (2) the public memory of contemporary society is also in the process of vacating traditional media to now largely reside in its immediate and corresponding cyberspace. If – given the volume and ubiquitous nature of digital information – selecting, or collecting, or other analog memory strate-

25 Christian Fuchs, "Internet and Society: Social Theory in the Information Age," in *Routledge Research in Information Technology and Society* 8 (2008); T.R. Schatzki, *The Site of the Social: A Philosophical Account of the Constitution of Social Life and Change* (University Park, PA, 2002).

26 Lawrence Lessig, *Remix: Making Art and Commerce Thrive in the Hybrid Economy* (New York, 2008).

gies are not viable or feasible within cyberspace, how will institutions adapt and continue to evolve their public memory interventions?

Information Creators and Sources

We are also experiencing fundamental change in the relationships between people and information. One of the most significant changes concerns the number of creators actually creating, producing, and distributing information both as a commodity and as a resource, and the impact this is having upon the evolution of public memory. In information resource development terms, in less than twenty years we have moved from a monopoly of information production and mediation to a virtual oligarchy (first generation Internet information service providers, such as Microsoft, Apple, Yahoo, Google, Amazon, etc.) to a "here comes everybody"[27] democracy enabled by social media, in which a very large percentage of the population is participating and collaborating in the creation, production, and consumption of digital information. We have also moved simultaneously into machine-generated information sources and resources through self-directed and artificially intuitive *tagging and linking* utilities within networks, both not only creating new, but also manufacturing and repurposing, ubiquitous information as information resource derivatives.[28]

Transformation is also occurring within the confines of the traditional and familiar relationships between people and information long established in the intrinsic nature of analog media, and the modality of our interactions with them as basic sources and filters of information, mediation, and meaning. Advances in information and communications technologies are fundamentally altering the way people think about, understand, interpret, assign meaning to, create, use, produce, exchange, receive, store, and provide information.[29] Individuals are also re-adapting – both disconnecting and reconnecting – the way they gain access to each other and to an enormous variety of information, services, and technologies offered by business, government, and communities through networks. Within these processes of social transformation and socio-technology convergence, the distinctions of significance, authority, meaning, and value that have been previously assigned to, or established, between information resources based on their status or provenance – for example, whether

27 Clay Shirky, *Here Comes Everybody: The Power of Organizing Without Organizations* (New York, 2008).

28 For a broader discussion on this topic, see Clay Shirky, "Ontology is Overrated: Categories, Links, and Tags" (2005), www.shirky.com/writings/ontology_overrated.html (accessed on 10 March 2010).

29 David Weinberger, *Everything is Miscellaneous: The Power of the New Digital Disorder*, 1st ed. (New York, 2007).

information is published or unpublished – or the nature of the communications medium in which it is transmitted or distributed, have all largely become irrelevant to creators, producers, users, and consumers of information in the digital environment. In other words, the value, utility, and mediation of information resources transcend the status, medium, or mode of their creation. In the digital age, communication is primarily about the production and consumption of "information resource," and not about the nature or status of the information resource *container.*

For memory institutions, part of the conundrum is that the diversity and multiplicity of contemporary information generators, producers, sources, and containers provide unprecedented access to sources and voices either previously untapped or heretofore unheard of or unacknowledged, and permit the development of more representative and inclusive public memory across all social sectors. At the same time, the choices are practically unlimited, and the choosing becomes incrementally far more difficult and complicated than it was in the pre-digital era, especially within the epistemological sense of memory context. Two of the great leavening or democratizing impacts of the digital age will certainly have to be addressed. First, it is no longer a given assumption that the source, status, and medium of information constituted in the form and format of its container (e.g., book, document) automatically convey authority and value from contemporary social memory perspectives. In fact, users of new media often simultaneously fulfill roles as readers and authors of text to the extent that the distinction between the author and the public "is about to lose its basic character."[30] Second – and perhaps most important from our perspective as archivists – the capacity of private individuals to blog, post videos to YouTube, or otherwise broadcast details of their lives, thoughts, or experiences complicates the relationship between individuals and collective memory. How do we approach the notion of collective memory within interactive media, and how do we accommodate its increasingly participatory nature?[31]

Coincidentally, the provenance of information resources has also become highly problematic, insofar as it is the contexts established within particular digital domains and networks that invariably provide information with associative qualification and ambience[32] as public knowledge and memory.

30 This oft-quoted phrase originated in Walter Benjamin's 1935 cultural discourse, *Das Kunstwerk im Zeitalter seiner technischen Reproduzierbarkeit* [The Work of Art in the Age of Its Technological Reproducibility, and Other Writings on Media]. The phrase was brought into popularity by the BBC series and book by John Berger, *Ways of Seeing* (London, 1972).

31 H. Jenkins with R. Purushotma, M. Weigel, K. Clinton, and A.J. Robison, *Confronting the Challenges of Participatory Culture: Media Education for the 21st Century*, (New York, 2006).

32 See Peter Morville, *Ambient Findability* (Sebastopol, CA, 2005) for a discussion on ambient findability.

Archivists like to say the "context is all."[33] What are the characteristics of the new ambient creator contexts within networks? Clearly, new value propositions for information resources will need to be developed in relation to the contextual relationships established around information resource development within networks.

Information Volume

The development of new relationships between people and information has also led to some largely unanticipated consequences. Among the most important incidental results of digital innovation is a world of superabundant and largely unstructured and undifferentiated information sources and resources.

The increase in the volume of information is both symptomatic and catalytic of a looming information value crisis.[34] Thanks to the Web and its ever-

33 See Heather MacNeil, "The Context is All: Describing a Fonds and its Parts in Accordance with the Rules of Archival Description," in *The Archival Fonds: From Theory to Practice*, ed. Terry Eastwood (Ottawa, 1992), pp. 195–225; S. Lubar, "Information Culture and the Archival Record," *American Archivist*, vol. 62, no. 1 (1999), pp. 10–22, http://archivists.metapress.com/content/30x5657gu1w44630/ (accessed on 31 May 2010) for a consideration of the intersections of information, culture, and technology in archives; and also, from the perspective of broadening traditional archival concepts on provenance from an individual or institutional perspective, to that of a societal provenance that focuses on the societal dimensions of record creation and archiving, see Tom Nesmith, "The Concept of Societal Provenance and Records of Nineteenth-century Aboriginal–European Relations in Western Canada: Implications for Archival Theory and Practice," *Archival Science*, vol. 6, nos. 3–4 (2006), pp. 351–60, http://www.springerlink.com/content/u7436138x4381417/fulltext.pdf (accessed on 8 October 2010). As concepts of context and provenance expand in a digital environment, opportunities for the range of voices and communities represented in traditional archives (minority, marginal, etc.) also increase. See also emerging work by community archival groups, such as the Community Archives Heritage Group (UK), whose aim is to support and promote community archives, http://www.communityarchives.org.uk/index.aspx (accessed on 28 March 2011). For an exploration of participative archives as a means and methodology for broadening the context of traditional archives to encompass marginalized communities, see Kate Shilton and Ramesh Srinivasan, "Participatory Appraisal and Arrangement for Multicultural Archival Collections," *Archivaria* 63 (Spring 2007), pp. 87–101. For a broader contextual and contemporary understanding of the wider role of information resource development in society, see the work of twentieth- and twenty-first-century critical theorists and their examinations of the functioning of societal structures in relation to the development of information resource management. See Gloria J. Leckie, Lisa M. Given, and John E. Buschman, eds., *Critical Theory for Library and Information Science: Exploring the Social from Across the Disciplines* (Santa Barbara, 2010).

34 The challenges of information overload have been discussed in relation to many time periods, notably: E. Eisenstein, *The Printing Revolution in Early Modern Europe* (Cambridge, UK, 1983), pp. 42–91; J. Carey, "Technology and Ideology: The Case of the Telegraph," in *Communication as Culture* (New York, 2009), pp. 155–77; and C. Shirky's 2008 keynote address at the *Web 2.0 Expo* in New York, "It's Not Information Overload. It's Filter Failure." See also the statistics, analogies, and insights around the notion of information overload in John Palfrey and Urs Gasser, *Born Digital: Understanding the First Generation of Digital*

expanding application and content layers, as well as other affiliated networks, communications links, and broadcast-transmission capacities, the world is now in the midst of what the computing experts are currently calling an "exaflood"[35] (of exabytes), the scope, scale, and dimensions of which are overwhelming regardless of whose calculations one accepts, or the nature of the criteria being used, or in what year the measure was taken. In any instance of explanation or analogy, the productivity is prodigious and continuously accelerating, and there are very few recognized socio-economic or other determinants generally in place to permit information resource differentiation for the purposes of deciding its continuing persistence, preservation, or disposal based on criteria of value. Essentially, the Web represents semantic and epistemological chaos from current public memory perspectives.[36]

Information Preservation and Persistence

Directly linked to the issue of overwhelming information resource generation and productivity is a fundamental problem of information preservation, insofar as society's capacity to create and produce information has far outdistanced both its physical and virtual capacity to store and preserve it; this gap continues to grow exponentially. One of the great myths of contemporary information technology is the notion that society possesses unlimited information storage. In fact, the production of digital information has already outstripped global server capacity by an estimated factor of four or five.[37]

A related myth concerns the costs of information storage. Typically, the issue of storage is viewed in terms of physical capacity, and it is true that continuing advances in microchip engineering are reducing information storage space to a virtual status approaching the atomic level, and that digital storage containers are becoming far less expensive than they once were. The real cost of information preservation, however, lies not in the physical storage of data, but in the administration, management, and accessibility of the

Natives (New York, 2008), in particular, chapter 8 "Overload," pp. 185–208.

35 The original term "exaflood" was coined by Bret Swanson in his 2007 *Wall Street Journal* opinion article, "The Coming Exaflood," http://online.wsj.com/article/SB116925820512582318.html (accessed on 11 December 2009).

36 In a digital and networked environment that supports participation and collaboration, appraisal increasingly is no longer purely the domain of memory specialists. See Caron, *Shaping our Continuing Memory Collectively,* which articulates this point.

37 IDC estimates that in 2009, if people had wanted to store every gigabyte of digital content created, they would have had a shortfall of approximately 35 percent. This gap is expected to grow to more than 60 percent (that is, more than 60 percent of the petabytes created could not be stored) over the next several years. See IDC, "2010. A Digital Universe Decade – Are You Ready?", http://gigaom.files.wordpress.com/2010/05/2010-digital-universe-iview_5-4-10.pdf (accessed on 28 October 2010).

information objects inside the storage containers – regardless of how big or small – over time, the costs of which are rapidly escalating out of sight. This is especially true in the case of online storage and preservation, which is the expected norm within participatory cyberspace and fundamental to information resource discovery, capitalization, and public utility within collaborative networks, as opposed to near-line storage or off-line "dark storage," which are progressively less expensive from an accessibility standpoint, though not necessarily from an administrative and management perspective.

Essentially, it is the temporary and medium- to long-term preservation or *persistence* of digital information objects in accessible form, which represent the real challenge in terms of information resource development and corresponding socio-economic utility. Even if one can assume that most digital objects, however fragile in terms of continuing readability and accessibility, do have a temporary endurability, this does not necessarily elongate the documentary moment and its corresponding decision making around value. On the contrary, given the technological enhancements and metadata markings necessary from the outset (beginning with the technical engineering phase) to ensure the persistence of information objects in digital cyberspace, decisions about the survivability of information resources will need to be taken before, during, and immediately following the act of creation. Effectively, the value, status, destination, and persistence of digital information resources will need to be determined and decided concurrently (i.e., information resource creation or production processes will need to proceed with greater documentary awareness and consciousness). For public memory institutions, which commonly think in terms of perpetual or everlasting preservation (as opposed to temporary or perennial preservation), this challenge is of first order importance and magnitude, and potentially turns the world of public memory upside down, both in terms of its theory and practice. It is entirely possible and increasingly logical, for example, to propose that the preservation of public memory should transpire through various interventions and mediations made within cyberspace, rather than through physical transfers of virtual civic goods from creators to a dedicated repository. Is it possible that public memory could become a network or a persistent "computing cloud" within the Web?

The Documentary Moment in the Digital Age

Reflecting upon the nature and substance of the changes currently happening within the information resource environment – which is the elemental wellspring of our capacity to remember – our sense of the growing complexity around the documentary moment is that archives need to fundamentally reconsider and rethink institutional vision and purpose, and coincidentally, that archivists need to re-examine their professional ethos and objectives. In particular, we need to establish new value propositions around the construction

and constitution of public memory, and we need to do this on a collaborative basis with those beyond the traditional memory institution domains.[38]

Part of this introspection will involve asking the right questions. For example, given the social and technological phenomena that we have outlined, what are the elements and characteristics of value and significance necessary or sufficient to warrant the preservation of digital information sources and resources in the form of public memory? How should criteria be established, on what basis, and who should make these determinations and decisions? These are some of the core and essential questions.

But we also believe that our lines of questioning must probe more deeply below the surface of our daily business operations. They need to reach down into the very elementals of institutional and professional public memory *métier*. A crystallizing question was recently posed during a keynote at the annual conference of the Association of Canadian Archivists: "In the digital environment, does contemporary documentary heritage need to be identified and preserved within a cultural context to be meaningful?"[39] In the past, most archivists would have treated this particular question as a rhetorical statement; after all, the public memory context of the archive has long been rooted in cultural mediation typically framed in forms of historical synthesis or interpretation. This has been self-evident for many years.

However, our reading of the current information resource environment – and we are certainly not alone in this reading[40] – is that society has moved well beyond having its public memory mediated, and its culture and history contextualized by dedicated memory specialists. Earlier, we referred to a phenomenon identified in the literature, wherein information and communications technologies are changing the construction and constitution of public memory because online sites of new media recording and storage represent and enable the translation of memory from the individual to the collective. Like practically everything else, the documentary moment in the digital age is becoming instantaneous, participatory, and collaborative within networks to the extent that the construction and constitution of public memory is also becoming instantaneous, participatory, and collaborative. All of us as individuals[41] potentially see ourselves in public memory, just as most of us are now

38 See Caron, *Shaping our Continuing Memory Collectively*.

39 Question posed by Dr. Daniel J. Caron at the Opening Plenary of the Annual Conference of the Association of Canadian Archivists, June 2010, http://www.usask.ca/archives/aca2010/ProgramPrint.php?limit=sessions&brief=on (accessed on 31 May 2010).

40 For similar views, see Pessach, "[Networked] Memory Institutions"; Weinberger, *Everything is Miscellaneous*; and Fritz Pannekoek, Mary Hemmings, and Helen Clarke, "Controlling the Popular: Canadian Memory Institutions and Popular Culture," in *How Canadians Communicate, Volume III: Contexts of Canadian Popular Culture*, eds. Bart Beaty and Derek Briton, 3rd ed. (Edmonton, 2010), pp. 199–215.

41 Sherry Turkle, "Always-on/Always-on-you: The Tethered Self," in *Handbook of Mobile*

running private archives at home, automatically and constantly updated in our external hard drives.

And so we return to the questions posed at the beginning of our essay. Within this superabundant information resource environment – our contemporary and future source of public memory – what is the relevance of archives and archivists, and how will this relevance be manifested? What spaces will the public archive and public memory occupy in an information ecosphere dominated by new information service providers, consortiums, and consumers? This is an environment where corporate giants like Google and Microsoft, using the unimaginable mass of their stored data and huge distributed computing power, are already conducting *temporal trends analyses* to predict and analyze future events. Imagine: Google's application will be called *Recorded Future*. In effect, Google is already predicting and *elongating forward* the next generation of documentary moments. It is anticipating the future, and identifying the documents that will be necessary to understand it.

In all of this, our sense of the documentary moment in the digital age is that archives and archivists, in conjunction with others, those both within and beyond the information resource domains, can continue to play prominent roles and fulfill key responsibilities both now and into the future. But we also think that these roles and responsibilities will need to be focused, formulated, and implemented differently, with substantially different goals, objectives, and results in mind. Within this context, we not only need to be asking the so-called "right questions," but also different ones, certainly different from the ones we have traditionally asked in the past. For example, do we need to establish a new documentary framework and new value propositions for public memory to be preserved within memory institutions? Does this documentary framework continue to be informed broadly by cultural and historical interpretive syntheses, or does it move us toward a different and potentially more concentrated sphere of intervention?

One option could be a more direct focus on the public endowment and preservation of our foundational civic goods – the original documents of our decisions and actions, and the information in our books and other documentary media and artifacts – that are required within society to articulate, express and share common goals, assumptions, values, and ethics; to provide individuals and groups with the capacities of social literacy necessary to enable their democratic participation within communities; and to ensure accountable public administration and responsible governance under the rule of law: in effect, we mean focusing attention on the preservation of society's *causa materialis*, the documents that permit us to socially live our lives within a state of law, to function collectively as a democracy, and to have continu-

Communication Studies, ed. James E. Katz (Cambridge, MA, 2008), pp. 121–38.

ing and inclusive social consensus and progress through the distribution and sharing of information resources, and the preservation of an accessible public memory. In other words, we are suggesting that public memory institutions should concern themselves primarily with the identification and survivability of the information resources and documents articulating the modern, democratic state and its broader domain of inter-sectoral governance and activities, including its corresponding regularities, ethics, and discourses expressed through contemporary socio-economic actions and behaviours at various individual, group, and organizational levels. This would necessarily move archives and archivists away from their traditional preoccupations with cultural mediation, interpretation, and the integration of selected information resources into historical *collections of memory*, and toward the construction and constitution of a more "civic" public memory serving multiple socio-economic utilities.[42]

More practically in the sense of application, would new value propositions supporting such a documentary framework separate us from previous information value taxonomies and traditional methodologies? Would all of this only apply to information resources that are "born digital?" Given the current economics of the public memory business, what kind of other decisions do we need to make? For example, how do we intend to make public memory sustainable over time? What is the nature and constitution of sufficient public memory? How can it become more representative and inclusive of diversity?

Many questions asked, and unfortunately few concrete answers thus far, although there are some encouraging signs. Library and Archives Canada (LAC) is currently engaged in a process of institutional modernization, a significant component of which is a reconsideration of the meaning of documentary heritage in its enabling legislation. This exercise may result in substantive changes in emphasis and direction, notably in relation to the prevailing philosophies, mechanisms, and expected results of appraisal and acquisition activities, which ultimately establish and represent public memory at the federal level of its constitution. LAC is also engaged in a series of discussions with colleagues from a number of institutions and jurisdictions across the country to establish a way forward through the labyrinth of digital information resources. Together, they have been talking about some of the

42 In proposing a new documentary framework around the notion of a "civic" public memory, this paper draws inspiration from ideas and concepts linked to the social discourse and public utility of memory variously expressed in the writings of Michel Foucault, on the constructed statements and discourses of the archive in *The Archaeology of Knowledge* (New York, 1972); of Antony Giddens, on social agency and practical consciousness, in *The Constitution of Society: Outline of the Theory of Structuration* (Los Angeles, 1986); of Pierre Nora, on the "locations" of memory, in "Between Memory and History: Les Lieux de mémoire," *Representations* 26 (Special Issue: Memory and Counter-Memory) (Spring 1989), pp. 7–24; and especially of Pierre Bourdieu, on the "site of the social" and the notion of "habitus," in *The Logic of Practice*, trans. Richard Nice (Stanford, 1990).

issues raised in this essay, variously at the levels of occupational ideology, philosophy, strategy, application and implementation, and there is a growing understanding and willingness to come to some basic propositions around how the challenges of the digital environment can begin to be addressed.

Of several things we are certain. There is a growing consensus that the public memory challenges of the digital age need to be met by collaborative strategy and research; that potential solutions and interventions will not succeed through independent unilateral actions, but can emerge through institutional and occupational convergences. And we are all beginning to realize that this collaboration cannot be confined to ourselves as memory professionals and memory institutions. We are beginning to understand that the construction and constitution of the civic goods of public memory are a collective, social responsibility requiring broad participation across all sectors.

As individuals, groups, and organizations, we all inhabit and share the documentary moment in the digital age; it is time to work collaboratively to explore its emerging nature, dimensions, and implications formulated as new public memory.