The Past that Archives Keep:
Memory, History, and the Preservation of Archival Records[*]

BRIEN BROTHMAN

RÉSUMÉ   Est-ce que « le passé » prend des sens différents dans les contextes de l'histoire et de la mémoire? Est-ce que la réponse à cette question a une relation avec les archives? Cet article répond par l'affirmative à ces deux questions. Son argument principal est que d'attribuer un sens distinct au « passé » dans le cadre de la mémoire permet le développement d'une perspective sur le travail archivistique qui rehausse la valeur des documents anciens pour les organisations et la société contemporaines. Le raisonnement de l'auteur se dévoile en trois sections. La première veut démontrer que certains éléments du concept australien de continuum des documents sont plus compatibles avec l'idée de la mémoire sociale et organisationnelle que ne l'est celui du cycle de vie des documents et que de plus, sur un plan archivistique, le continuum des documents est un concept plus cohérent au point de vue temporel que le cycle de vie des documents. La deuxième section se base sur des recherches de différentes disciplines pour démontrer que, dans le cadre de la mémoire, faire référence au passé représente simplement une autre façon de parler du présent. La troisième section se fonde sur les idées des deux premières pour proposer dix questions d'ordre conceptuel, organisationnel et technologique qui requièrent l'attention en ce qui concerne les programmes de conservation à long terme des documents d'archives.

ABSTRACT   Does "the past" take on different meanings in the contexts of history and memory? Does the answer to this question have any bearing on archives? This article answers affirmatively to both these questions. Its main argument is that ascribing a distinctive meaning to "the past" in the framework of memory enables the development of a perspective on archival work that enhances the value of old records to contemporary organizations and society. The argument unfolds over the course of three sections. The first section argues that certain elements of the Australians' records continuum are more compatible with the idea of societal and organizational memory than the records life cycle, and further, that, on an archival reading, the records continuum is a more coherent temporal concept than the records life cycle. The second section draws on research from several disciplines to argue that, within the framework of memory, allud-

ing to the past simply represents another way of talking about the present. The third section deploys ideas from the first two sections to propose ten conceptual, organizational, and technological issues that deserve attention with respect to long-term records preservation programmes.

During the days before and after the twelfth of December, time comes to a full stop, and instead of pushing us toward a deceptive tomorrow that is always beyond our reach, offers us a complete and perfect today ... Time is no longer succession, and becomes what it originally was and is: the present, in which the past and future are reconciled.

Octavio Paz, *The Labyrinth of Solitude*

In a memorable seminar, right after Richard Nixon died, Derrida drew a memorable distinction between kinds of death. He said (and I'm paraphrasing), "the headlines last week said, 'Nixon is dead. Richard Nixon has died.' Tomorrow when you pick up the paper you will not see that headline that Richard Nixon is dead."

"Essay in Imagetext: An Interview with W.J.T. Mitchell,"
Mosaic 33, no. 2 (June 2000)

The past is never dead. It's not even past.

Gavin Stevens, in William Faulkner, *Requiem for a Nun*

Introduction

At the beginning of his *The Philosophy of History*, Hegel writes, without a trace of irony:

But what experience and history teach is this – that people and governments never have learned anything from history, or acted on principles deduced from it. Each period is involved in such peculiar circumstances, exhibits a range of things so idiosyncratic that its conduct must be regulated by considerations connected with itself, and itself alone. Amid the pressure of great events, a general principle gives no help. It is useless to revert to similar circumstances in the Past. The pallid shades of memory struggle in vain with the life and freedom of the Present.[1]

Hegel's observation leaves little room for appreciating the long-term value of records, the importance of memory, and the uses and influence of the past. By probing several conundrums that are contained in Hegel's references to history and memory, past and present, this essay attempts to establish a strategically usable conception of long-term record-keeping practice. The main argument involves restructuring our conception of the relationship between the present and the past. Drawing on scholarship in several fields of memory

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1 Georg Friedrich Hegel, *The Philosophy of History* (New York, 1956), p. 6.

research, the following discussion proposes a plausible intellectual justification for the temporal compression of past and present. Under our description, the past will emerge as an integral constituent of an existential present. If successfully argued, this claim will pave the way towards a conception of archival records and archival practice that positions both of them closer to contemporary social and organizational concerns and interests. This approach, in other words, is intended to promote the pragmatic significance of the documentary past as memory. It conditionally accepts British historian Michael Oakeshott's distinction between an "historical past" and a "practical past."[2] The past of memory, we will argue, is distinguishable from the past that concerns history. Archivists are urged to reconsider their working concept of memory. They are invited to ponder not only how archives keep records of the past but also how, in their discourse and practices, they help to preserve a certain concept of what "the past" means. Archivists are asked to entertain the possibility that multiple perspectives are permissible on "what the past" might mean in the context of archival practice.

A principle aim is to strengthen and build on a longstanding claim that archivists have repeatedly made, and regularly continue to make, about the value of records delivered into their custody: archival records form a potentially important resource for helping society's institutions and organizations to meet their current needs. Partly for reasons having to do with certain emerging information technologies, now is an especially auspicious moment for the archival community to be developing this argument in more depth, and making it with more force.

The term "memory" is common discursive currency in the archival realm. Archivists variously use it to convey to others that their work has something to do with the past. Until recently, however, archivists' adoption of the term has been largely uncritical. Now, swept up by the widespread academic and popular interest in the nature of memory that has emerged over the last twenty years, a number of archivists are finally beginning to plumb this term's conceptual richness. They are now exploring the growing complexity of memory and the variable multidisciplinary perspectives on what it means, how it works, and what implications it holds for archival programmes.[3] In fact,

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2 Michael Oakeshott, "History and the Social Sciences," *The Social Sciences* (London, 1936), pp. 71–81.

3 Early usages of the term "memory" in archives discourse were based on assumptions about its meaning more than on rigorous conceptual analysis and understanding. This nonchalance remains widespread today. However, a number of archival scholars have recently begun to probe more deeply into the notion of memory and its implications for the keeping of records. Among the first to turn to the investigation of memory in an archival context was Terry Cook. See, for example, "Beyond the Screen: The Records Continuum and Archival Cultural Heritage," paper delivered at the Australian Society of Archivists Conference, Melbourne, 18 August 2000; "Archives, Evidence, and Memory: Thoughts on a Divided Tradition," *Archi-*

research in the humanities, social sciences, and pure sciences on individual, social, and organizational memory has been growing so rapidly that the literature now extends far beyond any single individual's or discipline's ability to grasp. At the same time, tendencies towards disciplinary convergence and cross-fertilization are also discernible. Out of this activity, new interdisciplinary research paradigms and perspectives on memory have been emerging. Elements from these disparate research sources are appropriated here in order to make some headway towards a concept of memory that will be serviceable to the archival community, in particular, to archivists' ongoing attempts to better formulate, promote, and establish the importance of their long-term mission, especially with respect to the preservation of electronic records. In this essay, memory emerges as a strategically useful concept.

The argument unfolds over the course of three sections. The first section briefly compares the life cycle and records continuum concepts. It argues that certain elements of the Australian records continuum research avoid some conceptual pitfalls and practical obstacles of the life cycle model, which has long prevailed in many archives programmes. Properly interpreted, the records continuum includes features that lend themselves to the development of a certain model of memory that can effectively bolster the pursuit of archival objectives. The second section introduces multidisciplinary research concerning conceptions of time, memory, and the past. This research provides material for shaping a particular view of the past's temporal identity within the framework of memory. The two issues addressed in the first two sections – the elements of a records continuum and the revision of the temporal identity of the past within the framework of memory – provide scaffolding for the articulation of the organizational memory research issues appearing in the concluding third section. The ultimate purpose of this essay is to sketch out conceptual, organizational, and technological dimensions of memory-based record-keeping that deserve archivists' attention.

Finally, it is necessary to mention that such topical archival issues as accountability, risk management, and evidence do not appear here. The conviction that evidence is central to archival practice may have merit, but it is

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val Issues 22 (1997), pp. 177–82. The University of Michigan's Sawyer Seminar 2000–2001 dealt with "Archives, Documentation, and the Institutions of Social Memory." There, Cook presented an excellent discussion paper on archives-memory issues: "Remembering the Future: The Role of Archives in Constructing Social Memory." Elsewhere, Richard Cox, for example, writes that "time, memory, and durability" are intimately connected. This may be a valid statement, but unless its terms are explained, it is impossible to say what it means, let alone decide whether it is true or not. "Searching for Authority: Archivists and Electronic Records in the New World at Fin de Siécle [*sic*]," *First Monday* 5, no. 1 (2000). See also, Cox, "The Concept of Public Memory and Its Impact on Archival Programming," *Archivaria* 36 (Autumn 1993), pp. 122–35.

one that needs to be tested on several counts, which some have begun to do. This essay proposes that the construal of records as cognitive memory artifacts, rather than merely as legal, evidence-bearing artifacts, opens up a potentially endless field of possibilities for institutional and professional growth that only a failure of imagination can limit.[4]

Record Life Cycle and Records Continuum

The Life Cycle

The preliminary research agenda sketched out below aims to supply arguments for the long-term usefulness of (archived) records as workaday organizational knowledge. At the core of the argument is the postulation that (long-term) memory-smart organizations work better. However, there is a critical paradox, indeed, a form of heterodoxy, lurking in this argument. It is one that will emerge in more fulsome detail later in the discussion of the records continuum and the implications of the concept of organizational memory for record-keeping. The paradox lies in the advocacy of the long-term *business* usefulness of *archival* records. This perspective departs from the conventional notion that "business information needs" and "archives" are distinct and mutually exclusive. Instead, the view advanced here is that organizations having the capacity to exploit even long past experience stand a good chance of improving the handling of current issues and challenges. This view also endorses the commensurate notion of organizational culture. It takes seriously the idea that organizations and institutions rarely transform themselves to a point of breaking completely free of persistent thoughts and behaviours that have taken form over long periods of time. The framing of the relations among current business needs, ideas of memory, and the idea of the past as it is specifically embedded in memory will lay the groundwork for the argument that old records are use-

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4 Space limitations preclude consideration here of the implications of the concept of evidence for our memory argument. For numerous reasons, the record-keeping community has recently invested very heavily in the notion of evidence. Along with Terry Cook, Verne Harris, Mark Greene, and others, my view is that record-keepers need to revisit the position of "evidence" in archival practice. Elsewhere, I argue that record-keepers' business is to keep records of business transactions and past events, not to keep or ensure "evidence." On the contrary, the emergence of evidence involves the retrospective (re)construction of a documentary universe by later users for myriad purposes. It is not possible to trick time by creating evidence in anticipation even as one creates records. Thus, record-keepers and records managers, as their professional titles suggest, keep and manage records, not evidence. Once having been created and kept, records may be placed into evidence; evidence cannot be pre-emptively placed in records. The creation of records and the construction of evidence involve different social practices, each occurring at different times. This view is developed more extensively in Brien Brothman, "Afterglow: Some Concepts of Record and Evidence in Archival Discourse," submitted for publication.

ful for business – even when an organization's business appears to need changing or "re-engineering."

Arguing for the business usefulness of archival records challenges the common life cycle representation of records. That biological metaphor continues to shape the self-image of many record-keeping programmes. It is a scheme that describes a so-called cyclic narrative in which records pass through three distinct stages, or ages, of life: an active or business stage, a semi-active or dormant stage, and, finally, an inactive archival stage in which records reach a post-business term. Record-keepers also refer to records "retirement." The prevailing language of biological cycles in records management discourse, therefore, describes records as objects that accumulate time, and confers upon them a sense of increasing age. Some records emerge as objects that eventually decline into archival age, at which moment they will have reached a point of having outlived their *initial raison d'être* or business use.[5]

The classic three-stage life cycle has offered to modern organizations the advantage of conceptual simplicity. It depicts an organizational process that lends itself to relatively simple administration and workflow management. Its appeal also lies in its compatibility with a longstanding division of labour between two professions, archivists and records managers. This division has involved the construction of something akin to what C.P. Snow called "two cultures." It differentiates between people with special skills to manage records as an administrative business support function (corporate legal and business intelligence asset) and people who manage records to help fulfill the longer-range social function and culture-making roles of private and public institutions (cultural asset). The life cycle metaphor has undeniably enabled archivists and records managers to develop a suitably clear vision of their respective social positions and professional identities and responsibilities in organizations and society.[6]

For reasons briefly discussed below, maintaining this division of labour between archival and records management functions remains important. However, the apparent simplification has not come without a significant price. By definitional fiat, the life cycle has effectively consigned aged, archival

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5 For a classic statement, see William Saffady, "The Document Life Cycle: A White Paper," prepared for the Association for Information and Image Management, 1997. Available at <http://www.documentconversion.com/news.htm>.

6 For example, Jay Atherton's often-cited repudiation of the life cycle and advocacy of continuum management partly represented a strategic attempt to resolve an organizational issue concerning the respective professional roles of archivists and records managers at the National Archives of Canada at the time. Jay Atherton, "From Life Cycle to Continuum: Some Thoughts on the Records Management–Archives Relationship," *Archivaria* 21 (Winter 1985–86), pp. 43–51. See also Matti Pulkkinen, "Turning Informational Value to Business Value – A Holistic Approach of [*sic*] Records Management in the Information Age," DLM Forum '99, Electronic Records <http://europa.eu.int/ISPO/dlm/fulltext/full_pulk_en.htm>.

records – if not archivists and archival institutions charged with looking after them – to a marginal role in contemporary organizations, institutions, and society. The life cycle represents a time-ordering regime that entrenches, especially among those who control organizational resources, the business obsolescence and secondary status of aged – historical – information. Often, "archives" seems reducible to the vaguely oxymoronic notion of obsolescent social or organizational knowledge. This was the case even before the advent of electronic records.

It is important to notice two things about the life cycle. First, the conventional representation of the life cycle idea is cyclical only in the narrowest sense. Second, the life cycle discourse is actually about two life processes or cycles. As records managers developed it, the cycle seems to have taken on the cast of an irreversible and unidirectional process of progressively declining life stages. This linear rendering of the life cycle has spawned a peculiar interpretation of "cycle," one that was perhaps intended to accommodate an organizational need to simplify work processes and assign responsibility; it may also reflect an understandable managerial disregard of conditions of complexity that elude formulaic responses. However, the logic behind the life cycle has also led archivists to a dead end, so to speak. Its unidirectional character, which implies clearly discernible beginnings, successive stages, and an identifiable terminal phase, has prevented archivists from thinking seriously about some alternative, admittedly trickier, but potentially more useful, helical, circular, epicyclical representations of cycles entailing ideas of social reproduction, recurrence, and repetition, and ambiguous origins and endings. Embodying an organic model of succession and aging, the conventional life cycle offers a prime example of a metaphor trapping its users.[7]

The life cycle has suited records management well. Unfortunately, the metaphorical placement of records in a life cycle begins to lose conceptual coherence with the approach of the archival stage. This incoherence leads to confusing linguistic usage. After all, is there not something amiss in the assertion that archival records are *non-current* records possessing *continuing value*?[8] How well does the notion of "continuing" fit the conventional life cycle? How can one claim that something possessing contemporary value is also non-current? What does "continuing" mean – continual or continuous? Do records periodically become young, active, and useful again, though perhaps not for their original business purpose? In other words, do records – to extend the biologically driven metaphor – enjoy an afterlife of some kind?

7 For an example of the repudiation of the governing biological metaphor in organization studies, see Barbara Czarniawska, *Narrating the Organization* (Chicago, 1997).

8 Lewis J. Bellardo and Lynn Lady Bellardo, comps., *A Glossary for Archivists, Manuscript Curators, and Records Managers* (Chicago, 1992), p. 3. The authors present this as an older, alternative usage.

How can inactive – useless or dead – records continue to possess value? Why not call archival records dormant, like perennial flora that return to life periodically? And what about "permanent value?" Like the increasing inadequacy of Ptolemy's model of an earth-centred universe in the face of new observational data, the linear life cycle metaphor lacks the robustness necessary to accommodate postmodern, or poststructuralist probing of the grounding notions of document, memory, history, and time.

The incoherence of the records life cycle is traceable to its confounding of "developmentalist" and "historical" notions of cyclical time. It actually tries to fit together – to straddle – two kinds of cycles. More precisely, it seeks to cover with a single temporal logic two distinct, different realms of temporal order: the logic of a linear, sequential process of finite records management workflow and a logic covering the temporal inertia or infinitude of archival records. This temporal incoherence becomes manifest in the dissonance engendered by our simultaneous commitments to notions of contextual finitude and contextual transcendence, and by our description of a seemingly natural triune evolutionary managerial sequence of phases that eventually reach closure (a finite linear process), together with our vision of preternaturally unchanging, infinite, absolute objects or phenomena (archival records) and, finally, by our sense of documentary permanence and acknowledgement of historical contingency and change.[9] The life cycle's identification of a single temporal order purporting to cover both archival records and records management regimes may meet administrative requirements. Intellectually, however, it is wobbly.

The Records Continuum Idea

The rumour declaring that archival records are dead, inactive, or non-current may have been exaggerated, not to say misconceived. This point begins to emerge in an important alternative to the life cycle metaphor that comes from Australia. It appears to be more successful in bridging the two distinct temporal orders of records and record-handling regimes. The idea of the ongoing and indefinite business usefulness of records, and the concomitant abandonment of the conventional biological analogy (which is, in any case, only one interpretation of the concept of "life") is potentially compatible with the Australian archival community's notion of a "records continuum" (hereafter, RC). In a sense, the RC's critical contribution to the advancement of recordkeeping praxis simply, and brilliantly, lies in its more literal, arguably more

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9 On the long tradition of thought about the idea of cycles in history, see Robert A. Nisbet, *Social Change and History: Aspects of the Western Theory of Development* (London, 1969), passim. See also geographer Yi-fu Yuan's *Topophilia: A Study of Environmental Perception: Attitudes and Values* (Englewood Cliffs, NJ, 1974), p. 148.

coherent, interpretation of the term "cycle."[10] The RC perspective carries inti-mations of a life cycle that leaves room for the unending circular, recursive, process that the notion of cycles imply. It discards the linear, unidirectional concept that the life cycle grew to become. Sue McKemmish, one of the pro-genitors of the Records Continuum Research Group (RCRG), which is com-mitted to developing the possibilities of the records continuum, puts the difference in the following fashion:

Definitions of the role of records managers and archivists associated with life cycle and "the three ages of archives" thinking suggests that records managers are concerned with corporate memory, while archivists are concerned with collective memory. This is not the philosophical position taken by continuum thinkers. They see the recordkeep-ing profession as being concerned with the multiple purposes of records. They take current, regulatory and historical perspectives on recordkeeping simultaneously, not sequentially.[11]

Leading advocates of the continuum idea have repudiated the linearity of the conventional life cycle metaphor as unsuitable for archives, especially since electronic information technology regimes are becoming established as the principal means of making, transmitting, storing, and preserving records.[12] The RC idea, however, also tends to slide towards conventional notions of time. Like the language of the life cycle, it too sometimes appears to fall prey to the unresolved ambiguity between the temporality that gov-erns archival records and the temporal order of records management regimes. Notwithstanding its postmodern-like gestures towards a flattened simultaneity, the RC betrays an adherence to traditional, Newtonian ideas of absolute, linear time. More specifically, the RC concept ascribes conven-tional historically based ideas to memory, and then accordingly invokes a linear ordering of relationships among past, present, and future. At least this

10 The *American Heritage Dictionary* defines "cycle" as follows: "1. A time interval in which a characteristic step, esp. a regularly repeated, event or sequence of events occurs. 2.a. A single complete execution of a periodically repeated phenomenon." Interestingly, the National Archives of Australia's draft of its DIRKS Manual (Design and Implementation of Record-keeping Systems Manual for Commonwealth Agencies – Part 1, Exposure Draft, February 2000) describes its continuum approach as "cyclical." <http://www.naa.gov.au/Govserv/ tech-pub/DIRKSman/Part_1.html>

11 Sue McKemmish, "Yesterday, Today and Tomorrow: A Continuum of Responsibility," Pro-ceedings of the Records Management Association of Australia 14th National Convention, 15–17 September 1997, RMAA, Perth, Australia, 1997 <http://www.sims.monash.edu.au/rcrg/ publications/recordscontinuum/smckp2.html>.

12 Glenda Acland, Kate Cummings, and Sue McKemmish, "The End of the Beginning. The SPIRT Recordkeeping Metadata Project," paper delivered at the Australian Society of Archi-vists Conference, 1999.

is the conclusion one might draw, notwithstanding its quite novel emphasis on the possibility of the simultaneous use of records for business, corporate memory, and social memory. Proponents of the RC seem to remain wedded to a notion of memory that encompasses the storage and retrieval of information from successive historical moments marking a path from a pre-existent past to a distinctive present. The argument developed below demurs from this view of memory. It suggests, instead, that memory, in contrast to history, should be understood to have nothing to do with the past – not the past as historians conceive it.

Yet, the continuum metaphor does at times seem to veer towards claims that are potentially compatible with the notion of time-ordering, or temporality, that will develop as our proposal below. A working indifference to historical time lies at the heart of the organizational memory model that will emerge below. The most important ramification of this stance is the virtual elimination of *prima facie* assumptions concerning the centrality of correlations between the chronological age of records and the uses to which they can be put. Again, as the RC view urges, records can serve business, historical, and collective memory purposes contemporaneously – and presumably indefinitely. These different uses, in other words, don't necessarily irreversibly succeed one another, as the life cycle has strongly implied.

No less than the life cycle concept, the RC is a Frankenstein-like monster. It provides a powerful metaphor that can simultaneously expand and inhibit the vision, and also escape the control, of its creators. More pertinent to our purpose of developing a memory-based approach to record-keeping, the RC idea overturns the life cycle's quite rigid calibration of record chronology with successive types of use and handling, and turns to the possibility of the open-ended, continuing business usefulness of "archival" records – independent of the regimes that care for them. To adapt McKemmish's words and Frederick Bartlett's view, in a memory framework archival records may always be *actual*.

The RC perspective offers archivists a break-hole out of the solitary confinement to which the life cycle metaphor has relegated them. The organizational memory proposal below aims to advance things in this same direction. Within the framework of organizational memory, the terms of archival engagement shift significantly. Like the records continuum, the memory concept sketched below discounts the idea that records evolve in an irreversible direction through distinct stages of use/life. Instead, it makes room for the recurrence of business relevance of records, and raises the prospect of sustained usefulness during (not to mention beyond) organizational life. Nor does it exclude the possible immediate cultural significance of freshly made records.

Finally, it is no coincidence that continuums convey a space-bound image where change has a zero value, while the record community's life cycle, like

history, has been widely represented as a linear, time-bound concept.[13] Spatiality will form a crucial part of the memory model. It is this switch from a temporal to a spatial representation of time that offers a possible avenue of escape from the limitations and incoherence of the linear, chronological differentiations among active, dormant, and archival phases of record-keeping. Indeed, from the standpoint of our concept of memory, the conventional life metaphor better applies to finite organizations and custodial regimes than to the permanent records that may well survive them both. As we will see, the archival notions of "permanent" and, arguably, "continuing" make the notion of phases of "life" and "time" untenable.

Perspectives on the Concept of Memory

How might archivists conceptualize memory? Taking up our earlier argument, memory will emerge as a form of temporal ordering that compresses – that "spatializes" – the passing of time. Accordingly, the key archival notion of permanence, or permanent value, undermines the archival commitment to linearity and historicity: its immortalizing intention simultaneously reifies and nullifies the significance (indeed, as Heidegger pointed out, the very conception) of time's passing. Thus, archival permanence, which precludes the anticipation of eventual death, that is, the prospect of a terminal point, renders the concept of life and the passing of measurable units of time meaningless. This second section of the essay marshals historical and philosophical studies and scientific research on the notion of human memory to provide intellectual grounding for the move towards what some philosophers call a "tenseless" conception of time. Most important, as we shall soon show, issues of memory and temporality flush out the continuum's flattening of the relations between past and present. This discussion of time, memory, and the past provides the underpinning for the more applied organizational memory research issues presented in the final section.

Memory and History

In recent years, scholarship in numerous disciplines has lead to an understanding of the relations among time, history and memory, archives, knowledge, and memory, and past, present, and future that has become significantly more complex. It was in Hegel's work, apparently, in the full glare of the Enlightenment and at the beginning of the Rankean age of source-based historical writing, that the concept of memory for the first time coincided

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13 For a similar characterization of the continuum model, see Cook, "Beyond the Screen: The Records Continuum and Archival Cultural Heritage," p. 12.

exclusively with the past and no longer connoted repetition.[14] Among some contemporary scholars, however, the concept of memory is once again becoming detached from the idea of linear history and its conception of the past. They observe that the meaning of the past is being transformed under the subtle erosion of our sense of the passage of time. According to some views, in fact, the resurgence of the concept of memory since the 1960s has been having the effect of marginalizing historical time; postmodernity has seen a "loss of temporality" and a "collapse of time horizons."[15] "Accelerated memory," some propose (undoubtedly under the influence of Jean Baudrillard), has been shrinking our sense of the difference between present and past.[16] This reworking of the relationship between past and present is partly connected to the placement of memory within the framework of individual and collective psychological processes, for example, individual and collective cognition and community imagination. As we shall soon see, the reappearance of these anachronistic ideas of the past and memory may also be traceable to the recent elevation of "information" as a key cultural concept and to the advent of information technology. The sense of memory now emerging in some quarters is returning to its anti-historical origins.

Some contemporary thinkers, then, differentiate between memory and historical consciousness. Historical consciousness is rooted in the identification of the past with external, material symbolic storage and with "artificial" mnemonic systems, that is, with temporally marked written documentation.[17] Memory, on the other hand, embodies the philosophical notion of an absolute present. In memory, all knowledge, which includes what we habitually call knowledge of the past, gains in immediacy and is embraced as absolutely relevant. Thus, all knowledge is present knowledge, and there is no possibility of knowledge accessible beyond or before it. Moreover, memory is deeply implicated not merely in knowledge formation, but in the shaping of consciousness. Document-based historical practice adopts a more scientific view of the past.

14 Gerdien Jonker, *The Topography of Remembrance: The Dead, Tradition and Collective Memory in Mesopotamia* (Leiden, 1995), p. 14. There is a body of literature dealing with the dating of the rise of linear history and its displacement of other ways of ordering the relationship between past and present. See Mark Salber Phillips, "Reconsiderations on History and Antiquarianism: Arnaldo Momigliano and the Historiography of Eighteenth-Century Britain," *Journal of the History of Ideas* 57, no. 2 (1996), pp. 297–316.

15 Diane Elam, "Postmodern Romance," in Bill Readings and Bennet Schaber, eds., *Postmodernism Across the Ages: Essays for a Postmodernity that Wasn't Born Yesterday* (Syracuse, 1993), pp. 217, 228; David Harvey, "Postmodernism," *The Condition of Postmodernity* (Oxford, 1989), pp. 58–59; Peter Stearns, *Meaning Over Memory: Recasting the Teaching of Culture and History* (Chapel Hill, 1993).

16 Matt K. Matsuda, *The Memory of the Modern* (Oxford, 1996), p. 166.

17 See Michael Clanchy, *From Memory to Written Record* (Cambridge, MA, 1993); Jack Goody, "Writing and Its Social Effects," in Goody, ed., *Literacy in Primitive Societies* (Cambridge, 1968). On external storage systems, see note 22.

It nurtures a deep respect for the autonomy and integrity of the past. The past is comprised of surviving physical artifacts, of independent objects available for critical, scientific inspection and analysis. The Archives-History axis, in other words, normally represents the past as a foreign place of insurmountable difference. Contextual barriers and temporal distances both enable our objective understanding of the past while also limiting our access to it and mitigating its relevance to present concerns. Historical time places a premium on diachronic "distanciation," detachment, and mediation, or archival records.[18] Memory is oblivious of such effects. It is no wonder, therefore, that the subject of archives and records figures very little in the many recent books on the history of memory, except to mention that the growing storehouses of archives documenting the past in its particular context are ultimately responsible for the dissolution of collective memory. Here, memory, both social and organizational, and archives emerge as antithetical concepts.

Admittedly, the above antithesis between archives/history and memory is simplistic to the point of being misleading. Memory and history do perform distinctive social functions, partly because each shapes individual and communal time differently. At the conceptual level, each also embodies two different perspectives on the relation between present and past. Some scholars would be willing to argue that history's scientific intention towards the past makes it distinguishable from memory's function. Yet, at the level of practice, the respective relationships of memory and history to the categories of past and present have been more difficult to untangle. There are those who remain oblivious to issues of sameness and difference, and who use the two terms interchangeably. Others maintain that in real life the two are different but mutually implicating, that they constantly interact to induce conditions of continual flux in each other. Historians sometimes deliberately interpret the past to influence contemporary political consciousness and social agendas. In others, present concerns quietly influence historical accounts of the past. Thus, the writing of histories may serve a collective memory function. Some historical works, for example, can exert some measure of influence on the shaping of popular, collective memory. By the same token, social, collective memory inevitably helps to form a cultural environment or collective consciousness

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18 Benedetto Croce supplied a classic argument for history as inevitably centred on the living present rather than on the dead past, and argued that all history is "contemporary history." Benedetto Croce, *Theory and History of Historiography*, Douglas Ainslie, trans. (London, 1921). One is also reminded of J.H. Plumb's lament in *The Death of the Past* (London, 1967). The word "distanciation" comes from Paul Ricoeur. See Paul Ricoeur, "The Hermeneutical Function of Distanciation," in John B. Thompson, ed., *Hermeneutics and the Human Sciences* (Cambridge, 1981), pp. 131–44. For a discussion of identity and difference and the difference between diachrony and history, see Frederic Jameson, *The Prison-House of Language: A Critical Account of Structuralism and Russian Formalism* (Princeton, 1972), pp. 123–29.

that impinges upon the "objective" history that historians choose to write[19] – including, today, the history of memory.

19 On memory's overcoming of historical time, see Kerwin Lee Klein, "On the Emergence of Memory in Historical Discourse," *Representations* 69 (Winter 2000). Klein speculates on the social and psychological reasons why memory has recently been overshadowing history as the means by which this generation prefers to relate to the past. See also Steven Knapp, "Collective Memory and the Actual Past," *Representations* 26 (Spring 1989), pp. 123–49.

The literature on the relations between history and memory has grown dramatically in volume and complexity over the last half of this past century. Much of the literature focuses on whether and when history has prevailed over memory and memory over history. Apart from Nietzsche *(On the Use and Abuse of History for Life*, 1873) and Freud, Maurice Halbwachs's work, *The Collective Memory* (New York and London, 1951), chapter 2 remains required reading, as does Frederic Bartlett, *Remembering: A Study in Experimental and Social Psychology* (Cambridge, 1964). Some of the significant works marking more recent developments of the field include Frances Yates, *The Art of Memory* (Chicago, 1966); the special issue on memory in the *Journal of American History* 75, no. 4 (1989), especially David Lowenthal, "The Timeless Past: Some Anglo-American Historical Preconceptions," pp. 1263–80; the periodical *History and Memory* from Indiana University Press; Paul Connerton, *How Societies Remember* (New York, 1989); Elizabeth Deeds Ermath, *Sequel to History: Postmodernism and the Crisis of Representational Time* (Princeton, 1991); John Gillis, ed., *Commemorations: The Politics of National Identity* (Princeton, NJ, 1994); Raphael Samuel, *Theatres of Memory, Volume I: Past and Present in Contemporary Culture* (London, 1996); Jacques Le Goff, *History and Memory*, Steven Rendall and Elizabeth Clamon, trans. (New York, 1992); Patrick Hutton, *History as an Art of Memory* (New England, 1993); Marcel Detienne, "Comparative Historicities," *South Atlantic Quarterly* 98, nos. 1/2 (Winter/Spring 1999); Patrick J. Geary, *Phantoms of Remembrance: Memory and Oblivion at the End of the First Millennium* (Princeton, 1994); Matsuda, *Memory of the Modern*, passim.

The Holocaust has spawned many studies on individual and collective memory. See Geoffrey H. Hartman, ed., *Holocaust Remembrance: The Shapes of Memory* (Cambridge, MA, 1994); Dominick LaCapra, *History and Memory after Auschwitz* (Ithaca, 1998); Peter Novick, *The Holocaust in American Life* (Boston, 1999); Yosef Hayim Yerushalmi, *Zakhor: Jewish History and Jewish Memory* (Seattle, 1982); James Young, *The Texture of Memory: Holocaust Memorials and Meaning* (New Haven and London, 1993); Eric L. Santner, "History Beyond the Pleasure Principle: Some Thoughts on the Representation of Trauma," in Saul Friedlander, ed., *Memory, History and the Extermination of the Jews of Europe* (Bloomington, 1993).

Germany and France have been especially active in engendering a renewed interest in memory and history. Pierre Nora suggests that the currency of memory studies is a symptom of the disappearance of the places of memory in the face of a growing stockpile of written archives feeding history's approach to the past. See *Les Lieux de Mémoire* (3 vols.) published by Gallimard, 1984. A concise account of Nora's important work on memory is available in his article "Between History and Memory: Les Lieux de Mémoire," *Representations* 26 (Spring 1989), pp. 7–25. See also, Henry Rousso, *The Haunting Past: History, Memory, and Justice in Contemporary France* (Philadelphia, 2001); Rudy Koshar, *Germany's Transient Pasts: Preservation and National Memory in the Twentieth Century* (Chapel Hill and London, 1998); Robin Regine, *Berlin Chantiers* (Paris, 2001); Charles Maier, *The Unmasterable Past: History, Holocaust, and German National Identity* (Cambridge, MA and London, 1988).

For an examination of an earlier manifestation of a similar dynamic between memory and history, in which, for various reasons having to do with professional prestige and influence, lawyers reasserted memory's "custodial moment" over history, see Robert J. Ross, "The Memorial Culture of Early Modern English Lawyers: Memory as Keyword, Shelter, and Identity," *Yale Journal of Law and the Humanities* 10, no. 2 (Summer 1998), pp. 229–326.

It is critical to emphasize, therefore (before moving on to the consideration of archives' role in organizational memory), that memory's time and history's time, memory's past and history's past, although different, can both mark an archives' mission. The research this essay proposes focuses on the significance of the memory function and conditionally brackets history's past from the analysis. This move provides our warrant for developing a distinctive view of time and the past within the context of (organizational) memory. The approach attempts to dissolve, or, more precisely, to suspend, the apparent antithesis between the concepts of memory and archives. This will allow us to identify a role that archives may be suited to play in the working of social and organizational memory. At the conceptual level, being memory's archivist and being history's archivist may each involve radically different attitudes to time and its objects. Memory's archivist is interested in the past's residue as material for promoting integrated knowledge, social identity, and the formation of group consciousness; history's archivist is interested in finding records and, in them, uncovering evidence to develop a linear narrative about a past that is ours, yet different from us.

Our approach, then, is postmodern: we admit the possibility that archival institutional practice might operate simultaneously under the influence of multiple "chronotypes" or temporal regimes,[20] and behave in accordance with multiple types of time ordering.[21] Notwithstanding this essay's preoccupation with memory's time and the distinctive place the past occupies in it, the process of constructing an organization's or society's historical past requires the maintenance of distinct sites of archival practice. Regardless of whether and how archives and records management were integrated in the past, the establishment of archives separate from records management programmes can be justified today on political, material, cultural, and symbolic grounds.[22] To contend that memory inevitably trumps history, or vice versa, is at best to grasp at reductive half-truth.

20 See John Bender and David E. Wellbury, eds., *Chronotypes: The Construction of Time* (Stanford, CA, 1991). On the multiple chronologies that historians may uncover in their analysis of a single historical document or set of co-occurring documents, see also Michel Foucault, *The Archaeology of Knowledge* (London, 1969), introduction.

21 Richard Whipp, "Creative Deconstruction: Strategy and Organizations," in Stewart Clegg, Cynthia Hardy, and Walter Nord, eds., *Handbook of Organization Studies* (London, 1996), p. 270.

22 There are several archaeological and anthropological studies of the historical evolution and social, cognitive, and symbolic value of maintaining distinct sites for the storage and permanent preservation of a society's externalized symbolic expression. See Julia Herndon, "Having and Holding: Storage, Memory, Knowledge, and Social Relations," *American Anthropologist* 102, no. 1 (March 2000), pp. 42–53. On the relation between social and cognitive evolution and the advent of external symbolic storage, see Colin Renfrew and Chris Scarre, eds., *Cognition and Material Culture: The Archaeology of Symbolic Storage* (Cambridge, 1999), and psychologist Merlin Donald, *Origins of the Modern Mind: Three Stages in the Evolution of Culture and Cognition* (Cambridge, MA, 1991), chap. 8. See also Denise Schmandt-Besserat, *How Writing Came About* (Austin, 1997).

Philosophy, Technology, and the Emergence of the Spatial Age

The conception of memory towards which we are advancing is tied to a line of thought on time and temporality that runs at least from the great fourth-century philosopher St. Augustine, through medieval philosophers, right up to the work of a number of modern and contemporary archaeologists, anthropologists, philosophers, and scientists.[23] It is a perspective that some archivists will undoubtedly find counterintuitive. It begins with the admittedly stark proposition that memory uses the past but functions outside time's passing. The potentially controversial claim here is that memory does not preserve a separate past. Rather, memory colonizes – that is, continually construes – the past as an integral component of a perpetual present. The objectives that memory serves make no allowance for a distinct, autonomous past; memory allows no room for the constitution of identities outside the present. To be sure, memory involves manipulating information about "the past." Within the framework of memory, however, the past simply encompasses another subset of currently available data about people, events, objects, and data that exist in and for present consciousness, and in which the dead, including dead records, form part of the contemporary social order. This attitude is comparable to the operation of memory in medieval society, which, it has been claimed, harboured an indifference to the "pastness of the past."[24]

The "detensing" of the past in this conception of memory runs parallel to an observed effect of information technology networks, namely the incorporation of all information into an all-knowing, narrative-free, technologically "flattened" information environment.[25] In the age of digitization, philosopher Edith Wyschogrod has written, we are all, in Hegelian style, becoming "wired

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23 This may be no accident. Some have noticed that the explosion of interest in memory during the 1980s has resulted in the resurrection of some obsolete definitions. See, for example, Klein, "On the Emergence of Memory in Historical Discourse," p. 127. On pre-modern notions of memory, see also Mary Carruthers, *The Book of Memory: A Study of Memory in Medieval Culture* (Cambridge, 1993); Janet Coleman, *Ancient and Medieval Memories: Studies in the Reconstruction of the Past* (Cambridge, 1992); and David Farrell Crell, *Of Memory, Reminiscence, and Writing: On the Verge* (Bloomington, 1990). The latter two titles are heavy going. A more accessible, succinct history of ideas of memory in Western thought is Jeffrey Andrew Barash, "The Sources of Memory," *Journal of the History of Ideas* 58, no. 4 (October 1997), pp. 707–17.

24 As Foucault writes: "... history is one way in which a society recognises and develops a mass of documentation with which it is inextricably linked." *The Archaeology of Knowledge,* introduction. On the pastness of the past, see Carruthers, *The Book of Memory*, p. 193. On   the medieval view of time and the past, see also Hayden White, "The Value of Narrativity in the Representation of Reality," in W.J.T. Mitchell, ed., *On Narrative* (Chicago, 1981), pp.   1–23.

25 Walter Ong observed that "de-plotted narrative forms part of the electronic age." *Orality and Literacy: The Technologizing of the Word* (London, 1982), p. 159.

26 Edith Wyschogrod, *The Ethics of Remembering: History, Heterology, and the Nameless Oth-*

in the absolute."[26] By this phrase she means to suggest that the information society is ultimately advancing a spatial agenda. Information technology is "spatializing" time. It is doing this by digitally processing and incorporating all information, whatever its historical address, into a flat and seamless, increasingly time-insensitive, horizontal network of learning and interrelated knowledge structures – network information architectures. In a spatial setting, in other words, the primary relations among known sets of information are seen as primarily logical rather than chronological: information is defined by spatial rather than temporal coordinates. The time of memory is a function of relative position and not a function of some absolute, neutral, and seemingly natural temporal frame of reference. Accordingly, the hegemony of spatiality is displacing the nineteenth-century modernist belief in development, sequential process, and an ever-accumulating past.[27]

In line with this spatial view of memory, some researchers describe human memory as involving a flattening process that obscures distinct, successive representational moments in time.

[M]emory is indistinguishable from our capability to make sense, to learn a new skill, to compose something new. It is not a place where descriptions of what we have done or said before are stored. In more detail, memory-based performances involve an intricate combination of reconstructed "feelings" and "attitudes" that orient composition of new sequences, and specific reconstructed images, sounds, and other sensations that constrain behavior from "below." This is essentially Bartlett's model of constructive memory.[28]

Memory is not simply about storing and keeping. It involves ongoing con-

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26 Edith Wyschogrod, *The Ethics of Remembering: History, Heterology, and the Nameless Others* (Chicago, 1998). For a discussion of the reverse process, where the rise of print portended the displacement of memory as custodian of the past bygone and gave rise to an "historicist sensibility that unflattened time ...," see Ross, "The Memorial Culture of Early Modern English Lawyers," pp. 320–21. For a discussion of a similar horizontal effect of electronic networks on contemporary law, see M. Ethan Katsh, "Looking Ahead Into the Past," *Government Technology* 14, no. 3 (February 2001).

27 See Michel Foucault, *Power/Knowledge: Selected Interviews and Other Writings* (New York, 1980), p. 70. Ermath, *Sequel to History*, p. 22 and passim. For a history of ideas of temporal location and early modern challenges to absolute, dateable time, see Donald J. Wilcox, *The Measure of Times Past: Pre-Newtonian Chronologies and the Rhetoric of Relative Time* (Chicago, 1987). Archivists, for example, have not been immune from a "spatializing" propensity. Increasingly, archivists are prone to mine the history of archival practice for information that variously supports the construction of ahistorical theories of, and arguments for, an archival science. Thus, seemingly historical information loses its chronological significance and takes the form of another memory resource available for incorporation into the construction of a contemporary scientific paradigm of archival methodology and consciousness.

28 William J. Clancey, "Review of Rosenfeld's *The Invention of Memory*," *Artificial Intelligence* 50, no. 2 (1991), pp. 241–84.

struction of the present. Similarly, Marya Schechtman, using the Freudian concept of condensation, describes how memory erases the gaps and delays between successive moments or events:

It is precisely insofar as our memories smooth over the boundaries between the different moments in our lives, interpreting and reinterpreting individual events and experiences in the context of the whole, that we are able to produce a coherent life history. It is by summarizing, condensing, and conflating the different temporal portions of our lives in memory that we are able to see them as parts of an integrated whole, and this integration blurs the distinction between different moments of our lives.[29]

Under the present description, organizational memory diminishes time's creation of difference and succession. It discounts the antiquarian reverence for agedness, for temporal distance and difference, which runs through much of historical and archival thought. Rather, the past of memory forms the cognitive material that shapes the form that present thought and action are continually taking. This characterization of the organizational past is compatible with the fundamental and paradoxical argument of the organizational memory perspective sketched out below: archival records need not simply evolve to a state beyond business usefulness. Archival records, in other words, need not become historicized representations. As postmodernists might say, memory, unlike history, incorporates the past into the "same," mitigating its status as temporally "different" or "other."[30] This is why, in the context of memory, records may always prove to be "actual."

In memory processes, artifacts from the past lose their temporal strangeness. Instead, memory is a "perpetually actual phenomenon"[31] in which the past subsists as a constituent of active, living present being. As part of a social or corporate *memory function*, therefore, archives' role is not so much to construct the remoteness and preserve the difference of the past. More subtly, archives must articulate cycles of continuity, recurrence, and repetition – to efface time's linear progression. Rather than occupying a fixed point from which time inexorably works its distancing effects, the record content of memory forms part of a corporate continuum; that is, it forms part of the system in place, the "living, momentary setting."[32] As agents of organizational

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29 Marya Schechtman, in John Sutton, ed., *Philosophy and Memory Traces: Descartes to Connectionism* (Cambridge, 1998).

30 Jacques Derrida's *Edmund Husserl's Origins of Geometry: An Introduction* is an extended critique of language as the spacial suppression of time and difference. Richard Terdiman's study describes the nineteenth-century reaction to the crisis of memory and the "failure of diachronocity." He discusses the effects of history as a new form of memory in *Present Past: Modernity and the Memory Crisis* (Ithaca, 1993).

31 Nora, "Between Memory and History," p. 8.

32 This phrase is taken from Bartlett, *Remembering: A Study in Experimental and Social Psychology*, p. 201.

memory, then, archivists continually eradicate time's relentless creation of difference and postpone the onset of agedness. They manage archival records in such a way as to enfold them in the corporate present and handle records in their keep as part of a network of present-centred information. Staged in this way, even the aged records of a "distant" past may emerge as a resource worthy of sustained organizational investment. Provenance, more than merely marking a point in linear time, might also represent a place in documentary space.

Science and the Plastic, Distributed, and Relational Qualities of Memory

As in many other modern disciplines, the archival profession has shown increasing concern about its scientific stature. In the latter part of the twentieth century, an intersection of epistemological, political, and strategic considerations has led archivists to stake a claim to scientific status. In elaborating a conception of "archival science," however, they have also informally defined a threshold between "science" that is germane to archival "science" and "science" that is deemed to lie beyond the realm of archival "science." Many archivists believe, for example, that archival science is a social science or a classification science. This would seem to imply that physical science has little to contribute to archives (apart from conservation). Yet the advent of information science and information technology (IT) is arguably blurring the lines between the "social" and the "scientific." (Two good examples are the emerging fields of cognitive technology and neurohistoricism. The first combines neurobiology, psychology, information, and computer science, the second, literary studies and neuropsychology.) In the search for a working archival concept of memory, this section briefly glimpses some recent conceptions of memory in a manner that freely traverses the threshold between the "scientific," or technical, and the "social" in archival science.

Organizational memory studies are situated in a web of interdisciplinary approaches.[33] Scholars in the field have drawn on resources from cognitive

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33 See, for example, Annie Brooking, *Corporate Memory: Strategies for Knowledge Management* (1998); Mark Ackerman, "Answer Garden: A Tool for Growing Organizational Memory," *Proceedings of the ACM Conference on Office Information Systems, 1990*, pp. 31–39; James P. Walsh and G.R. Ungson, "Organizational Memory," *Academy of Management Review* 16, no. 1 (1991), pp. 57–91; E.W. Stein, "Organizational Memory: Review of Concepts and Recommendations for Management," *International Journal of Information Management* 15, no. 2 (1995), pp. 17–32. Finally, see L.J. Bannon and K. Kuutti, "Shifting Perspectives on Organizational Memory: From Storage to Active Remembering," *Proc. HICSS '96: 29th Hawaii International Conference on System Sciences, Hawaii* (January 1996), (IEEE 1996), pp. 155–66. Since the mid-1990s many more articles and books dealing with organizational memory have appeared, both in print and on the Internet.

psychology, computer science, sociology, information science and engineering, and, of course, the biological sciences in order to elucidate the multiple facets of organizational memory, to propose methods for describing memory, and for making it an effective servant of public and private organizations. Organizational memory is becoming especially closely associated with work on organizational learning, organizational design, organizational change, information processing, and knowledge management.[34] To see what others are coming to understand by "memory" and "organizational memory," therefore, it is worthwhile to briefly note some work in several adjacent scientific fields. Exploring these perspectives is important because information science, cognitive science, and biological science appear to be converging at several levels. Certainly, in such areas as biocomputing and neural network research, they seem to be drawing inspiration from each other's ideas and discoveries, and appropriating concepts from each other's research to do their work. If the future direction of information management and information processing technology is a matter of interest to archivists, then advances in brain science, and scientific research on the workings of human memory in particular, may be something for archival researchers to keep an eye on. For, ironically, mutually implicating research on human memory and information technology may be helping to mark out future paths of development in record-keeping technology, the technology of memory.

From the 1960s to about 1980, memory research came under the still powerful influence of an information-processing paradigm. Indeed, one philosopher has intimated that the influence of business perspectives on informatics has subsequently reached into neuroscientific conceptualizations of memory.[35] By the mid-twentieth century many researchers had come to view memory as performing passive storage – embodied in the revived storehouse metaphor –

A related area of organizational studies focuses on the role of narrative production in shaping organizational culture. See Barbara Czarniawska-Joerges, *A Narrative Approach to Organization Studies* (Thousand Oaks, CA, 1998); Barbara Czarniawska-Joerges, *Narrating the Organization: Dramas of Institutional Identity* (Chicago, 1997); David M. Boje, "Organizations as Storytelling Networks: A Study of Story Performance in an Office-Supply Firm," *Administrative Science Quarterly* 36 (1991), pp. 106–26; Gladys L. Symons, "Récits pour construire une mémoire organisationnelle : les directeurs se souviennent," *Sociologie et Société* XXIX, no. 2 (Autumn 1997), pp. 65–76.

34 It is interesting to note that, in the new information technology-based discipline of "memory management," the term "memory" includes two (actually more) meanings, neither of which specifically refers to informational or data content. To memory managers, memory can refer to open available computer memory not occupied by data, or to information. Memory is empty, available storage space.

35 Crell, *Of Memory, Reminiscence, and Writing*, p. 87. On the relationship among artificial intelligence research, neurobiology, and psychoanalysis, see Clancey, "Review of Rosenfeld's *The Invention of Memory*," pp. 241–84.

and retrieval functions.[36] In a sense, the passive archival storage of records has remained the prevailing icon of memory. The word "repository" captures well the image of archives as repositories for dead, inactive, passive, and, therefore, "fixed" information. It fits well with the conventional rendering of the record cycle.

The present era of research began in the early 1980s, from which point on researchers have been conducting work on memory processes and memory systems. Indeed, it is during this period that a multi- and inter-disciplinary assault has been made on the still-elusive problem of memory. What is memory – a place, a process, a function, a single object, or function, or is it better to view memory as a term covering multiple anatomical places, physiological processes, and social (environmental) and psychological functions? Many researchers seem increasingly inclined to believe that the term "memory" describes neither a single anatomical region of the brain nor a unitary function but a coordination process. Memory is not a single place, but a dynamic process involving several functions and multiple locations. Explanations of memory-related brain activity, therefore, have been set on a more complex biochemical foundation. Increasingly, molecular biologists have been making some dramatic discoveries about the behaviour of memory connections at the neurogenetic and cellular level, and joining together with behavioural psychologists and cognitive neuroscientists to work towards the development of new paradigms.[37] Thus, three levels of memory research – molecular/genetic, systemic, and behavioural – now mark the contemporary memory research landscape.

Memory researchers have also drawn a fundamental distinction between long-term and short-term memory (LTM and STM). Long seen as connected but independent, the working relations between LTM and STM are now undergoing revision. However, some studies are suggesting that highly functioning individuals show an ability to draw on LTM to supplement STM's limited capacity to fully perform certain kinds of work-related functions. Obviously, the notion of "long-term working memory," if acceptable, has

36 For a critique of the view of memory as a storage place for descriptive structures, see Israel Rosenfeld, *The Invention of Memory: A New View of the Brain* (New York, 1988.) Along similar lines, A. Iran-Nejad explores Bartlett's related notion of "schema" in "The Schema: A Long-Term Memory Structure or a Transient Functional Pattern," in R.J. Tierney, P.L. Anders, and J.N. Mitchell, eds*., Understanding Readers' Understanding: Theory and Practice* (Hillsdale, 1987). In memory research circles, the storage and retrieval paradigm is also known as "proceduralism." See Robert Crowder, *Systems and Principles in Memory Theory: Another Critique of Pure Memory* (East Sussex, 1993), pp. 139–61. Finally, see Bannon and Kuutti, "Shifting Perspectives on Organizational Memory," passim.

37 Endel Tulvig, "Organization of Memory: Quo Vadis?" in Michael Gazzaniga, ed., *The Cognitive Neurosciences* (Cambridge, 1995). See also Vernon B. Mountcastle, "Brain at Century's Ebb," *Daedalus* 127, no. 2 (Spring 1998), pp. 19–31.

implications for developing optimum models of working memory – just as, one might argue, the foregoing analysis and the RC idea implies some form of qualification of the life cycle's distinctions between working memory and archives.[38] Still, LTM and STM are also said to work very differently, require the participation of different processes and mechanisms, and involve important transformations of information during transfer from STM to LTM.

Many researchers now believe that memory, particularly long-term memory, resides not in a single part of the brain, but at multiple sites. The current view, again, seems to be that memory ramifies across many brain structures and processes. More important, it now appears unlikely that a central location serves as a repository for all our memories. Nor does memory even seem to consist of a series of discrete sites each of which stores intact every aspect of individual or individual types of memory. Rather, the brain seems to distribute and store in different locations fragments of data – what one might call information objects – from single events and phenomena that have been processed in "high-order association areas." Under appropriate stimulant conditions, the hippocampus provides a venue for the retrieval of various combinations of information objects stored in various parts of the cerebral cortex. These objects may come together to reconstruct something more or less approaching a representation of the "original" event.

However, memory is not that straightforward. The brain does not simply store and then later retrieve these same memories. This is because, according to many studies, a significant degree of synaptic plasticity in the brain affects the functioning of human memory. Processes of neuronal change apparently induce a constant evolution in memory so that how it arranges, stores, and then retrieves previously selected information keeps changing. Sometimes, triggered by internal and/or external cues from different – that is, later – contexts, the hippocampus may combine bits of information from several previous experiences to form a variation of an "original." The distributed storage of discrete elements of an experienced event or object in long-term memory, in other words, is manifest in memory's "representational flexibility and promiscuity."[39] This reflects declarative memory's signature characteristic: it is fundamentally a relational representation system.

[T]he full interconnectedness of such a representational system produces the ability of information to be activated regardless of the current context, by all manner of external sensory or even purely internal inputs. As a consequence, the representations are

38 K. Anders Ericsson and Walter Kintsch, "Long-Term Working Memory," *Psychological Review* 102 (1995), pp. 211–45. Also available at <http://www.cogsci.soton.ac.uk/~harnad/Papers/Py104/ericsson.long.html>.

39 Neal J. Cohen and Howard Eichenbaum, *Memory, Amnesia, and the Hippocampal System* (Boston, 1995), p. 64. The Nobel Prize–winning neurologist, Gerald Edelman, says much the same thing: "Building a Picture of the Brain," *Daedalus* 127, no. 2 (Spring 1998), pp. 37–70.

promiscuously accessible to – and can be activated by – all manner of processes and processing modules; and they can be manipulated and flexibly expressed in any number of novel situations, independent of the circumstances in which the information was initially acquired.[40]

Memory involves far more than the straightforward storage and faithful retrieval and expression of bits of information, all forever exclusively dedicated to particular integral scenes from the past. What "information objects" memory fetches, and how it combines, recombines, and "expresses" these stored fragments of previously stored information, depends as much upon the succeeding cues and contexts of retrieval as on the initial means of processing and storage. As researchers have emphasized, the 1960s' information-processing image of memory as a symmetrical input-output corporate database of stable information is inadequate. Memory's amazing complexity, plasticity, and constant evolution account for the brain's still-mysterious and wondrous imaginative, interpretive, and reconstructive qualities.[41] One of the key discoveries in recent years is that memory's content and structures are constantly changing as the brain continually ingests new information. Current memory states may determine what information from its environment the brain selects and how it handles this information. However, new information may in turn affect the strength and connections – the organization – among those informa-

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40 Ibid., p. 52, Edelman writes more elusively: "I stress time in my definition [of memory] because of its ability to recreate an act separated by a certain duration from the original signal set that is characteristic of memory. And in mentioning a changing context, I pay heed to a key property of memory in the brain: that it is, in some sense, a form of recategorization during ongoing experience rather than a precise replication of a sequence of events." See also Edelman, *The Remembered Present: A Biological Theory of Consciousness* (New York, 1989).

41 This was one of F.C. Bartlett's central arguments in his milestone work. Rosenfeld, for whom Bartlett is important, writes: "There are no specific recollections in our brains; there are only the means for organizing past impressions. Memories are not fixed but are *constantly evolving generalizations* – recreations – of the past, which give us a sense of continuity, a sense of being, with a past, a present, and a future. They are not discrete units that are linked up over time but a dynamically evolving system." Rosenfeld, *The Invention of Memory*, p. 76. Elsewhere, Rosenfeld explains that "Memory ... is not a set of stored images that an independent 'I' remembers; memory is an evolving set of procedures." Israel Rosenfeld, "Memory and Identity," *New Literary History* 26, no. 1 (Winter 1995), p. 202. Hubert Dreyfus similarly underlines the evolving rather than fixed nature of memory's content: "Neural networks provide a model of how the past can affect present perception and action without needing to store specific memories at all. It is precisely the advantage of simulated neural networks that past experience, rather than being stored as a memory, modifies the connection strengths between the simulated neurons. New input can then produce output based on past experience without the net having to, or even being able to, retrieve any specific memories. The point is not that neural networks provide an explanation of association. Rather they allow us to give up seeking an associationist explanation of the way past experience affects present perception and action." Hubert Dreyfus, "The Current Relevance of Merleau-Ponty's Phenomenology of Embodiment," *Electronic Journal of Analytical Philosophy* 4 (Spring 1996).

tion objects already stored in memory. The conditions of the very brain struc-
tures that enable humans to make memories by retrieving information are
themselves under constant renovation. Memory, in other words, encompasses
much more than retention and preservation. The making of memory involves
the active construction of present knowledge out of continually evolving infor-
mational materials together with the elaboration on data relationships col-
lected in the past.

Research Issues

The discussion of memory in the preceding sections forms the basis for some
archives-oriented preliminary research issues presented below. Some of these
will require empirical research to flesh out the issues. The several aspects of
memory glanced above provide some heuristics for the characterizations of
time, memory, and the past which may prove useful for fashioning a model of
archival practice that serves the interests of long-term records preservation.
The issues enumerated below are neither necessarily mutually exclusive nor
even mutually consistent. The issues cover conceptual, organizational, and
technological issues.

Conceptual Issues

Issue 1: What is Memory? What is Archival Temporality?

What is memory? What might memory mean in the context of archival prac-
tice? To what extent have our images and metaphors of memory, which are
increasingly marked by technological language, thought, and culture, shaped
our own talk about archives, memory, and the past? Is there a concept of mem-
ory that is compatible with the current interests and methods of archival prac-
tice? There is a need for rigorous clarification of a concept of memory before
archivists can fully comprehend and explore the possibilities it offers for and
limits it imposes upon archival programme policies, purposes, and methods.
Participation in and analysis of research on the often converging or overlap-
ping biological, social, psychological, philosophical, and technological con-
stituents of contemporary memory discourse is indispensable.
  Grappling with contemporary philosophical, scientific, and technological
constructions of the concept of memory may help archivists to develop more
sophisticated, viable models of their current place in organizations and their
functions or roles in society. How well do different elements of memory
research apply to the problem of keeping electronic records over long periods
of time? The information technology industry has been exerting a pervasive
influence on contemporary concepts of what memory means, on the language
researchers use, and on memory research at the psychological, social, organi-

zational, and even neurobiological and technological[42] levels of analysis. Archivists need to identify, understand, and critically assess these increasingly intersecting research efforts and extrapolate their implications for the keeping of permanent records.

Issue 2: Memory, History, and Time

What concepts of time slip into archivists' discussions of memory, history, the life cycle, and the records continuum? Does archival memory discourse accommodate notions of change? If so, is memory really nothing more than a fashionable buzzword for "history?" If not, then where do the ideas of change, continuity, diachrony, and permanence fit into our notions of organizational memory, continuums, and life cycles? What does the often-used phrase "historical memory" signify – synthesis, convergence, or confusion? Does memory imply the absence of change and, therefore, the negation of passing time? Is one accountable to memory or to history? Is evidence necessary for memory or history? What's the difference between "organizational memory" and "organizational history?"[43]

Organizational Issues

Issue 3: Organizational Memory is Communal

What are the implications of viewing institutions and corporations as single individuals, as comprised of several groups of individuals, or as comprised of single, atomic individuals, and, therefore, conceptualizing memory as residing in "individuals," within several groups, or in unified corporate bodies or communities? Is corporate memory inevitably a collective kind of memory? What are the advantages and disadvantages of each view? What does provenance mean in electronically networked and virtual environments? What is the relationship between boundaries set in statutes and the boundaries being drawn and redrawn in cyberspace?

Issue 4: The Forces of Organizational Culture: Memory Encompasses Remembering and Forgetting

Organizations are shaped by what they know and what they don't know, including what they don't know that they know. In other words, organizations are shaped by their past, even – and sometimes especially – when they don't

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42 See Crell, *Of Memory, Reminiscence, and Writing*, passim.
43 On change and chronology in the concepts of history and memory, see Detienne, "Comparative Historicities," p. 15.

remember it. This notion converges with the idea that (organizational) tradition and culture is an "always-in-use and hence never-criticized framework of the world."[44] As archivists know too well, loss or failure of memory can result in significant legal, operational, and social costs.[45] As Nietzsche argued, however, forgetting is also important, for forgetting – a state of thoughtlessness – is what finally makes action possible. Moreover, forgetting can also benefit organizations and society because it prevents them from falling too much under the sway of mindless habit, harmful tradition, and false information. Indeed, classification systems constitute a form of systematic forgetting.[46] Archivists must develop a more advanced understanding of the concept of forgetting, and know equally well the advantages of forgetting the past as well as they do the benefits of remembering it. Remembering and forgetting are two sides of the same coin of information selection, which forms useful institutional memory. Archivists need to refine their knowledge about, and develop programme strategies that accommodate, both dimensions of memory as part of effective organizational cognition and knowledge formation.

Issue 5: Organizational Memory – Multiple Locations

Organizational memory undoubtedly resides in multiple social and organizational repositories, in multiple organizational memory systems. It resides in individuals, in groups, and in various physical embodiments – artifacts, records, and buildings. Increasingly, some of the most important fragments of organizational memory also exist outside the boundaries of organizations. What are these types of memory? What are their relationships, and what are the implications for knowledge and learning, and for decision processes? What role do archives play within the multiplicity of organizational memory systems?

Issue 6: Archival Practice is Part of Information Management and
Information Management is Part of Knowledge Management

Is knowledge simply a form of memory? Is memory a synonym for knowl-

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44 George Allan, "Traditions and Transitions," in Patricia Cook, ed., *Philosophical Imagination and Cultural Memory: Appropriating Historical Traditions* (Durham, 1993), pp. 24–25.

45 According to one legal scholar, mistaken "epistemological" preconceptions about "the corporation as a knowledgeable entity" have resulted in the imposition of unfair demands on corporate memory during legal discovery and deposition processes. See Kent Sinclair and Roger Fendrich, "Discovering Corporate Knowledge and Contentions: Rethinking Rule 30(b)(6) and Alternative Mechanisms," *Alabama Law Review* 50, no. 3 (Spring 1999), pp. 651–99.

46 Geoffrey C. Bowker, "Lest We Remember: Organizational Forgetting and the Production of Knowledge" at <http://weber.ucsd.edu/~gbowker/forget.hml>.

edge? No single view prevails on what "organizational memory" and "knowl-
edge management" mean. If the notions of archives and memory are
compatible, does this mean that archives is also indistinguishable from the
aims and structures of knowledge management? Is organizational memory
simply synonymous with knowledge formation? Does memory have a special
role in the development and management of institutional cognitive processes,
knowledge formation, and learning organizations? Will "knowledge analysts"
replace archivists and records managers? Are archivists and records managers
already evolving into knowledge analysts? What is the implication for record-
keepers of placing archives in a knowledge management/analysis frame-
work?[47] What original contribution can archives make to the development of
the concept of knowledge management? Are there significant differences for
archival practice among "corporate memory," "corporate knowledge," "corpo-
rate history," and "corporate culture?"

Issue 7: Completely Unprecedented Organizational Situations are Rare

Today, people often tend to regard change and innovation as positive cultural
values. Contemporary organizational managers may have a tendency to
assume, and sometimes even have a vested interest in thinking, that the prob-
lems they encounter and the solutions they develop are fresh and without pre-
cedent. However, administrators, managers, and staff must also recognize that
archival records can often provide a pool of insight and information on simi-
lar, if not identical or analogous, situations that arose in the past. This would
include evidence of organizational experiences and patterns of performance,
and documentation and information on reasoning behind decisions and actions
pursued, and alternatives ignored.

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47 One author envisions organizational "knowledge analysts" who will develop "intelligent user
interfaces," and, much like "library archivists," "index, structure, and maintain the webs of
information and expertise [and] provide the most effective guidance to staff." It is these
skills "that often make the difference between success and failure in organizational mem-
ory." Simon Buckingham Shum, "Balancing Formality with Informality: User-Centered
Requirements for Knowledge Management Technology," AAAI Symposium on Artificial
Intelligence in Knowledge Management, Stanford University, Palo Alto, CA, 24–26 March
1997 <http://kmi.open.ac.uk/~simonb/org-knowledge/aikm97/sbs-paper1./html> last visited
January 2000.
    Terry Cook's plea many years ago for archivists to look beyond information gathering to
knowledge formation gains in significance at a time when "knowledge management" has been
taking the managerial and corporate world by storm. Terry Cook, "From Information to
Knowledge: An Intellectual Paradigm for Archives," *Archivaria* 19 (Winter 1984–85), pp. 28–
49.

At the same time, archival records can help to dissuade decision-makers from yielding to what Nietzsche called "seductive analogies," that is, mistaken recognition of largely novel situations as familiar.[48]

Issue 8: Organizations Have Only a Superficial Understanding of How and Why Things Are the Way They Are

Closely related to issues six and seven, short-term memory limits many organizations' depth of understanding of how and why things came to be the way they are. Certainly, organizations develop narratives about themselves in one form or another, but sometimes this amounts to quite narrow conceptions about the organization's past. A recent survey of American government chief information officers reveals that respondents view their jurisdictions as slow to take the steps to realize "business intelligence." Little has been accomplished in the use of advanced technologies to support organizational decision-making and reaction. Thus, decision makers have so far largely failed to take advantage of technology to access quality organizational memory.[49]

Technological Issues – Archival Technoscience

Issue 9: Archival Mnemonics and the Human-Computer Interface

The proposed approach to memory focuses on technological opportunity rather than on accountability and risk management.[50] Though these two issues unquestionably deserve the attention they have been getting, it may be time for archivists to emphasize social and business opportunity as well. In the world of paper records, archival files remained relatively remote and inaccessible, both physically and intellectually, from the business loop, and, therefore, often remained outside it. Archives need to harness information technology to promote regular social and organizational utilization of long-term electronic memory. Innovations in systems design, information retrieval, and archival management software augur important changes in this situation by making long-term memory, though currently "off-line," more readily available to

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48 Daniel L. Schacter, Mieke Verfaellie, Michael D. Anes, and Carrie Racine, "When True Recognition Suppresses False Recognition: Evidence from Amnesiac Patients," *Journal of Cognitive Neuroscience* 10, no. 6 (November 1998), pp. 668–79.

49 *Federal Computer Weekly* (September 2000), available at <http://www.fcw.com/cio/s2000 surveyreportsummary.asp>.

50 In record-keeping discourse, "risk" crops up in discussions of two kinds of situations: the risks of loss involved in keeping and migrating records in electronic file formats, and the corporate legal and financial risks of not keeping good records.

knowledge workers than paper was. This should provide social organizations and institutions with enterprise intelligence opportunities previously unavailable to them.[51]

Plato may have been right to warn that writing would destroy memory, for recording sanctions forgetfulness. Computers, it has been said, augur the "industrialization of forgetting and lack."[52] Thus, computers will undoubtedly make long-term memory more easily *accessible* to organizational workers, but access is not enough. Archivists have a crucial role to play in the *actualization of memory*. This means that archivists must elaborate mnemonic mechanisms that remind organizations to remember, to recall what they have already written. In other words, archivists need to develop technologically enhanced interfaces between past and present. Archival records, especially those in digital form, can become more tightly and conspicuously coupled with active business processes through the development of "triggers" and "placeholders."[53] Such facilities may be virtually transparent[54] desktop retrieval cues that automatically bring the existence of task-relevant past knowledge and documented experience to the attention of organizational decision makers in a time- and situation-appropriate fashion. This means, again, closer apposition between archival and other business processes and applications; it requires tighter forward and backward linkages between archival records and "front-end" organizational business processes and information systems. Properly constructed,

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51 John McDonald, formerly with the National Archives of Canada, has been at the forefront of conceptualization of electronic record-keeping on the desktop. See National Archives of Canada, Information Standards and Practices, "Electronic Work Environments – Vision" (May 1996), p. 3.

52 Paul Virilio, *The Art of the Motor* (Minneapolis, 1995), p. 211.

53 For the notions of "triggers" and "placeholders," see Alan Dix, Julie Wilkson, and Devina Ramduny, "Redefining Organizational Memory: Artifacts and the Distribution and Coordination of Work." Ultimately, this research concerns the human-computer interface design of the workspace. Archival information must occupy a higher visibility in the workspace through attention to issues of electronic desktop design <http://www.hiraeth.com/alanpapers/artefacts98>.

    The thrust of this research recalls the mnemonic arts that go back to ancient times. In some of these schemes the effectiveness of memory depended on the allocation of mental images to real or imagined architectural spaces. The classic study is Yates's 1962 work, *The Art of Memory*. Today, information scientists talk about cognitive architecture. An article that draws together the ancient, spatially oriented "art of memory" and contemporary human-computer interface design issues is Janine Wong and Peter Storkerson, "Hypertext and the Art of Memory," *Visible Language* 31, no. 2 (1997) <http://www.id.itt.edu/visiblelanguage/Feature%20Articles/Artofmemory>.

    For a critique of the computer as a limiting factor in human cognition, however, see Tor Norretranders, *The User Illusion: Cutting Consciousness Down To Size* (n.p., 1998).

54 On the notion of technological transparency, see Susan Star and Geoffrey Bowker, "Transparency At Different Levels of Scale: Convergence between Information Artifacts and Social Worlds," at <http://weber.ucsd.edu/~gbowker/converge.html>.

long-term memory can form an integral resource regularly contributing to contemporary structured, as well as unstructured, workflows.[55]

Issue 10: Autopoeisis and the Principle of Dynamic, Self-Organizing Records Systems

This issue is closely related to issue nine. Record-keeping systems development has rested on assumptions about enduring informational relationships. This is manifest in the construction of stable record series, classification systems, and file directories. However, static classification structures, though nec-

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55 The design of a workspace that makes archival records more conspicuous, accessible and integrated might be part of HCI (Human-Computer Interface) work. See Andreas Abecker, et al., "Towards a Well-Founded Technology for Organizational Memories," at <http://www.cpsc.ucalgary.ca/~ksi?AIKM97/abecker/OM.html> (last visited December 1999). On the technological design of embedded rules bringing organizational memory to bear on work, see also Christine Moorman and Anne S. Miner, "Organizational Improvisation and Organizational Memory," *Academy of Management Review* 23, no. 4 (October 1998), pp. 698–723. "Prospective memory" studies, which one finds in psychology and archaeology, concern the effective operation of memory in anticipation of future needs and uses. Archaeological research on prospective memory interprets monuments as objects for the future rather than as objects from the past. Thus, what makes monuments monumental is their performance and scale, and "their *constant visibility.*" Cornelius Holtorf, "Towards a Chronology of Megaliths: Understanding Monumental Time and Cultural Memory," *Journal of European Archaeology* 4 (1996), pp. 119–52; Gerdien, *The Topography of Remembrance*, passim.

There is a growing body of technological research that promises to incorporate documentary memory into business processes. See Pulkkinen, "Turning Informational Value to Business Value," passim. Here, a case is made for the use of records for business purposes. Work is already well underway on the development of desktop memory agents. This software is being designed to maximize the timely identification and retrieval of relevant historical records for operational purposes. See, for example, Yvonne Wren, "Collective Learning and Collective Memory for Coping with Dynamic Complexity," Co-Tech Workshop at ECSCOW 95, <http://www.cwi.nl/~steven/sighi/bulletin/1996.3/waern.html>; Alan Wexelblat and Patti Maes, "Footprints: History-Rich Tools for Information Foraging," CHI 1999 at <http://www.media.mit.edu/people/wex/CHI-99-Footprints.html>; Alan Wexelblat, "History-Based Tools for Navigation," IEEE 32nd Hawaiian International Conference on Systems Science at <http://wex.www.media.mit.edu/people/wex/HICSS-32.html>; Andrew Garland and Richard Alterman, "Multiagent Learning through Collective Memory," at <http://www.cs.brandeis.edu/~aeg/aaaiss96/aaaiss96.html>; Bradley Rhodes and Thad Starner, "Remembrance Agents: A Continuously Running Automated Information Retrieval System," in Proceedings of the First International Conference on the Practical Application of Intelligent Agents and Multi Agent Technology, PAAM'96 (pp. 487–95); Bradley J. Rhodes and Patti Maes, "Just-in-time Information Retrieval Agents," *MIT Media Laboratory* 39, nos. 1&2 (2000) at <http://www.research.ibm.com/journal/sj/393/part2/rhodes.html>; Bradley J. Rhodes, "Margin Notes: Building a Contextually Aware Associative Memory," *Proceedings of the International Conference on Intelligent User Interfaces*, New Orleans, LA (January 2000), and Richard Salter, "A Client-Server Architecture for Rich Visual History Interfaces," *Human Computer Interaction Laboratory Technical Report No. 99-22* (September 1999) at <http://www.cs.umd.edu/hcil>.

essary, also impose limitations. Under conditions of frequently changing organizational objectives, needs, and perspectives, such stability can limit the period of usefulness of records. However, one can envision established structures and connections flexibly responding to emergent, changing patterns of use. Long-term potentiation (LTP) – engendering the extended use of particular records over long periods of time – depends on the existence of systems capable of the experientially based articulation of new connections among archival records.

Such adaptiveness recalls the function of connectionism in some conceptions of Neural Networks and Parallel Distributed Processing: systems evolve and store successive sets of associations or relations among records experientially. In others words, the nature and strength of relations among records changes in response to automatically identified patterns of use and newly ingested information. Rather than adhering to an initially defined set of relationships, record-keeping can involve moving beyond early-predetermined intellectual constructs and contexts (classification systems/record series, original order, types and classes of information objects). In effect, autopoeietic records systems would possess a degree of self-determining intelligence, an intelligence capable of organizing, reorganizing, and storing successive records relationships (classifications) in response to monitored and registered patterns of record use.[56]

To preserve rich context information, it is essential for organizations and societies to capture an archival record of classification constructs as artifacts themselves. However, neither archives nor organizations in general need to be tethered to static states of initial records arrangement for research and retrieval in subsequent contexts of use. Here, the strength of original connections and relations – original orders – might submit to adaptive, continually evolv-   ing (and automatically documented) usage rates and patterns of learning. In other words, under this regime, record-keeping systems become reflective, dynamic, and virtually self-ordering in response to emerging patterns of need and use.

In this view, then, the strength of conceptual connections among informational entities – knowledge structures, record classification series, file directories – undergoes continuous or periodic change as relations among information entities shift in response to new organizational concerns arising

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56 On autopoesis, see Ken Slocum Georg Von Krogh and Johan Roos, "An Essay on Corporate Epistemology," *Strategic Management Journal* 15 (Special Issue) (Summer 1994), pp. 53–71. Information modelers are beginning to recognize the dynamic nature of information objects as they take shape through multiple context associations over time. See Pieter Wisse, *Meta-patterns: Context and Time in Information Models* (Boston, 2001).

from emergent learning algorithms. The viewpoint shifts from "record series" to parallel records processing, that is, from the time-dependent series to the simultaneity of parallelism, from a linear algorithm to cyclical learning.[57]

Conclusion

Memory is not a place; it is a process. It is a process of knowledge construction in anticipation of performance. Nor is memory about the past. Memory involves diminishing "the pastness of the past" and shaping existing informational material to present purposes. In the framework of memory, "the past" is simply a term of convenience, one that encompasses certain categories of information available for use by contemporary individuals, organizations, and society. Archives can form a vital part of this process. Archivists need to see that records are cognitive artifacts as much as evidential artifacts. New opportunities and rewards for archivists may well lie in the manifold areas of cognitive science and cognitive technology as well as in beginning to understand the cognitive aspects of making, keeping, and using records. This research, as well as other work already mentioned, may offer archivists a set of perspectives they can use to parlay old information into useful knowledge in the workplace and society. If an information revolution is what we are experiencing, then its revolutionary quality lies in the new cognitive capabilities it is affording us, not in its evidential power.

Second, information technology and information culture have placed a premium on access and given short shrift to preservation – to access over significant periods beyond the present. For archivists, access is not the issue – access over time is. Indeed, the issue of access over time may well depend, as we have argued, on going beyond the passive preservation of *accessibility* to the project of *actualization*. This means actively constructing effective mechanisms for bringing archival records to the attention of potential users by deploying the powers of the very technology that now threatens the longevity of archival records.

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57 Discussion of this issue draws on the work on neural networks, also known as connectionism and parallel distributed processing (PDP). This work involves training a given information system to adapt by implementing learning rules that serve to alter the strength of connections among units as new inputs arrive. The best-known rules are the Hebbian Rule and the Delta Rule. They best capture associations or discover regularities within a set of patterns; where the volume, number of variables or diversity of the data is very great; the relationships between variables are vaguely understood; or, the relationships are difficult to describe adequately with conventional approaches. Other concepts and approaches dealing with the adaptive evolution of information objects, classifications, and systems include adaptive clustering, contextual reasoning, and schema evolution. This work may have implications for automated records classification and the capturing of the history of logical database architectures (including metadata) as they evolve over time.

Third, archivists need to revisit the philosophy that underwrites their conceptions of the past that archives keep. They should reflect on how their thought and work have affected and been affected by the construction of certain relations between past and present, and cycles and continuums. They need to think through their conceptions of time, history, and memory. Armed with emerging technology, memory's archivists might be in a position to implement a present-centred idea of long-term working archival memory as part of organizational cognitive processes and social knowledge production. If successfully argued, memory's archivists might well receive much more of the attention and support they have been seeking for a long time. Archives need fresh arguments grounded in new corporate and social epistemologies. Failure to find them may well mean a repeated history of indifference to and limited funding of the archival mission, and by-passing of archivists.