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# Archives in Liquid Times

## Jaarboek 17

edited by

Frans Smit, Arnoud Glaudemans, Rienk Jonker

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Archives in Liquid Times

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# The Theoretical Framework for the 'Archive-As-Is'. An Organization Oriented View on Archives

## Part I. Setting the Stage: Enterprise Information Management and Archival Theories

### 1. Introduction

#### 1.1. *The problem: Information Chaos within organizations*

The definition of a business strategy is a common practice to capitalize on new market opportunities and to do better than direct competitors. Projected on the information management processes of an organization, a business strategy clarifies how information can be used for reaching business objectives (Baets, 1992; Peppard and Ward, 2016). It can be used for quick responses to needs of customers, adjustments to changes in the organizational environment, and improvements in competitiveness. Most of this information is recorded in different types of information objects that are embedded within organizational business processes and are, as such, important business assets.

Enterprise Information Management (EIM) tries to enable organizations to secure these business assets across the complex landscapes of organizational departments, legacy systems, corporate and regulatory policies, business content, and big data (Chaki, 2015). It organizes the information value chain in capturing, structuring, describing, preserving, and governing information objects across organizational, temporal, and technological boundaries to allow business strategies to reach their objectives (Van Bussel, 2012abc; Van de Pas and Van Bussel, 2015ab). It has not been overly successful, because it concentrates almost exclusively on structured information (objects), as the result of being influenced extensively by computer science. But more than 80 % of all information objects in organizations are unstructured and with big data on the rise, that amount is growing quickly (Van Bussel, 2012b).

More than forty years ago, Alvin Toffler (1970) coined the term 'information overload'. Today's world is characterized by an increasing information flood, completely fulfilling Toffler's forecasts. According to IDC, in 2020 the digital universe (the information objects created and copied annually) will reach 44 zettabytes (44 trillion gigabytes) (Turner et al, 2014). Because EIM has neglected the management of unstructured information objects, many of these objects

cannot be quickly found when needed. Knowledge workers spend up to 40% of their working day searching for information (objects) (Nel, 2015; Naidoo and Nsibirwa, 2015). They spend 15-25% of their time on information-related tasks (Brocke et al, 2011). An 'information chaos' caused by the inability of EIM to capture this large influx of unstructured information objects compromises the ability of organizations to reach business objectives. This chaos is the rule rather than the exception in contemporary organizations (Redman, 2004).

The abundance of (structured *and* unstructured) information objects leads to organizational challenges. To facilitate fail-proof information management guaranteeing accountability, compliance, and security is by no means new (Hausmann et al, 2014; Patnayakuni and Patnayakuni, 2014). Until a few years ago, organizations captured and controlled information objects in an infrastructure that did not cross the borders of the organizational structure. If accountability, compliance, security, or other business-related issues arose, there was a single 'point of control' defined (Davenport and Prusak, 1997). That 'point of control' became diffused with the ongoing integration of business processes between different organizations, stimulated by sharing information objects through (for instance) social media (McAfee, 2006) and the breakthrough of supply chain and ERP systems causing information integration (Srinivasan and Dey, 2014). As it became common practice to share information objects between different parties, it could become difficult to ascertain which of the integrated process owners was responsible for accountability, compliance, security, or information accessibility. It is proving challenging for traditional ways, methods and technologies to achieve the expected information quality, compliance and information governance (Van de Pas and Van Bussel, 2015ab). Guaranteeing an accountable, compliant, transparent, and effectively performing organization in a dynamically changing ICT environment, recognizing both structured and unstructured information objects, is problematic. EIM's focus is changing to incorporate unstructured information objects, but lacks the theoretical foundation to do so effectively.

### 1.2. The solution: the organizational archive and its records?

The key for such a theoretical foundation for EIM may be 'the archive' (Van de Pas et al, 2016). For defining business strategies, Smith and Steadman (1981) already acknowledged organizational archives as crucial resources. They are very important for organizational accountability, business process performance, and reaching business objectives. They have, unfortunately, not been recognized as such for many years and for that reason have been badly managed by organizations, do not meet quite common quality requirements, and are almost non-contextual (Redman, 2004; Groth, 2007). Without these characteristics, it is impossible to realize the primary goals of archives: a reliable reconstruction of past happenings, delivering evidence, and meaningful production (Van Bussel, 2012abc), extremely diminishing their organizational value.

Organization-wide management of archives has not been a common functionality for EIM (Serova, 2012). The neglect in the management of organizational archives has resulted in [1] fragmented storage of both structured and unstructured information objects in a variety of information systems, unconnected with their metadata and the organizational archive they belong to; [2] fragmented metadata,

separated from the information objects that caused their genesis and not embedded into the metadata layers of the organizational archive, leading to a loss of contextuality; and [3] a declining quality of information objects, because their provenance, integrity, and preservation are in peril (Van Bussel, 2016).

Two concepts are essential for integrating structured *and* unstructured information objects within EIM to exploit the value(s) of information in defining effective business strategies: records and archives. Records are combinations of information objects (structured and unstructured data, data sets, and data objects) and their metadata, generated and used in the course of (business) processes, actions, and transactions, stored in an organizational (or personal) archive, irrespective of format used, with a unique (fixed or reconstructable) content, context, and structure, and retained and preserved for whatever reason organizations (or individuals, groups, or families) want to set them aside (business use, compliance, accountability, evidence, future reference, curiosity, historical value, extension of human memory, etc.) or for whatever period of time they (or parts of them) are retained (Van Bussel, 2016; Yeo, 2007). Archives (or data stores) are organizational or personal constructs, embedded in and enriched by metadata about their creation, organizational environment, and management, in which records (from the moment of their creation) are persistently stored and managed with the objectives of reliably reconstructing the past, delivering evidence, and realizing meaningful production.<sup>1</sup> The term can be used for *any* construct of records that is meant to be retained, like YouTube, Twitter, Pinterest, etc., but also more traditional organizational or personal compositions of records (Van Bussel, 2012b). Both concepts do not differentiate between structured and unstructured information objects.

To allow for the integration of structured and unstructured information objects, EIM needs a theoretical foundation based on records and archives that is aimed at realizing organizational objectives.

### 1.3. The objective: a theoretical foundation

Both computer and Information science cannot be expected to define this theoretical foundation for EIM, although they have developed many useful concepts and theories.

As shown in Tables 1 and 2, an analysis of the contents and abstracts of five top journals each for computer and information science from 2010-2016 shows that both sciences do not really acknowledge the concepts records and archives. They are rarely used, even while there are many articles in these journals describing information objects within business processes used for organizational objectives that are traditionally known as records or archives. In these journals, they are called digital artefacts, documents, data objects, repositories, archival collections, archival documents, or storage platforms. These articles were *not* included in the analysis visualized in Table 1 and 2, just like the three articles using the terms 'archiving' and 'archivists'. In the end, only 25 articles (from the 5.319 articles reviewed) mention the concept records or archive(s) (or both) in its title or abstract.

<sup>1</sup> In this interpretation of the concept 'archive', I am following the Dutch archival tradition that uses the term 'archive' to designate an organizational (or personal) construct of [1] current (or active) records; [2] semi-active or semi-current records; [3] inactive or non-current records; and [4] permanent records, the whole body of records of continuing value of an organization or person.

Twelve articles use the concepts only to indicate specific information objects ('(personal) health records', 'medical records', 'patient records', 'personal records', 'archives'). Eleven articles use the concepts to indicate aspects of the management of records and archives: 'records management', 'records management systems', 'records management metadata', 'records laws', 'archival finding aids', 'records management strategies', 'record search', and '(functional) records classification'. One article explores the relationship between information culture and records management and offers an interesting theoretical discourse, but it is not meant to be a theoretical framework for records and archives (Sundqvist and Svärd, 2016). In the articles analysed, there is only one that offers a theoretical framework, a formal model for digital archives as cultural heritage (Ferro and Silvello, 2013). It is not a full-scale framework for records and archives, but a very useful application of digital library research to archives as cultural heritage. Ferro and Silvello propose a formal model, called NESTed SETs for Object hierarchies (NESTOR). The model is used to extend the 5S model, a unified formal theory for Digital Libraries. It allows for a definition of a digital archive as a specific digital library able to cope with the peculiar features of archives (as context and hierarchy) and provides archives with the full wealth of digital library technologies and methods.

Journal	Impact	Articles (Total)	Articles (Concepts mentioned)	Articles (frameworks defined)
<i>Computer Science</i>				
MIS Quarterly: Management Information Systems	6.984	358	1 (record)	0
Information Systems Research	4.397	408	3 (record)	0
ACM Computing Surveys	3.405	417	0	0
Journal of Management Information Systems	3.036	306	0	0
IEEE Transactions of Industrial Informatics	2.513	1.086	0	0
<i>Information Science</i>				
Library and Information Science Research	1.629	272	3 (record)	0
Journal of the Association for Information Science and Technology	1.601	1.340	5 (record, archival finding aid)	0
Information and Organization	1.306	90	1 (record)	0
International Journal of Information Management	1.173	541	9 (record, archives)	0
Information Processing and Management	0.897	501	3 (record, archives)	1
		<b>5.319</b>	<b>25</b>	<b>1</b>
		<b>100%</b>	<b>0,47 %</b>	<b>0,0188 %</b>

Table 1. Analysis of content of applicable top journals 2010-2016 (Scimago Journal and Country Rank (April 26, 2017))

Journal	Article
MIS Quarterly: Management Information Systems	1. Kohli, R., and S.S.L. Tan (2016). 'Electronic Health Records: How Can IS Researchers Contribute to Transforming Healthcare?', <i>Mis Quarterly</i> , Vol. 40, No. 3, pp. 553-573.
Information Systems Research	2. Ozdemir, Z., J. Barron, and S. Bandyopadhyay (2011). 'An analysis of the adoption of digital health records under switching costs', <i>Information Systems Research</i> , Vol. 22, No. 3, pp. 491-503. 3. Oborn, E., M. Barrett, M., and E. Davidson (2011). 'Unity in diversity: electronic patient record use in multidisciplinary practice', <i>Information Systems Research</i> , Vol. 22, No. 3, pp. 547-564. 4. Mishra, A.N., C. Anderson, C.M. Angst, and R. Agarwal (2012). 'Electronic health records assimilation and physician identity evolution: An identity theory perspective', <i>Information Systems Research</i> , No. 3 (part 1), pp. 738-760.
Library and Information Science Research	5. Kettunen, K., and P. Henttonen (2010). 'Missing in action? Content of records management metadata in real life', <i>Library &amp; information science research</i> , Vol. 32, No. 1, pp. 43-52. 6. Sinn, D., S.Y. Syn, and S.M. Kim (2011). 'Personal records on the web: Who's in charge of archiving, Hotmail or archivists?', <i>Library &amp; Information Science Research</i> , No. 4, pp. 320-330. 7. Oltmann, S.M., E.J. Knox, C. Peterson, and S. Musgrave (2015). 'Using open records laws for research purposes', <i>Library &amp; Information Science Research</i> , Vol. 37, No. 4, pp. 323-328.
Journal of the Association for Information Science and Technology	8. Nov, O., and W. Schecter (2012). 'Dispositional resistance to change and hospital physicians' use of electronic medical records: A multidimensional perspective', <i>Journal of the Association for Information Science and Technology</i> , Vol. 63, No. 4, pp. 648-656. 9. Steele, R., K. Min, K., and A. Lo (2012). 'Personal health record architectures: technology infrastructure implications and dependencies', <i>Journal of the American Society for Information Science and Technology</i> , Vol. 63, No. 6, pp. 1079-1091. 10. Li, T., and T. Slee (2014). 'The effects of information privacy concerns on digitizing personal health records', <i>Journal of the Association for Information Science and Technology</i> , Vol. 65, No. 8, pp. 1541-1554. 11. Huvila, I., Å. Cajander, M. Daniels, and R.M. Åhlfeldt (2015). 'Patients' perceptions of their medical records from different subject positions', <i>Journal of the Association for Information Science and Technology</i> , Vol. 66, No. 12, pp. 2456-2470. 12. Freund, L., E.G. Toms (2015). 'Interacting with archival finding aids', <i>Journal of the Association for Information Science and Technology</i> , Vol. 67, No. 4, pp. 994-1008.
Information & Organization	13. Davidson, E. J., C.S. Østerlund, and M.G. Flaherty (2015). 'Drift and shift in the organizing vision career for personal health records: An investigation of innovation discourse dynamics', <i>Information and Organization</i> , Vol. 25, No. 4, pp. 191-221.
International Journal of Information management	14. Külcü, Ö., and T. Çakmak (2010). 'Evaluation of the ERM application in Turkey within the framework of InterPARES Project', <i>International Journal of Information Management</i> , Vol. 30, No. 3, pp. 199-211. 15. Xie, S.L. (2013). 'National strategy for digital records: Comparing the approaches of Canada and China', <i>International Journal of Information Management</i> , Vol. 33, No. 4, pp. 697-701. 16. Shaw, N. (2014). 'The role of the professional association: a grounded theory study of electronic medical records usage in Ontario, Canada', <i>International Journal of Information Management</i> , Vol. 34, No. 2, pp. 200-209. 17. Asma' Mokhtar, U., and Z.M. Yusof (2015). 'The requirement for developing functional records classification', <i>International Journal of Information Management</i> , Vol. 35, No. 4, pp. 403-407. 18. Vilar, P., and A. auperl (2015). 'Archives, quo vadis et cum quibus?: Archivists' self-perceptions and perceptions of users of contemporary archives', <i>International Journal of Information Management</i> , Vol. 35, No. 5, pp. 551-560.

International Journal of Information Management	<p>19. Sundqvist, A., and P. Svård (2016). 'Information culture and records management: a suitable match? Conceptualizations of information culture and their application on records management', <i>International Journal of Information Management</i>, Vol. 36, No. 1, pp. 9-15.</p> <p>20. Gagnon, M.P., D. Simonyan, E.K. Ghandour, G. Godin, M. Labrecque, M. Ouimet, and M. Rousseau (2016). 'Factors influencing electronic health record adoption by physicians: A multilevel analysis', <i>International Journal of Information Management</i>, Vol. 23, No. 3, pp. 258-270.</p> <p>21. Asma' Mokhtar, U., Z.M. Yusof, K. Ahmad, and D.I. Jambari (2016). 'Development of function-based classification model for electronic records', <i>International Journal of Information Management</i>, Vol. 36, No. 4, pp. 626-634.</p> <p>22. Mokhtar, U.A., and Z.M. Yusof (2016). 'Records management practice: The issues and models for classification', <i>International Journal of Information Management</i>, Vol. 36, No. 6, pp. 1265-1273.</p>
Information processing and Management	<p>23. Romero, F.P., I. Caballero, J. Serrano-Guerrero, and J.A. Olivias (2012). 'An approach to web-based personal health records filtering using fuzzy prototypes and data quality criteria', <i>Information Processing &amp; Management</i>, Vol. 48, No. 3, pp. 451-466.</p> <p>24. Ferro, N., and G. Silvello (2013). 'NESTOR: A formal model for digital archives', <i>Information Processing &amp; Management</i>, Vol. 49, No. 6, pp. 1206-1240.</p> <p>25. Amini, I., D. Martinez, X. Li, and M. Sanderson (2016). 'Improving patient record search: A meta-data based approach', <i>Information Processing &amp; Management</i>, Vol. 52, No. 2, pp. 258-272.</p>

Table 2. Articles mentioning records and/or archives in applicable top journals 2010-2016

The professional practice of records management (or recordkeeping), recognizing both concepts, aims to support organizations in their business conduct and should be aligned with business and information systems, risk management, and information governance (McLeod and Lomas, 2015). Although it should have been aligned with EIM, in organizational reality it is not (Alalwan and Weistroffer, 2012). Most organizations do not align records management with business processes and strategies (Van Bussel, 2016). Records Management is based on best practices, pragmatic considerations and borrowed theories from other disciplines such as archival science, information science and management. It lacks its own theoretical basis, as an analysis of the contents and abstracts of the 392 primary articles of its only scholarly journal, *Records Management Journal* (Impactscore: 0.324) shows. The two articles defining encompassing frameworks for records management are based directly on theories from archival science (Yusof and Chell, 2002; Ismail and Jamaludin, 2009). Its reputation is that of 'the handmaiden of archives administration' (McLeod and Lomas, 2015, p. 349), a keeper of 'old documents', and an inconvenience or technicality. It is one of the main reasons for the organizational misunderstanding about the value of records management.

For EIM to find a theoretical foundation based on records and archives, only archival science seems to offer applicable, encompassing theoretical frameworks. There are two different views within archival science, the Records Continuum Theory and Digital Diplomacy. The theories focus on the cultural and evidential value of archives respectively. They do not pay much attention to the (organizational

or personal) construction of archives and their value for reaching organizational objectives and defining business strategies. It is remarkable, for instance, that in the more than 1.000 pages of *Research in the Archival Multiverse*, the most recent collection of essays on archival science research (Gilliland, McKemmish and Lau, 2016), the organizational (or personal) construction of archives receives no attention at all. The analysis of these two theoretical frameworks will be very important in defining a new one, more aimed at organizational value, reaching business objectives and defining business strategies. This new framework could be the theoretical foundation needed for EIM to use records and archives for reaching business objectives and in defining and realizing business strategies. Defining this new theoretical framework is the objective of the second part of this article.

#### 1.4. Research methodology

This new theoretical framework is a result of my long-term research into the relationships between organizational accountability, digital archiving and EIM (2008-2016). During this research, an interpretive research approach was followed, primarily based on Orlikowski and Baroudi (1991). In this approach, in order to explore phenomena without imposing an *a priori* understanding, a non-deterministic perspective is necessary. The research for this article is based on:

1. An analysis of a corpus of scientific literature, based on the literature review methodology of Okoli and Shabram (2010). This corpus consisted of 1152 conference papers, journal articles, working papers and books. These items were collected using key word search in the Digital Library of the University of Amsterdam, IEEE Xplore Digital Library, ACM Digital Library, Google Scholar, Microsoft Academic Search, EBSCO, Emerald Insight, and Paperity.
2. An analysis of the application descriptions of 17 case studies, organized and analysed for the research reported in Van Bussel and Ector (2009) about digital archiving, organizational accountability and governance in public organizations. These case studies were organized according to the case study methodology, designed by Yin (2003), supplemented with Benbasat, Goldstein and Mead (1987) for their method of action research.
3. In-depth, semi-structured interviews with ten records management, EIM, and business specialists about the analysis of the corpus of literature, the case studies, and the new theoretical framework in its different stages of design.

#### 1.5. Outline of this article

This article is published in two parts. This first part is setting the stage. In the introduction, EIM and its lack of a suitable theoretical foundation is introduced. This is followed with a delineation about the archival renaissance in the last decade of the twentieth century, when the 'archive' was 'reborn' as a 'theoretical archive', almost completely dissociated from organizational practice and characterized as a conceptual domain for many disciplines. After this, the leading archival theories in the first decades of the twenty-first century are discussed. The first part ends with a conclusion about the value of these archival theories for the theoretical framework that is discussed in the second part of the article. This second part will be an in-depth discussion of the new framework, developed as a way for EIM to use records and archives for reaching business objectives.

## 2. The Archival Renaissance

### 2.1. Foucault and Derrida

Since the early 1990s, in the wake of a new edition of Michel Foucault's (1992) *L'Archéologie du savoir*, archives have become the conceptual domain of a range of disciplines, most notably literary and cultural studies, philosophy, and anthropology. Foucault was, in essence, the pioneer of 'the theoretical archive' that is entirely dissociated from its conventional definition(s) and practices. The Foucauldian archive does not reproduce but produces meaning; it is not a monument for future memory, but a 'document' for possible use (Foucault, 1975, p. 193). Jacques Derrida, who reformulated the notion of an archive in terms of psychoanalysis, has pointed out in his highly complex 'Mal d'Archive' (1995a, p. 141) that 'rien n'est moins sûr, rien n'est moins clair aujourd'hui que le mot d'archive' ('nothing is less reliable, nothing is less clear today than the word 'archive': Derrida, 1995b, p. 57). For Derrida (1995a, p. 34) the process of archivization (a term which meaning is not always clear) 'produit autant qu'elle enregistre l'événement' ('produces as much as it records the event': Derrida 1995b, p. 17).<sup>2</sup>

We are confronted with what Marlene Manoff (2004, p. 14) has called 'the postmodern suspicion of the historical record'.<sup>3</sup> For archives are not passive receptacles: they shape and control the way the past is read. As Derrida (1995a, p. 15-16 (note 1); 1995b, p. 10-11 (note 1)) says, there is no power without control of 'the archive'. But, at the same time, 'postmodernists' are ambivalent about archives. They doubt the dominance of historical narratives (and that is not without reason). They view archives as 'traces of missing or destroyed universes of records and activity' and as 'trick mirrors distorting facts and past realities in favour of the narrative purpose' of authors and audiences (Cook, 2001, p. 9). Nevertheless, they resort to history and historical analyses. Foucault's historical studies on criminology and sexuality are exemplary examples (Foucault, 1975, 1976, 1984).

### 2.2. An inflation of terms

Archives are 'loosening and exploding' (Manoff, 2004, p. 10). In the resulting inflation of the term, archives have become 'loose signifiers for a disparate set of concepts' (Manoff, 2004, p. 10), such as: the 'social archive' (Greetham, 1999), the 'raw archive' (Galín and Latchaw, 2001), the 'postcolonial archive' (Shetty and Bellamy, 2000), 'the popular archive' (Lynch, 1999), 'the ethnographic archive' (Marcus, 1998), 'the geographical archive' (Withers, 2002), and 'the liberal archive' (Joyce, 1999). It leads Marta Voss and Paul Werner (1999) to dwell on 'the poetics of the archive'. It has been suggested that the changes in information technology are responsible for this inflation. The technological revolution, after all, has altered 'our relationship to the archive' (Voss and Werner, 1999, p. ii), it

<sup>2</sup> I will not elaborate here on the poststructuralist view of the archive, as expressed by Foucault and Derrida. For introductory reading: G. Bennington, 'Derrida's Archive', *Theory, Culture & Society*, Vol. 3 (2014), No. 7/8, pp. 111-119; B. Brothman, 'Declining Derrida: integrity, tensegrity, and the preservation of archives from deconstruction', *Archivaria*, Vol. 48 (1999), Fall, pp. 64-89; K.O. Eliasson, 'The Archives of Michel Foucault', E. Røssaak (ed.), *The Archive in Motion: New Conceptions of the Archive in Contemporary Thought and New Media Practices*, Oslo, Novus Press, 2010, pp. 29-51; S. Lubar, 'Information culture and the archival record', *The American Archivist*, Vol. 62 (1999), Spring, pp. 10-22; M. Morris, 'Archiving Derrida', *Educational Philosophy and Theory*, Vol. 35 (2003), No. 3, pp. 297-312; and R. Vosloo, 'Archiving otherwise. Some remarks on memory and historical responsibility', *Studia Historiae Ecclesiasticae*, Vol. 31 (2005), No. 2, pp. 379-399.

changed 'the archive' into 'a metaphor for what we are not yet able to grasp about the nature of digital collections' (Manoff, 2004, p. 10), and it resulted in such an addiction to live connections to cyberspace that to lose them is 'to die', that is 'to be disconnected from access to the archives, not jacked-in or not in real time' (Mackenzie 1997, p. 66). Andreas Huyssen (2000, p. 33) and Marlene Manoff (2001, p. 371-372) argue that the development of information technology has led to anxiety about the preservation of cultural heritage, to fears about the loss of historical awareness resulting from a loss of roots in time and space, and to cultural and historical amnesia because of information technology defects. Both argue that technological changes have bolstered an obsession with historical information. That is possible, just as it is undeniable that information technology changes affect information growth and influence the way organizations create, use, and store information (Van Bussel, 2012a). But it is, in my opinion, doubtful if they caused the inflation of the term 'archive'. The continuous use of that term in multidisciplinary contexts for very different types and collections of information objects and records seems a more probable cause for that inflation.

### 2.3. The 'Archival Turn'

The terms 'archive' and 'archives' seem to be used as keywords for questions of, among others, memory, evidence, taxonomy, governance, and justice. This preoccupation with 'the archive' is characterized as the 'archival turn', which can be seen as a follow-up (or a part) of the 'historical turn' (McDonald, 1996). The term signifies the repositioning of 'the archive' as a subject of investigation, more than as a mere site for research or a collection of records for research use. As Ann Stoler (2002, p. 87) states, using poststructuralist arguments: the 'archival turn' means looking to archives more as epistemological experiments of the past than as historical sources, as cross-sections of contested knowledge, as transparencies inscribed with power relations, and technologies of rule. The 'archival turn' positions 'the archive' as, as Jacques Derrida (1995a, p. 60) states, 'n'est pas la question d'un concept dont nous disposerions ou ne disposerions pas déjà au sujet du passé, .... C'est une question d'avenir' ('[not] the question of a concept dealing with the past which already might be at our disposal or not at our disposal, ...[but rather] a question of the future': Derrida 1995a, p. 27). It is an intriguing concept that opened doors for exhilarating research. This 'turn' has stimulated scientists to research the role of 'the archive' in social conditions and in postcolonial, post-trauma, and post-conflict societies. Seen as 'the decolonisation of the archive', it is situated in discourses on postcolonialism and postcoloniality (Stoler, 2002). It is studied as a political space, as a societal concept for the promotion of power, nationalism, surveillance, and for the silencing of alternative narratives (Burton, 2005; Chakrabarty, 2000; Faulkhead, 2009; Ketelaar, 2002; Stoler, 2009; McKemmish et al, 2011). 'The archive' is used as a concept in themes as race and

<sup>3</sup> Postmodernism is used as a rather loose label to identify a number of theoretical approaches developed since the 1960s. Poststructuralism, as a much more precise but less inclusive term, is used to refer to the French theorists Jacques Derrida, Michel Foucault, Jacques Lacan, Julia Kristeva, and Roland Barthes. They demonstrate the dependence of structures on what they try to eliminate from their systems. They diverge from one another in many ways, but they have in common the attempt to uncover the unquestioned dependencies and metaphors that uphold social and cultural norms. Postmodernism also includes theorists that are influenced by but are not within poststructuralism: Gilles Deleuze, Felix Guattari, Jean-Francois Lyotard, and Jean Baudrillard. Many theorists (like Gatyatri Spivak, Judith Butler, and Donna Haraway) are critical of postmodern theory but find elements of it very useful. Postmodernists and poststructuralists do not constitute a single school and there is as much disagreement among them as between them and other types of theory.



ethnicity, identity, gender, sexual orientation, and transnational approaches of migration (Kaplan, 2000; Cvetkovich, 2003; Wurl, 2005; Dunbar, 2006; Rawson, 2009; Campt, 2012; White, 2017). It is about the epistemological and symbolic role of 'the archive' in a trans-disciplinary, multicultural, pluralistic, and increasingly interconnected and globalised world (Dunbar, 2006; Kaplan, 2000; Wurl, 2005). The organizations that generated the archives disappeared from consideration.

#### 2.4. Rethinking the archive

Archival scholars, as Upward (1996, 1997), Brothman (1999, 2001), Cook (1997, 2001), Ketelaar (1999, 2000a, 2017), Nesmith (1999, 2002), and, recently, Wood et al (2014) are engaged in re-thinking and debating archival theory in the wake of the 'archival turn', using postmodern (especially poststructuralist), structurationist, and postcustodial theories<sup>4</sup> and the concept of (Derridean) archiviology, 'une science générale de l'archive, de tout ce qui peut arriver à l'économie de la mémoire et à ses supports, traces, documents ...' (Derrida, 1995a: 56; 'a general science of +the archive, of everything that can happen to the economy of memory and to its substrates, traces, documents ...': Derrida, 1995b, p. 34). These archival scholars, in their enthusiasm of this 'archival turn', are using the term 'archive' in poststructuralist sense, and are moving away from its traditional meaning(s), practices, and environments. They view 'the archive' as manifesting power, memory and evidence paradigms of past times and places (Stoler, 2002).

In the 1980s and 1990s, there was an intensive theoretical discourse about [1] the adoption of archival principles as 'respect des fonds' and 'provenance' (Bearman and Lytle, 1985; Carucci, 1992); and [2] the re-examinations of appraisal theory, instigated by Booms' (1987) evaluation of appraisal. The discourse revolved especially around how acquisition of archives by heritage institutions could represent society or social justice. Renewed attention to macro-appraisal theories (for the first time expressed by Hermann Meinert (1939)) and development of documentation strategies are expressions of that discourse. Acquisition was (and is) subject of theoretical (and practical!) scrutiny as it was challenged with rising amounts of information and a proliferation of information objects and records created by new technologies (Samuels, 1991, 1992; Duranti, 1994; Menne-Haritz, 1994; Brown, 1995; Cook, 2005). This discourse is still going strong: Shilton and Srinivasan (2007) and Huvila (2008), for instance, apply participatory design ideas to appraisal, and define the concept of participatory appraisal. Van Bussel (2012c) embedded appraisal within information relevancy theories that emphasize the change in information relevance over time.

### 3. The archival theoretical frameworks

#### 3.1. The postmodern and structurationist meta-view of the Records Continuum

##### 3.1.1. The Records Continuum theory and its long-term contribution

In the mid-1990s, Frank Upward (1996, 1997) defined his records continuum theory and model, with additional models following several years later (Upward, 2000). The continuum theory is influenced by Australian postcustodial practices, postmodernist thinking, and the social theory of structuration (McKemmish, 2001, p. 346-347; McKemmish, 2017, p. 137). Upward was especially triggered by Giddens'

view that societies are shaped by individuals and their structures (or traces of memory, as Giddens (1984, p. 378) calls them). Unlike the linear theory of information, thinking along the continuum emphasizes the continuous change in the context of information 'in spacetime' (Upward, 2000, p. 117-119). According to Xiaomi (2003), the theory is trying to integrate records and archives management, which is correct and its original intention as is clearly defined in Upward (1996). Upward (2000, p. 117) claims that his theory (and its postmodern and structurationist motivation) represents 'a fully-fledged paradigm shift in which a worldview is being replaced', for it ends the 'life cycle worldview' that is based on 'the separation of space and time'. This claim that the theory is a paradigm shift has been supported (Thomassen, 1999; Cook, 1997, 2000a, 2001; McKemmish, 2001), but it has been correctly put into perspective by Luciana Duranti (2001) and Charles Jeurgens (2014). It is, at least, an exaggeration, for thinking in a semiotic spacetime continuum was introduced by the pragmatic philosopher Charles Peirce in the late nineteenth century (Morrissey, 2002; see also Upward (2017), without recognizing the contradiction with his earlier statement).<sup>5</sup>

<sup>4</sup> The *structuration theory* (or concept) of Anthony Giddens (especially in: *The constitution of society: Outline of the theory of structuration*, Cambridge, Polity Press, 1984) is developed as a social theory that tries to comprehend human social behaviour by studying the interfaces between actors (agencies) and structures. Giddens believes that actors operate within contexts of rules resulting from social structures. These structures do not have inherent stability outside the human action that constructed them. Agents modify social structures by acting outside their constraints. Giddens proposes three kinds of structure in a social system: [1] *signification*, a codification of meaning in language and discourse; [2] *legitimation*, normative perspectives implemented as societal norms and values; and [3] *domination*, the ways power is applied in the control of resources. Those structures are met by three kinds of interaction: [1] the communication of meaning; [2] morality or sanction; and [3] power relations. Structures and interactions 'communicate' with each other using a matching set of three modalities: [1] interpretive schemes; [2] norms; and [3] facilities. The object of the structuration theory are the conditions which govern the continuity and/or dissolution of structures and types of structures. In 1981 F. Gerald Ham ('Archival Strategies for the Postcustodial Era', *The American Archivist*, Vol. 44, No. 3, pp. 207-216) presented *postcustodialism*, a set of archival strategies that featured a decentralized computer environment that realized easy and centralized access to complex and decentralized archives. Ham did not argue that archivists should stop managing custodial holdings, but that they needed strategies to navigate the complex realities of the twentieth century. David Bearman ('An indefensible bastion: Archives as a repository in the electronic age', Technical report, *Archives and Museum Informatics*, Vol 13 (1991), pp. 14-24) went into extremes when arguing that archivists should avoid taking any custody at all of electronic records. In a networked world, 'it doesn't matter much where records or users are', as long as archivists have intellectual control. This provocative statement was endorsed in Australia (F. Upward and S. McKemmish, 'Somewhere Beyond Custody: literature review', *Archives and Manuscripts*, Vol. 22 (1994), No. 1, 136-149), but was abandoned several years later by the National Archives of Australia. In the establishment of a digital preservation project, it was argued that digital records ideally should be transferred to archival repositories for custody. In 2017, physical custody of archives is the stated preference of most archival programs as a result of the acceptance of 'trusted digital repositories'. A. Cunningham, 'Postcustodialism', L. Duranti and P.C. Franks, *Encyclopedia of Archival Science*, Lanham, Rowman & Littlefield, 2015, pp. 274-278.

<sup>5</sup> Apart from Peirce's pragmatic thinking of a semiotic spacetime continuum, the concept of a records continuum can be dated to the 1950s when Ian Maclean, the Australian national archivist, stated that archival science should be directed toward studying the characteristics of records, record keeping systems, and classification processes. He promoted a view of a management continuum for records. See: F. Upward, 'In Search of the Continuum: Ian Maclean's 'Australian Experience' Essays on Recordkeeping', S. McKemmish and M. Piggott, *The Records Continuum: Ian MacLean and Australian Archives: first fifty years*, Clayton (Vict.), Ancora Press, 1994, pp. 110-130. In 1985, Canadian archivist Jay Atherton made the word 'continuum' explicit for a way of integrated management of all interrelated stages of records, pointing out the information management weaknesses of the lifecycle model. This model is based on the premise that the 'life' of a record can be divided into two distinct, separate stages of responsibility: that of records management (with creation, classification, maintenance and use, and disposition of records) and that of archives management (with acquisition, description, preservation, and reference and use of archival records). J. Atherton, 'From life cycle to continuum: Some thoughts on the records management-archives relationship', *Archivaria*, Vol. 21 (1985), Winter, pp. 43-51. Upward's theory is the culmination of thinking about a records continuum, philosophically enriched by postmodernisms and Giddens' structuration theory.

The continuum theory and model are based on four dimensions: create, capture, organize, and pluralize, corresponding with four steps of time-space distancing mentioned by Giddens (1984, p. 298) in an analytic example (!). The dimensions of the continuum describe how organizational archives (and the records captured within them) are disembedded from their original context(s) of use to become a part of a collective memory and carried through spacetime. Their context is represented by the axes of evidentiality, transactionality, record keeping, and identity (Upward, 2005). The theory is not about the archives themselves, it is about the information management activities that add new contexts to them such as capturing them into systems, or adding metadata. The status of archives is interpreted as part of a continuum of activity related to known and unknown contexts, to known or unknown social, cultural, political, and legal processes. According to the theory, it is this metaview, these contexts that are vital to interpret and (potentially) understand the role and value of archives in past, present, and future (McKemmish et al, 2010). A continuum approach highlights from the beginning that archives are both current and historical, representing one of the core concepts of structuration: the duality of structures. Archives and their records are viewed as fixed in content and structure, linked to mutable, ever-broadening layers of metadata to clarify their meaning and to enable their accessibility and usability over time (McKemmish, 2001).

Marshall (2000) states that the most important focus of the theory are the multiple purposes of archives (in multiple contexts) over time. Visualizations of the records continuum theory explain it (in essence) as a context theory, emphasizing the ever-broadening layers of contextual descriptions attached to records and archives. The aim of the theory is to provide a framework for conceptualizing archives in multiple contexts over space and time. Creating archives starts before they are created by implementing their requirements in policies, systems, organizations, processes, and laws. These requirements need to be integrated into social and business processes and purposes. The theory is heavily indebted to Australian postcustodial practices (see note 4), Terry Cook's (1992, 1997, 2005) ideas about macro-appraisal, and especially to David Bearman's (1993ab, 1994, 1996 (with Wendy Duff)) work on evidence, transactionality, and systems thinking. The influence of Bearman's extremely complex and inconsistent paper 'Record Keeping Systems' (Bearman, 1993a) is largely responsible for the mentioned axes of 'transactionality' and 'evidentiality'.

The theory's most important contribution is its accentuation of the importance of context and contextualizing for understanding the 'contextual narrative' of archives in spacetime. It has become common thinking in archival science that this 'contextual narrative' is an absolute necessity for revealing meaning, for accessibility, and for usability. But despite this long-lasting contribution and its very valuable insights into the context of records, which have greatly influenced my thinking about archives, from its formulation onwards, the theory *itself* has been on very shaky grounds.

### 3.1.2. Criticism: omissions, comprehensibility, and philosophical foundations

To counter *omissions*, some revisions of the theory have been suggested. Terry Cook (2000b) suggested (quite sensibly) to separate evidence and memory into their own

axes. He also suggests adding a new dimension (besides Create, Capture, Organize, and Pluralize) for archives of private origin. A fifth dimension is also (convincingly) proposed by Yvon Lemay and Anne Klein (2014), namely that of the use ('exploitation') of archives. But adding new dimensions to the theory is inconsistent with its structurationist nature. It would break the theoretical link to the four steps of time-space distancing mentioned by Giddens (1984, p. 298). These steps are the sole reason for the four dimensions of the Records Continuum theory. New dimensions eliminate the possibility to directly link the records continuum to Giddens' structuration theory. Karabinos (2015) created 'the shadow continuum' to correct an omission in the theory concerning archives stuck between dimensions.

Michael Piggott (2012), an Australian supporter of the theory, made several remarks about the theory's problematic *comprehensibility* and its abstract nature. He states (2012, p. 180) that 'the core texts are not always easy to understand' and that it is very difficult 'to comprehend the intended meaning of continuum writing'. More problematic is his contestation that the continuum model is an abstraction that relies 'on the viewer to draw a correct inference' (Piggott, 2012, p. 183). That is confirmed by Karabinos (2015, p. 14) who states that it is the reader to make conclusions on what the model attempts to visualize because the model is 'confusing and vague'. One could characterize this as a postmodernist expression, but it is, of course, problematic, for a model that seemingly cannot convey its meaning in a straightforward way is very difficult to test (Piggott, 2012, p. 185).

The *philosophical foundations* of the theory are also heavily criticized. Verne Harris (2004, p. 215-216) condemns, in quite strong terms, Sue McKemmish's (2001, p. 347) claim for the model as 'post-modern philosophical ... thinking' and to be 'universal' as 'the worst case of misidentification', as 'a co-opting – or colonising – move designed to have us believe that what is a wild tiger is only a domestic cat' and the fact that she 'ignores the fact that postmodernisms seek relentlessly to disturb every totalising conceptual container'. Harris is opposing the (theoretically untenable) totalizing worldview of the theory that ignores existing differences in information and records management. Andrew Lau (2013, p. 200-204) finds the structurationist theoretical foundations inadequate. Using Manuel DeLanda's (2006) neo-assemblage theory and its different view of society<sup>6</sup>, he analyses the continuum theory and reveals, for instance, the mechanistic view of society and social complexity that allows for the reductionist approach the theory needs to identify stabilized entities that create archives. Such a view, however, is only one way

<sup>6</sup> Manuel DeLanda's neo-assemblage theory is an elaboration of the ontological framework developed by the postmodernists Gilles Deleuze and Felix Guattari in: *Capitalisme et schizophrénie 2: Mille plateaux*, Paris, Les Editions de Minuit, 1980. The theory offers a bottom-up framework for analyzing social complexity by accentuating exchangeability, indefiniteness, and multi-functionality. Deleuze and Guattari's assemblage theory is an approach that stresses that entities are not fixed, not predetermined, and not stable in their ontology or location. Assemblages are formed through coding, stratification, and territorialization processes. An assemblage, consisting out of imaginative articulations among heterogeneous elements, defines the relationships with the bodies in and around it, and demonstrates social complexity. See also: J.D. Slack, J. Macgregor Wise, *Culture and Technology. A primer*, New York, Peter Lang, 20142. DeLanda's starting point is his argument that assemblage theory is a reaction to the theory of organic totalities. In his opinion, all 'parts' have some independence regarding the assembled 'whole' they help to constitute. Although a 'whole' will change following the addition or removal of an individual 'part', the components themselves do not need to change as a consequence of the new (dis)assembly. Assemblages, though dynamic, are part of historical processes. DeLanda defines a reinterpretation of the concepts of Deleuze and Guattari that provides a robust theoretical framework for analyzing assemblages. For an overview: M. DeLanda, *Assemblage Theory*, Edinburgh, Edinburgh University Press, 2016.

to view society and social complexity, and a reductionist approach may not be possible (or might be difficult) in other views of society. The claim of ‘universality’ is, thus, nonsense. Lau also attacks the form of objectivity and impartiality that is suggested in the theory: ‘a privileged transcendent vantage point in which the archivist using the records continuum can ‘see’ all of society and speculate how records move from immediate contexts of creation through capture, organization, and the ultimate plural view of societal recordkeeping’ (Lau 2013, p. 202). Such objectivity and impartiality of the archivist is impossible as understanding of reality is never complete. It is always constrained by the observer’s perspective and knowledge and always carries blind spots, as Donna Haraway (1988) already stated. It ignores the effects of the archivist’s context, his social preoccupations, moral codes, preconceptions, and choices made in the process of ‘archivization’. This is remarkable in a theory that is (essentially) a context theory. As David Greetham (1999) concluded, archives do not tell us the truth. They propose a constructed, prejudiced, sometimes an idealized historical image. They are politicized bodies of information, pretending to be neutral. Joan Schwartz and Terry Cook (2002) stated that ‘the archive’ is always a reflection or a justification for the society that created it. Archivists are important in capturing, appraising, and maintaining archives and have a large responsibility for the reflection ‘the Archive’ provides.

### 3.1.3. Daily practice

The records continuum theory proves very challenging in the daily practice of managing business processes of organizations. Afshar and Ahmad (2015) propose a hybrid model for records management (a combination of continuum and linear models), because of the problems to implement the records continuum theory and model. Jeurgens (2014) concluded (albeit related to appraisal) that in daily (professional) practice ‘in spite of all efforts and even the firm belief held by some professionals that archival thinking has undergone a paradigm shift, there is still no revolutionary progress in solving the many puzzles of records management and archiving’. The suggestion of Karabinos (2015, p. 150) that by removing the theory’s ‘universality’ claim testing would not be necessary is, in my opinion, accepting defeat in bringing theory into practice. It is revealing that (although Sue McKemmish (2017, p. 143-144) states that the model is ‘widely used as ... an implementation model, as exemplified through its use in the development of standards, metadata entity-relationship models and schemas, and best practice guidelines for the design of recordkeeping systems and appraisal programs’) practical examples of implementation of the theory within daily organizational practice are genuinely missing. The (needless) ‘invention’ of ‘recordkeeping informatics’ to ‘re-figure a discipline in crisis’ (that is: a records management that does not use the records continuum theory and model) (Upward et al, 2013; Evans et al, 2014) only confirms that there is no convincing evidence that the theory has been used by organizations to manage their records and archives.

## 3.2. Digital diplomatics

### 3.2.1. The revitalization of traditional, proven methods in Digital Diplomatics

Not all archival scholars are following Foucault, Derrida or Giddens in their observations of ‘the archive’. There is still a tradition, based on the ‘old’ diplomatic science, in which principles and concepts are ‘universally valid’, precisely defined, and ‘objective’ regardless of place. It provides a systematic method for the analysis of

the internal and external elements of documentary form, the circumstances of the writing, and the juridical nature of the fact that is communicated. It analyses the creation, form, and status of transmission of records, and the relationship with the facts represented in them and with their creator, in order to identify, evaluate, and communicate their ‘true nature’ (Duranti, 1998, p. 27). The primary focus of this tradition has been the ‘record’ (equated with the documents that were the subject of diplomatic science) and all the elements that it embodies. The content of the record is subject of its analysis, but also the relationships of the record and the persons, functions, procedures, acts, and the system that created them. The basic affirmations of this diplomatic tradition is that hypotheses and theories need to be empirically testable. Its philosophical roots lie in empiricism. Luciana Duranti is nowadays the most notable scholar within this tradition. She revitalized the traditional diplomatic methods and has argued for its relevance to electronic records and archives (Duranti, 1998, 2005, 2010a).

Digital diplomatics integrates traditional diplomatic techniques, concepts and methods with archival theory ‘based on jurisprudence, the history and theory of administration, and an extensive and centuries old body of written reflection and experience’ about the nature of records and archives within organizations (MacNeil, 2004, p. 205). Digital diplomatics emphasizes the importance of identifying evidence. For being used as evidence, records need to be authentic for only than it can be presumed their integrity has been maintained. To prove authenticity, the continuing identity and integrity of records and archives must be established. Identity and integrity of records allow to determine the who, what, where, when, and why, and establish ‘perfection’ in quality. Identity is revealed by documentary form or presentation. It is the whole of the distinguishing attributes that in combination uniquely characterize records. They have stable content and a fixed form, reveal together with the metadata layers of the organizational archive it belongs to, the legal, administrative, provenancial, procedural, technological, and documentary context, belong to identifiable organizations, persons or groups, are part of actions, are linked to related records, and are stored within the infrastructure of the organizational archive (Duranti and Jansen, 2011).

### 3.2.2. Computerized processing

Duranti has tried to broaden the types of records to which diplomatics could be effectively applied. In the InterPARES projects (1998-2018), she has applied diplomatic mechanisms to investigate the veracity of records in new, computerized environments (Ross, 2012). Within these projects, theory and methods are developed capable of ensuring the reliability, accuracy, and authenticity of electronic records and archives created in dynamic, experiential and interactive systems. InterPARES developed the Chain of Preservation, a series of continuous records-centric activities that contribute to the authenticity and preservation of records stored within the organizational archive. All activities that a record participates in are linked together. Any omission in a link deteriorates the ability of the chain to preserve the authenticity of records (and the archive they belong to), its ultimate objective (Jansen, 2015). According to Duranti (2009), it is possible that digital diplomatics may not be sufficient for dealing with challenges of increasingly complex digital environments, which might require that concepts, principles, and methods of other disciplines are evaluated by digital diplomatics. An expectation

I tend to agree with. As such, it is interesting to see how in digital records forensics the relationship between digital diplomatics and digital forensics is researched (Xie, 2011).

Digital diplomatics produces very detailed definitions and requirements for authentic electronic records that help business informatics in designing adequate ICTs for the organizational archive. That will be necessary: in an information deluge it is economically only viable to manage and store records in the organizational archive in a computerized way. The biggest contribution of digital diplomatics are the very detailed frameworks of authenticity and integrity requirements and its Chain of Preservation that allow (ultimately) for computerized processing and archiving of 'trusted' records. They have greatly influenced me in my ideas about the quality requirements for records and the information value chain. It is this contribution that makes digital diplomatics into a very interesting theoretical framework for EIM.

### 3.2.3. Theoretical problems

There are, however, some theoretical challenges with digital diplomatics. As Geoffrey Yeo (2017) points out, the equation of 'records' with the documents that were the subject of diplomatic science (particularly made in an English-speaking environment) may be a problem. The word 'record' was, until the late twentieth century, confined to countries whose legal and administrative systems are of English origin. It has no equivalent in other linguistic cultures. It was most certainly not common in the civil-law traditions based on Roman law in which diplomatic science has evolved (Yeo 2015). Yeo (2017) agrees that the equation seems to be correct for legal, textual records, for diplomatic science was primarily designed for their analysis. But is it correct for the new forms of record in the contemporary world that are largely non-legal and non-textual? Is it possible to apply diplomatic principles, techniques, and methods to these records, too? Joan Schwartz (1995, p. 54-55) does not think so and asserts that, at least for photographs, the 'extension of diplomatics from records of bureaucratic transactions created within the procedural rules, written or unwritten, of a juridical system to records of cultural actions and transactions' cannot be directly made and that 'the rigour of diplomatic criticism is undermined by the inherent ambiguity of the photograph'. Yeo (2017) also tends to answer those questions negatively and, although it is not explicitly addressed, he implies that the mentioned equation never has been researched adequately and that, for that reason, digital diplomatics is partly based on an unproven hypothesis. It is a serious allegation that cannot be refuted without researching the equation *itself*.

Even before digital diplomatics was born, there were issues with the reductive emphasis of diplomatic science on the relationship between record and juridical act. According to Leonard Boyle (1976) and Armando Petrucci (1995) that emphasis risked overlooking the contextual complexities of documents, their function and the power dynamics involved. Boyle (1976, p. 78) claims that the application of diplomatics demands intricate knowledge of the context of the object of analysis. A 'thorough competence in the language of the document' is needed, 'a knowledge of chronology', 'of local usages [and] conventions' and 'an easy familiarity with the methods, formulae, and practices ... of the period and region'. Such knowledge is necessary to uncover the 'central reality' of the document to be analysed, but cannot

be gained by only using diplomatics. Petrucci (1995, p. 239) agrees with Boyle (1976) and states that 'the document is first and foremost evidence of a process entirely internal to its own making. And only the reconstruction of the process of documentation, of its articulations and reasons, can permit us to consider, with both greater insight and greater humility than before, the complex relationship between written documentation and the event that from time to time gave (or should have given) impulse to the process of documentation: what we call, in the language of diplomatics, the connection between action and documentation'.

Following these interpretations, Richard Brown (1997) challenged the strict (even narrow) contextual interpretation within digital diplomatics. He argued for a broader interpretation, in which social, cultural, ideological and other factors are considered, in addition to the very limited administrative-juridical context he observed in digital diplomatics at that time. And although digital diplomatists no longer perceive the juridical system as the only context for a record and recognize an extended range of contexts (legal, administrative, provenancial, procedural, technological, and documentary context (Duranti 2010b, p. 1596)), they have, as Yeo (2017) asserts, continued to emphasize the dominance of the legal context.

Digital diplomatics faces a contextual crisis. The context it captures is not enough in the long term to help users *understand* the wider social, cultural, and (inter-) organizational environment that generated the archive.

## 4. Concluding remarks

In this first part of the article, the problem EIM faces in contributing to organizational objectives and to defining business strategies was explored. To cope with the deluge of structured and unstructured information objects, EIM needs a theoretical foundation that effectively guides it in reaching business value. A possible solution for that problem is (following Smith and Steadman (1981)) 'the archive' and the records within it. Archival science has developed two overall theoretical frameworks relating to records and archives, but not focused on the (organizational or personal) construction of archives, the effects of (organizational) behaviour on their evolution, reaching organizational objectives, and designing business strategies. These two archival frameworks are based on philosophical traditions that are on opposite sides of the philosophical spectrum: postmodernism and empiricism. This shows itself especially in the very different forms of methodology used. The Records Continuum school uses deductive research methods, beginning with general a-priori concepts and, regardless of empirical data, deciding what to do with records and archives based on those concepts. Digital diplomatics uses inductive research methods, starting with empirical data and observations to find general principles about the subject.

The Records Continuum theory, characterized by structurationist and poststructuralist thinking, considers 'the archive' to be an epistemological and symbolic representation for the ways in which histories are constructed, organized, and narrated. An archive is a symbol of contestation, within which historical narratives, social power structures, and traditional meanings are challenged. This theory is not about records and archives themselves, but about their evolving

(especially societal) contexts within the dimensions of the theory that help to understand the meaning of their narrative in spacetime. It is used as a declarative model for the 'contextual narrative' of archives. Its philosophical foundation is weak, its comprehensibility problematic and its implementation in organizational practices debatable.

Digital Diplomats, characterized by more empiricist, traditional, proven, and revitalized diplomatic techniques, methods, and concepts, is, in contrast, almost solely about the records and archives themselves and the relationships between them. It concentrates on the continuing identity and integrity of records to reveal documentary form, the attributes that characterize records and reveal its legal, administrative, provenancial, procedural, technological, and documentary functional context. It produces detailed definitions of authenticity and integrity that allow ICTs to recognize and realize 'trusted' records using its Chain of Preservation. The theoretical framework of Digital Diplomats can be used as a declarative model for the (technical) generation of records, the relations between them, and their integrity and authenticity. It seems to be partly based on an unproven hypothesis and it faces a contextual crisis because the context it captures is not enough to understand the wider social, cultural, and (inter-) organizational environment that generated the archive.

The focus of both theories lays on the cultural (or historical) value (Records Continuum theory) and the evidential value (Digital Diplomats) of archives. Both are important values that can be used to improve the way records and archives are managed and used within organizations. They offer interesting insights for EIM. The Records Continuum theory emphasizes the importance of context for a 'reconstruction of the past', extremely important for realizing accountability, governance, and compliance (Van Bussel, 2012b, 2016). Digital Diplomats offers tools and frameworks to improve the authenticity and integrity of records to allow them to be used as evidence. Both theories offer, their theoretical weaknesses notwithstanding, convincing arguments for the value of archives and records for organizations. But they have not succeeded in linking these values to the challenges of reaching organizational objectives, designing business strategies, and constructing archives in a way that offers EIM the possibility to do so effectively. Both theories do not explain how and why the archive is as it is.

To emphasize the organizational value of archives, there is, I think, enough space for another theoretical view: an *organizational* one, the view of the 'Archive-as-Is', a pragmatic view on archives and records, their genesis, construction, use, and continuous management in the everyday life of people and organizations. A view that can be used as a declarative model for understanding the archive 'as-it-is', how it has been designed, constructed, processed, manipulated, and managed as a valuable business resource within EIM. A view that explains how it has 'grown' to be the archive that the organization or the person that generated it, wants it to be, with all distortions consciously and unconsciously embedded within it.

Archives are constructed in organizational settings and are the result of organizational behaviour, business processes, and predetermined rules and regulations. Cultural and social preconceptions, deviant behaviour, and (conscious

or unconscious) negligence are influencing decision making within organizations and affect EIM in its management of records and archives. Researching the genesis of organizational (or personal) archives, the records within them, and their fundamental components is necessary to understand them, to contextualize them, and to use them for reaching organizational objectives, the design of business strategies, and the increase of business value. That is what they were primarily made for....

## Literature

- Afshar, M., & Ahmad, K. (2015). A new hybrid model for electronic records management. *Journal of Theoretical and Applied Information Technology*, 81(3), 489-495.
- Alalwan, J.A., & Weistroffer, H.R. (2012). Enterprise content management research: a comprehensive review. *Journal of Enterprise Information Management*, 25(5), 441-461.
- Baets, W. (1992). Aligning information systems with business strategy. *The Journal of Strategic Information Systems*, 1(4), 205-213.
- Bearman, D. (1993a). Record Keeping Systems. *Archivaria*, 36, 16-36.
- Bearman, D. (1993b). Functional requirements for record keeping systems. *Archives & Museum Informatics*, 7(2), 3-5.
- Bearman, D. (1994). *Strategies for Managing Records in Contemporary Organizations*. Pittsburgh: Archives & Museum Informatics.
- Bearman, D., & Duff, W. (1996). Grounding archival description in the functional requirements for evidence. *Archivaria*, 41, 275-303.
- Bearman, D., & Lytle, R. (1985). The Power of the Principle of Provenance. *Archivaria*, 21(1), 14-27.
- Benbasat, I., Goldstein, D.K., & Mead, M. (1987). The Case Research Strategy in Studies of Information Systems. *MIS Quarterly*, 11(3), 369-386.
- Booms, H. (1987). Society and the formation of a documentary heritage. Issues in the Appraisal of Archival Sources. *Archivaria*, 24, 69-107.
- Boyle, L. (1976). Diplomats. In J.M. Powell (Ed.), *Medieval Studies. An Introduction* (pp. 69-101). Syracuse: Syracuse University Press.
- Brothman, B. (1999). Declining Derrida. Integrity, tensegrity and the preservation of archives from deconstruction. *Archivaria*, 48, 64-88.
- Brothman, B. (2001). The past that archives keep. Memory, history, and the preservation of archival records. *Archivaria*, 51, 41-80.
- Brown, R. (1995). Macro-Appraisal Theory and the Context of the Public Records Creator. *Archivaria*, 40, 40-74.
- Brown, R. (1997). Death of a Renaissance Record-Keeper: The Murder of Tomasso da Tortona in Ferrara 1385. *Archivaria*, 44, 1-43.
- Burton, A. (ed.) (2005). *Archive stories. Facts, fictions and the writing of history*. Durham, NC: Duke University Press.
- Camp, T. (2012). *Image matters. Archive, photography, and the African diaspora in Europe*. Durham: Duke University Press.
- Carucci, P. (1992). Archival science today. Principles, methods and results. In O. Bucci (ed.), *Archival science on the threshold of the Year 2000: Proceedings of the international conference, Macerata, 3-8 September, 1990* (pp. 55-68). Ancona: University of Macerata.
- Chaki, S. (2015). *Enterprise Information Management in Practice*. New York: Apress.
- Chakrabarty, D. (2000). Subaltern studies and postcolonial historiography. *Nepantla: Views from the South* 1(1), 9-32.

- Cook, T. (1992). Mind Over Matter: Towards a New Theory of Archival Appraisal. In B. L. Craig (ed.), *The Archival Imagination. Essays in Honour of Hugh A. Taylor* (pp. 38-70). Ottawa: ACA.
- Cook, T. (1997). What is past is prologue. A history of archival ideas since 1898, and the future paradigm shift. *Archivaria*, 43, 17-63.
- Cook, T. (2000a). Fashionable Nonsense or Professional Rebirth: Postmodernism and the Practice of Archives. *Archivaria*, 51, 14-35.
- Cook, T. (2000b). Beyond the Screen: The Records Continuum and Archival Cultural Heritage. In L. Burrows (ed.), *Beyond the Screen: capturing corporate and social memory* (pp. 8-21). Melbourne: Australian Society of Archivists.
- Cook, T. (2001). Archival science and postmodernism. New formulations for old concepts. *Archival Science*, 1(1), 3-24.
- Cook, T. (2005). Macroappraisal in Theory and Practice: Origins, Characteristics, and Implementation in Canada, 1950-2000. *Archival Science*, 5(2-4), 101-161.
- Cvetkovich, A. (2003). *An archive of feelings. Trauma, sexuality, and lesbian public culture*. Durham: Duke University Press.
- Davenport, T.H., & Prusak, L. (1997). *Information ecology: Mastering the information and knowledge environment*. New York: Oxford University Press.
- DeLanda, M. (2006). *A New Philosophy of Society: Assemblage Theory and Social Complexity*. New York: Continuum.
- Derrida, J. (1995a). *Mal d'Archive: Une Impression Freudienne*. Paris: Galilée.
- Derrida, J. (1995b). Archive Fever. A Freudian impression. *Diacritics*, 25(2), 9-63.
- Dunbar, A.W. (2006). Introducing critical race theory to the archival discourse. Getting the conversation started. *Archival Science*, 6(1), 109-129.
- Duranti, L. (1994). The concept of appraisal and archival theory. *The American Archivist*, 57(2), 328-344.
- Duranti, L. (1998). *Diplomatics. New uses for an old science*, Lanham and London: The Scarecrow Press.
- Duranti, L. (2001). The impact of digital technology on archival science. *Archival Science*, 1, 39-55.
- Duranti, L. (2005). The long-term preservation of accurate and authentic digital data: the INTERPARES project. *Data Science Journal*, 4, 106-118.
- Duranti, L. (2009). From Digital Diplomatics to Digital Records Forensics. *Archivaria*, 68, 39-66.
- Duranti, L. (2010a). Concepts and principles for the management of electronic records, or records management theory is archival diplomatics. *Records Management Journal*, 20(1), 78-95.
- Duranti, L. (2010b). Diplomatics. In M.J. Bates and M.N. Maack (eds.), *Encyclopedia of library and information sciences*, (3rd ed.). Boca Raton: CRC Press.
- Duranti, L., & Jansen, A. (2011). Authenticity of Digital Records. An Archival Diplomatics framework for Digital Forensics. In W. Castelnova and E. Ferrari (eds.), *Proceedings of the 5th European Conference of Information Management and Evaluation* (pp. 134-139). Como: Academic Publishing Limited.
- Evans, J., B. Reed, H. Linger, S. Goss, D. Holmes, J. Dobrik, B. Woodyat, & S. Henbest (2014). Winds of Change. A recordkeeping informatics approach to information management needs in data-driven research environments. *Records Management Journal*, 24(3), 205-223.
- Faulkhead, S. (2009). Connecting through records: Narratives of Koorie Victoria. *Archives and Manuscripts*, 37(2), 60-88.
- Ferro, N., & G. Silvello (2013). NESTOR: A formal model for digital archives. *Information Processing & Management*, 49(6), 1206-1240.

- Foucault, M. (1975). *Surveiller et punir: Naissance de la prison*. Paris: Gallimard.
- Foucault, M. (1976, 1984). *Histoire de la Sexualité*, Vol. I (1976), Vol. II-III (1984). Paris: Gallimard.
- Foucault, M. (1992). *L'Archéologie du savoir*. Paris: Gallimard. (1st ed.: 1969)
- Galín, J., & J. Latchaw (2001). Theorizing Raw Archive. A new paradigm for academic scholarship and publication'. In J.F. Barbar and D. Grigar (eds.), *New Worlds, New Words: Exploring Pathways for Writing about and in Electronic Environments* (pp. 279-306). Cresskill, NJ: Hampton Press.
- Giddens, A. (1984). *The constitution of society: Outline of the theory of structuration*. Cambridge (UK): Polity Press.
- Gilliland, A.J., McKemmish, S., & Lau, A.J. (eds.) (2016). *Research in the Archival Multiverse*. Clayton, VIC: Monash University Publishing. [http://dx.doi.org/10.26530/OAPEN\\_628143](http://dx.doi.org/10.26530/OAPEN_628143)
- Greetham, D. (1999). Who's in, who's out. The cultural politics of archival exclusion. *Studies in the Literary Imagination*, 32(1), 1-28.
- Groth, P.T. (2007). *The origin of data. Enabling the determination of provenance in multi-institutional scientific systems through the documentation of processes*. Southampton: University of Southampton.
- Haraway, D. (1988). Situated Knowledges: The Science question in feminism and the privilege of partial perspective. *Feminist Studies*, 14(3), 575-599.
- Harris, V. (2004). Concerned with the writings of others: Archival canons, discourses and voices. *Journal of the Society of Archivists*, 25(2), 211-220.
- Hausmann, V., S.P. Williams, C.A. Hardy, & P. Schubert (2014). Enterprise information management readiness: A survey of current issues, challenges and strategy. *Procedia Technology*, 16, 42-51.
- Huvila, I. (2008). Participatory archive. Towards decentralised curation, radical user orientation, and broader contextualization of records management. *Archival Science*, 8(1), 15-36.
- Huysen, A. (2000). Present Pasts: Media, Politics, Amnesia. *Public Culture*, 12(1), 21-38.
- Ismail, A., & A. Jamaludin (2009). Towards establishing a framework for managing trusted records in the electronic environment. *Records Management Journal*, 19(2), 135-146.
- Jansen, A. (2015). Chain of Preservation. In L. Duranti, P.C. Franks (eds.), *Encyclopedia of Archival Science* (pp. 133-136). London: Rowman and Littlefield.
- Jeurgens, C. (2014). *The target keeps moving. Appraisal in a continuum*. Paper presented at the conference 'Paradigm shift! Shifting minds and practices in record keeping?' (Nationaal Archief Netherlands, Den Haag, January 2014). Retrieved from <https://openaccess.leidenuniv.nl/bitstream/handle/1887/32027/Jeurgens%20target%20keeps%20moving.def.pdf?sequence=1>
- Joyce, P. (1999). The Politics of the Liberal Archive. *History of the Human Sciences*, 12(2), 35-49.
- Kaplan, E. (2000). We are what we collect, we collect what we are. Archives and the construction of identity. *The American Archivist*, 63, 126-151.
- Karabinos, M.J. (2015). *The Shadow Continuum. Testing the Records Continuum Model through the Djogdja documents and the Migrated Archives*, Leiden (PhD).
- Ketelaar, E. (1999). Archivalisation and archiving. *Archives and Manuscripts*, 27, 54-61.
- Ketelaar, E. (2000a). Archivist research saving the profession. *The American Archivist*, 63, 322-340.
- Ketelaar, E. (2002). Archival temples, archival prisons. Modes of power and protection. *Archival Science*, 2(3-4), 221-238.
- Ketelaar, E. (2017). Archival turns and returns. Studies of the Archive. In A.J. Gilliland, S. McKemmish, A.J. Lau (eds.), *Research in the Archival Multiverse* (pp. 228-268). Clayton, VIC: Monash University Publishing. [http://dx.doi.org/10.26530/OAPEN\\_628143](http://dx.doi.org/10.26530/OAPEN_628143)

- Lau, A.J. (2013). *Collecting Experiences*. Doctoral Dissertation. Los Angeles: University of California. Retrieved from <http://escholarship.org/uc/item/9f8572zp>
- Lemay, Y., & A. Klein (2014). Les archives définitives: un début de parcours. Revisiter le cycle de vie et le Records continuum. *Archivaria*, 77, 73-102.
- Lynch, M. (1999). Archives in Formation. Privileged spaces, popular archives and paper trails. *History of the Human Sciences*, 12(2), 65-87.
- Mackenzie, A. (1997). The mortality of the virtual real-time, archive and dead-time in information networks. *Convergence: The International Journal of Research into New Media Technologies*, 3(2), 59-71.
- MacNeil, H. (2004). Contemporary Archival Diplomats as a Method of Inquiry. Lessons learned from Two Research Projects. *Archival Science*, 4(3), 199-232.
- Manoff, M. (2001). The symbolic meaning of libraries in a Digital Age. *Portal: Libraries and the Academy*, 1(4), 371-381.
- Manoff, M. (2004). Theories of the Archive from Across the Disciplines. *Portal: Libraries and the Academy*, 4(1), 9-25.
- Marshall, P. (2000). Life Cycle Versus Continuum - What Is the Difference? *Information Quarterly*, 16(2), 20-25.
- Marcus, G.E. (1998). The Once and Future Ethnographic Archive. *History of the Human Sciences*, 11(4), 49-64.
- McAfee, A. (2006). Enterprise 2.0: The dawn of emergent collaboration. *MIT Sloan Management Review*, 47(3), 21-28.
- McDonald, T.J. (1996). Introduction. In T.J. McDonald (ed.), *The Historic Turn in the Human Sciences* (pp. 2-16). Ann Arbor: University of Michigan Press.
- McKemmish, S. (2001). Placing records continuum theory and practice. *Archival Science*, 1(4), 333-359.
- McKemmish, S.M., F.H. Upward, & B. Reed (2010). Records Management Continuum. In M.J. Bates and M.N. Maack (eds.), *Encyclopedia of Library and Information Sciences* (3rd ed.) (pp. 4447-4459). London: Taylor & Francis.
- McKemmish, S. (2017). Recordkeeping in the Continuum. An Australian tradition. In A.J. Gilliland, S. McKemmish, A.J. Lau (eds.), *Research in the Archival Multiverse* (pp. 122-160). Clayton, VIC: Monash University Publishing. [http://dx.doi.org/10.26530/OAPEN\\_628143](http://dx.doi.org/10.26530/OAPEN_628143)
- McKemmish, S., L. Iacovino, E. Ketelaar, M. Castan, & L. Russell (2011). Resetting relationships. Archives and Indigenous human rights in Australia. *Archives and Manuscripts*, 39(1), 107-114.
- McLeod, J., & E. Lomas (2015). Records Management. In L. Duranti, P.C. Franks (eds.), *Encyclopedia of Archival Science* (pp. 346-350). London: Rowman and Littlefield.
- Meinert, H. (1939). Die Aktenwertung. Versuch einer methodologischen Zusammenfassung. *Mitteilungsblatt der preußischen Archivverwaltung*, 6, 103-110.
- Menne-Haritz, A. (1994). Appraisal or documentation. Can we appraise archives by selecting content? *The American Archivist*, 57, 528-542.
- Morrissey, F. (2002). Introduction to a semiotic of scientific meaning, and its implications for access to scientific works on the Web. *Cataloguing & Classification Quarterly*, 33(3/4), 67-97.
- Naidoo, K., & Nsibirwa, Z. (2015). The information behaviour of managers in the Msunduzi municipality's business units. *Innovation: Journal of Appropriate Librarianship and Information Work in Southern Africa*, 51, 3-21.
- Nel, M.A. (2015). *Information needs, information seeking behaviour and information use behaviour of researchers at the Faculty of Veterinary Science, University of Pretoria, and how these needs are being met by the information support delivered by the Jotello F Soga Library*. Pretoria: University of Pretoria.

- Nesmith, T. (1999). Still fuzzy, but more accurate. Some thoughts on the 'ghosts' of archival theory. *Archivaria*, 47, 136-150.
- Nesmith, T. (2002). Seeing archives. Postmodernism and the changing intellectual place of archives. *The American Archivist*, 65, 24-41.
- Okoli, C., & K. Schabram (2010). *A guide to conducting a systematic literature review of information systems research*. Sprouts: Working Papers on Information Systems. Retrieved from [https://www.researchgate.net/publication/228276975\\_A\\_Guide\\_to\\_Conducting\\_a\\_Systematic\\_Literature\\_Review\\_of\\_Information\\_Systems\\_Research](https://www.researchgate.net/publication/228276975_A_Guide_to_Conducting_a_Systematic_Literature_Review_of_Information_Systems_Research)
- Orlikowski, W.J., & J.J. Baroudi (1991). Studying Information Technology in Organizations: Research Approaches and Assumptions. *Information Systems Research*, 2(1), 1-28.
- Patnayakuni, R., & N. Patnayakuni (2014). Information security in value chains: A governance perspective. *Proceedings of the twentieth Americas conference on information systems (AMCIS 2014, Savannah)*, Association for information systems (pp. 1-10). Retrieved from <https://pdfs.semanticscholar.org/e4af/737191a4d6ecb90c990fd94bd4545e0f56cc.pdf>.
- Peppard, J., & J. Ward, J. (2016). *The Strategic Management of Information Systems: Building a Digital Strategy* (4th ed.). Hoboken: John Wiley & Sons.
- Petrucci, A. (1995). The Illusion of Authentic History: Documentary Evidence. In A. Petrucci, *Writers and Readers in Medieval Italy: Studies in the History of Written Culture* (Chapter 10, pp. 236-250). New Haven: Yale University Press.
- Piggott, M. (2012). Two cheers for the records continuum. In M. Piggott, *Archives and Societal Provenance: Australian Essays* (Chapter 12, pp. 175-195). Oxford: Chandos Publishing.
- Rawson, K. (2009). Accessing transgender // desiring queer(er?) archival logics. *Archivaria*, 68, 123-140.
- Redman, T.C. (2004). Data: an unfolding quality disaster. *DM Review*, 8, 22-23 and 57.
- Ross, S. (2012). Digital Preservation, Archival Science and Methodological Foundations for Digital Libraries. *New Review of Information Networking*, 17(1), 43-68.
- Samuels, H. (1991). Improving our disposition: Documentation Strategy. *Archivaria*, 33, 125-140.
- Samuels, H. (1992). *Varsity Letters: Documenting Modern Colleges and Universities*. Lanham, MD: Scarecrow Press.
- Schwartz, J.M. (1995). 'We Make Our Tools and Our Tools Make Us': Lessons from Photographs for the Practice, Politics, and Poetics of Diplomats. *Archivaria*, 40(Fall), 40-74.
- Schwartz, J.M., & T. Cook, (2002). Archives, records, and power: the making of modern memory. *Archival science*, 2(1-2), 1-19.
- Serova, E. (2012). Enterprise Information Systems of new Generation. *The Electronic Journal of Information Systems Evaluation*, 15(1), 116-126.
- Shetty, S., & E.J. Bellamy (2000). Postcolonialism's Archive Fever. *Diacritics*, 30(1), 25-48.
- Shilton, K., & R. Srinivasan (2007). Participatory appraisal and arrangement for multicultural archival collections. *Archivaria*, 63, 87-101.
- Smith, G.D., & L.G. Steadman (1981). Present value of corporate history. *Harvard Business Review*, 6(59), 164-173.
- Srinivasan, M., & A. Dey (2014). Linking ERP and e-business to a framework of an integrated e-supply chain. In F.Z. Martínez-López (ed.), *Handbook of strategic e-business management* (pp. 281-305). Berlin and Heidelberg: Springer.
- Stoler, A.L. (2002). Colonial Archives and the Arts of Governance. On the Content in the Form. In C. Hamilton, V. Harris, M. Pickover, G. Reid, R. Saleh, and J. Taylor, (eds.), *Refiguring the Archive* (pp. 83-100). London: Kluwer Academic Publishers.
- Stoler, A.L. (2009). *Along the Archival Grain: Epistemic Anxieties and Colonial Common Sense*. Princeton: Princeton University Press.

Sundqvist, A., & P. Svård (2016). Information culture and records management: a suitable match? Conceptualizations of information culture and their application on records management. *International Journal of Information Management*, 36(1), 9-15.

Thomassen, T.H.P.M. (1999). Paradigmatische veranderingen in de archiefwetenschap. In P.J. Horsman, F.C.J. Ketelaar, T.H.P.M. Thomassen (eds.), *Naar een nieuw paradigma in de archivistiek* (pp. 69-79). Den Haag: Stichting Archiefpublicaties.

Toffler, A. (1970). *Future shock*. New York: Random House.

Turner, V., J.F. Gantz, D. Reinsel, & S. Minton (2014). *The digital universe of opportunities: Rich data and the increasing value of the internet of things*. Framingham, Ma.: IDC.

Upward, F. (1996). Structuring the records continuum, part one. Postcustodial principles and properties. *Archives and Manuscripts*, 24(2), 268-285.

Upward, F. (1997). Structuring the records continuum, part two. Structuration theory and recordkeeping. *Archives and Manuscripts*, 25(1), 10-35.

Upward, F. (2000). Modelling the continuum as paradigm shift in recordkeeping and archiving processes, and beyond - personal reflection. *Records Management Journal*, 10(3), 115-139.

Upward, F. (2005). Records continuum. In S. McKemmish, M. Piggott, B. Reed and F. Upward (eds.), *Archives: recordkeeping in society* (pp. 197-222). Wagga Wagga: Charles Sturt University.

Upward, F. (2017). The archival multiverse and eddies in the spacetime continuum. In A.J. Gilliland, S. McKemmish, A.J. Lau (eds.), *Research in the Archival Multiverse* (pp. 198-227). Clayton, VIC: Monash University Publishing. [http://dx.doi.org/10.26530/OAPEN\\_628143](http://dx.doi.org/10.26530/OAPEN_628143)

Upward, F., B. Reed, G. Oliver, & J. Evans (2013). Recordkeeping informatics: re-figuring a discipline in crisis with a single minded approach. *Records Management Journal*, 23(1), 37-50.

Van Bussel, G.J. (2012a). Enterprise 2.0., Accountability and the necessity for digital archiving. In W.F. Riekert and I. Simon (eds.), *Information in e-Motion. Proceedings BOBCATSSS 2012 - 20th International Conference on Information Science. Amsterdam, 23-25 January 2012* (pp. 82-86). Bad Honnef: Bock+Herchen Verlag .

Van Bussel, G.J. (2012b). Reconstructing the Past for Organizational Accountability. *The Electronic Journal of Information Systems Evaluation*, 15(2), 127-137. Retrieved from [www.ejise.com](http://www.ejise.com).

Van Bussel, G.J. (2012c). *Archiving should be just like an Apple, en acht andere (nuttige?) stellingen*. Amsterdam: Amsterdam University Press.

Van Bussel, G.J. (2016). An Accountability Challenge: Capturing Records and Their Context in Enterprise Information Systems. In P. Silva, A. Guerreiro and R. Quaresma (eds.), *Proceedings of the 10th European Conference of Information Systems Management. ECISM 2016, Evora, Portugal, 8-9 September 2016* (pp. 204-211). Reading: ACPI.

Van Bussel, G.J., & F.F.M. Ector (2009). *Op zoek naar de herinnering. Verantwoordingsystemen, content-intensieve organisaties en performance*. Helmond: Van Bussel Document Services.

Van de Pas, J., & G.J. van Bussel (2015a). Privacy lost - and found? The information value chain as a model to meet citizens' concerns. *Electronic Journal of Information Systems Evaluation*, 18(2), 199-209.

Van de Pas, J., & G.J. van Bussel (2015b). Embedding Privacy in ICT Architectures. The citizen as public stakeholder in architecture development. In B. van der Sloot (ed.), *Proceedings of the Amsterdam Privacy Conference (21-26 October 2015)* (14 pages, incl. References, only available on USB). Amsterdam: APPR. Retrieved from [http://www.vbds.nl/wp-content/uploads/2015/10/Van-de-Pas\\_-Van-Bussel.pdf](http://www.vbds.nl/wp-content/uploads/2015/10/Van-de-Pas_-Van-Bussel.pdf).

Van de Pas, J., G.J. van Bussel, M. Veenstra, & F. Jorna (2016). Digital Data and the City. An exploration of the building blocks of a Smart City Architecture. In D.P. Baker, W. Evans (eds.), *Digital Information Strategies. From Applications and Content to Libraries and People* (Chapter 13, pp. 185-198). Waltham, MA: Chandos Publishing.

Vom Brocke, J., A. Simons, & A. Cleven (2011). Towards a business process-oriented approach to enterprise content management: the ECM-blueprinting framework. *Information Systems and e-Business Management*, 9(4), 475-496.

Voss, P.J., & M.L. Werner (1999). Toward a Poetics of the Archive: Introduction. *Studies in the Literary Imagination*, 32(1), i-viii.

White, K.L. (2017). Race and culture. An ethnic studies approach to archival and recordkeeping research in the United States. In A.J. Gilliland, S. McKemmish, A.J. Lau (eds.), *Research in the Archival Multiverse* (pp. 352-381). Clayton, VIC: Monash University Publishing.

Withers, C.W.J. (2002). Constructing 'The Geographical Archive'. *Area*, 34(3), 303-311.

Wood, S., K. Carbone, M. Cifor, A. Gilliland, & R. Punzalan (2014). Mobilizing records: re-framing archival description to support human rights. *Archival Science*, 14, 397-419.

Wurl, J. (2005). Ethnicity as provenance. In search of values and principles for documenting the immigrant experience. *Archival Issues*, 29(1), 65-76.

Xiaomi, A. (2003). An integrated approach to records management. *The Information Management Journal*, July-August, 24-30.

Xie, S.L. (2011). Building Foundations for Digital Records Forensics: A Comparative Study of the Concept of Reproduction in Digital Records Management and Digital Forensics. *The American Archivist*, 74, 576-599.

Yeo, G. (2007). Concepts of record (1): evidence, information, and persistent representations. *The American Archivist*, 70(2), 315-343.

Yeo, G. (2015). Record(s). In L. Duranti and P.C. Franks (eds.), *Encyclopedia of Archival Science* (pp. 315-319). Lanham: Rowman & Littlefield.

Yeo, G. (2017). Information, records, and the philosophy of speech acts. In F. Smit, A. Glaudemans and R. Jonker (eds.), *Archives in Liquid Times*. Den Haag: Stichting Archief Publicaties.

Yin, R.K. (2003). *Case Study Research. Design and methods* (3rd ed.). Sage: Thousand Oaks.

Yusof, Z.M., & R.W. Chell (2002). Towards a theoretical construct for records management. *Records Management Journal*, 12(2), 55-64.



# The Theoretical Framework for the 'Archive-As-Is'. An Organization Oriented View on Archives

## Part II. An Exploration of the 'Archive-As-Is' Framework\*

### 1. Introduction

In Part I of this article, I presented the first part of this exploration into the problems Enterprise Information Management (EIM) experiences in managing structured and unstructured information objects. It dealt with the possibility of using records and archives as applicable concepts to find a solution for that problem. It became clear that EIM lacks an applicable theoretical framework to use records and archives in its attempts to facilitate business processes in reaching organizational objectives and designing business strategies. To find a usable theoretical framework, the existing two archival theoretical frameworks were discussed. The conclusion of that discussion was that both theories, theoretical weaknesses notwithstanding, offer convincing arguments for the value of archives and records for organizations. Another conclusion was that both theories have not succeeded in linking these values to the realization of organizational objectives, designing business strategies, and constructing archives in a way that allows EIM to facilitate organizations effectively in those endeavors.

In this part, I will extensively discuss the theoretical framework of the 'Archive-as-Is'. I developed the theory as a pragmatic view on archives and records, their genesis, construction, use, and continuous management. The 'Archive-as-Is' is a declarative model for understanding the archive of an organization (or organizational chain), how it has been designed, created, processed, manipulated, and managed as a valuable business resource. This framework explains how the archive has 'grown' to be the archive that the organization or the person that generated it, wants it to be (in short: the 'Archive-as-Is').

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An overview of the conceptual background of the theoretical framework will follow this introduction. After that I will elaborate on the assumptions on which the theoretical framework is based, followed with a graphical model of the framework. The next part will be an in-depth discussion of all components of the framework. This part of the article will be concluded with several concluding remarks, remarks about further research, and an acknowledgement section.

## 2. Conceptual background of the theoretical framework

I have developed the theoretical framework of the 'Archive-as-Is' primarily as an *organizational* theory on archives. As such, the focus of the framework is on the organizations (and/or persons) that create, process, manage, and preserve information objects, records and archives in their business processes and activities. The background of the theoretical framework presented here is directly influenced by archival science, but also by concepts, theories, and ideas from organization and information sciences, such as:

1. The sensemaking theories of Karl Weick (1979, 1995) and Brenda Dervin (2003), that guide research about the way people make sense of information objects and the way organizations address either uncertain or ambiguous situations. For sensemaking, records and archives are of crucial importance, because of their contextual nature;
2. Relevance theories (Saracevic, 2007ab), which argue that what causes information to be used, stored, kept, and preserved is its relevance to the user or the organization that generates or collects that information. Relevance is extremely important when attributing value to records and should be part of appraisal processes;
3. The situation theory (Barwise and Perry, 1983; Devlin, 1994), an information theoretic mathematical ontology developed to support situation semantics. Situations support (or fail to support) items of information. The theory is applicable to the analysis of information flows and information architecture, cooperative action, and ICT-design (Israel and Perry, 1991; Devlin and Rosenberg, 2008). Situations can be associated with transactions in business processes and can be used to analyze records and the context(s) surrounding them;
4. Andrew Pettigrew's (1979, 1990) ideas of the relationship between context and organizational development, in which reconstructing past contexts, processes, and decisions to discover patterns, underlying mechanisms and triggers, is extremely important when formulating strategies, but also for accountability, governance and compliance;
5. The knowledge chain model of Clyde Holsapple (Holsapple and Singh, 2001), which offers a framework for knowledge translation within organizations to realize organizational objectives. It can be applied to records and archives because of its process-oriented nature;

6. The activity theory as used by Bonnie Nardi (Nardi and O'Day, 1999; Kaptelinin and Nardi, 2012), which offers valuable ideas about behaviour and technology. Nardi (1996, p. 13) states that activity theory 'sees people and things as fundamentally different. People are not reduced to 'nodes' or 'agents' in a system; 'information processing' is not seen as something to be modelled in the same way for people and machines'. Nardi's theory has been important for my interpretation of EIM and organizational behaviour.

The philosophical tradition that underlies this new framework is pragmatism, in which 'truth' is traced by its 'respective practical consequences' (James, 1907, p. 45). Thought is not meant to describe or mirror reality (James, 1909, chapter 1). Theories should have practical application (James 1907, p. 216) and are instruments in problem solving, which is exactly the kind of logic useful in continuously changing organizations. The ethics of pragmatism is practical: ethical theory without practice is 'intolerably academic'. It should be judged by practical use (Dewey and Tufts, 1908, p. v). Patricia Shields (1998, p. 197) called pragmatism 'the philosophy of common sense'. Charles Peirce's general concept of 'continuum' has been extremely important for my understanding of information management, for 'every general concept is, in reference to its individuals, strictly a continuum' (Hartshorne and Weiss, 1933, p. IV, 642). Just as with the concepts of other pragmatist philosophers, Peirce's continuum is not bound by spacetime. Pragmatism is, by definition, an approach based on spacetime realities (as is recognized by Upward, 2017). Peirce's highly complex concept of 'continuum' would have been a sound philosophical foundation for the Records Continuum theory, but it was not recognized as such. Peirce's ideas about 'continuum' were revitalized in late twentieth century mathematics (Zalamea, 2003).

## 3. Assumptions

The framework of the 'Archive-as-Is' is based on several assumptions. These assumptions are:

1. In the theoretical framework of the 'Archive-as-Is', the information management function is a continuum. It does not make a distinction between records management and archives management (commonly made in archival practices). The Information management function (and its expression: EIM) needs to guarantee content, context, and structure of records and archives over time, even if these records or archives cease to be used in business, even if there are different organizations/organizational units or persons responsible for (parts of) the information management function, even as (parts of) an archive are no longer retained and irreparably destroyed, and even if there are multiple legitimate successors of the organization or persons that created the archive, including archival repositories (archival institutions). This (pragmatic) continuum is not bound by spacetime.
2. Records pass through a (non-linear) lifecycle. They are created and will, in the end, be irreparably destroyed ('die') or indefinitely preserved ('live') in the organizational archive, continuously managed in EIM processes and

contextualized by metadata that capture changing contexts in organizational, social and personal circumstances. Hence, the lifecycle of records takes place within a continuum of management and context.

3. Archives are neither complete, nor neutral or objective sources of 'truth' (Lane and Hill 2010). Although they are 'process bound information' (Cook, 1997, p. 48; Thomassen, 1999, p. 76) and 'a sediment of organizational' (or personal!) 'actions' (PIVOT, 1994), they are *constructed* bodies, configured to retain all those records organizations or persons *choose* to retain, enriched with all the metadata that are *allowed* to be included in metadata schedules. Archives are primarily used to reconstruct the past (for, for instance, accountability) (Van Bussel, 2012b). They retain (at a minimum) all records that, according to legal obligations, have to be kept for specified periods of time. Archives embed all preoccupations, moral codes and preconceptions entrenched in procedures, business processes, legislation, and social environments. They are subjective constructs (Greetham, 1999). Not all records are captured in the organizational archive: employees may decide to delete them prematurely, because they do not find them relevant, do not want them to be known to anyone, do not want them to become part of accountability processes, or out of deviant behaviour. Archives change constantly: new records are added daily, metadata are added or changed, and records that have reached the end of their retention period are removed from the archive and irreparably destroyed. Only a (small) part of the archive is preserved indefinitely for its 'historical value'. That part of the archive can only deliver a distorted view of the reality in which the creating organization functioned (Kaplan, 2000).
4. In the *Manual for the Arrangement and Description of Archives* (1896, Muller et al, 2003, p. 19) in its Statement 2, it is declared that an archive 'is an organic whole', a 'living organism, which grows, takes shape, and undergoes changes in accordance with fixed rules. ... The rules which govern the composition, the arrangement and the formation of an archival collection, therefore, *cannot be fixed by the archivist in advance*; he can only study the organism and ascertain the rules under which it was formed' (italics by GJvB). Although this is true for archives that are no longer a 'living organism' (as is stated in a footnote), there may arise a problem for archives that are: organizational archives as digital, constructed bodies *need* to be configured *in advance*. This means that the business rules that govern composition, arrangement, formation, and (even) method of description are defined *before* the archive as a construct is created. They do not have a 'life'; they do not 'grow organically'. It is one of the reasons why archivists need to participate in the configuration phases of digital archives. But what does it mean for the statement of Muller, Feith and Fruin about the archive as an 'organic whole' when the business rules that define an archive *need* to be fixed in advance and do not grow organically? I do not have an answer now, but it needs careful consideration and research.
5. It is possible that archival repositories will be 'without walls' (Cook, 2007, p. 429-430), but the opposite is also true. In this age of big data, organizational chains, inter-organizational data warehouses, cloud computing, authentic registrations, and computer mediated exchange, the archival repository may

be changing into a 'hub' for access to the original organizational and personal systems or web-environments that have managed the archive from the moment of its creation (a postcustodial view: Acland, 1991; Bearman, 1993a; Upward and McKemish, 1994). Charles Dollar (1992) stated that as the integrity of archives and records would be best preserved in its original ICT environment, the costs of proprietary systems would be extremely high, and technology obsolescence would make preservation extremely complex, management of archives would become unsustainable for any archival repository. Duranti's (2007, p. 464-465) argument is that a physical place is an absolute necessity to maintain the integrity of archives. It is necessary that 'the archival institution establish an architecture in which the records of all creating bodies, once received, can be put into clearly defined and stable relationships, and in which their broader context can be identified and the associations among the records never broken' (a custodial view). Even adherents that agree with Duranti's argument about the absolute importance of guaranteeing the authenticity of records have disagreed with her conclusion that this only can be achieved by taken physical custody of the archive by an archival repository (for a discussion: Cunningham, 2015). Both statements are ideological and not substantiated with convincing practical evidence. In the theoretical framework of the 'Archive-as-Is', it is not important whether archives are preserved by the organizations that created them (or their successors) or transferred to an archival repository, although the practical consequences for EIM are far-reaching.

6. Archivists are part of the information management function of organizations. They help organizations in configuring policies, procedures, business processes, and ICTs to shape the organizational archive and to implement laws and regulations for compliance and accountability. They assist in developing metadata schedules that try to capture organizational and environmental contexts. They play a crucial role in reconstructing the past and appraising, selecting, contextualizing, and preserving records within the organizational archive. When they are working with an archival repository, they are acquiring and preserving archives, contextualizing and relating them, and realizing access. But they do *not* shape an objective narrative of past occurrences in preserving and contextualizing archives. They need to acknowledge their own subjectivity and the impossibility of creating complete and objective organizational or personal archives. They are part in deciding which archives will be indefinitely preserved and are accountable for gaps, inconsistencies, and distortions in (and between) them. Archivists are not neutral, independent, and objective custodians of organizational, cultural or historical knowledge.
7. My definition of a record (in Part I of this article) allows the inclusion of information objects that are traditionally not known as records and have not been part of organizational archives. There are information objects that, as Jenkinson (2003, p. 342) stated, have become a record because 'someone decided to stick it into a file rather than the bin'. They are set aside and preserved, maybe out of a notion of potential future value (as Schellenberg, 2003, p. 11-16, stated), maybe because of subjective perceptions of employees. If an organization wants to preserve an ebook because it is perceived as extremely valuable for the organization (although it is *not* evidence or cultural heritage), according to my definition it can be considered a record.

### 4. The theoretical framework

#### 4.1. The framework's components

The framework of the 'Archive-as-Is' consists out of five components (A-E). The components A, B, and C are aggregations of several elements. These three defining components define the management of records and archives:

- A. *the four dimensions of information, (primarily) about records themselves.* This component is an aggregation of four elements Quality (1), Context (Situational) (2), Relevance (3), and Survival (4);
- B. *the two archival principles, about the archive as a whole.* This component is an aggregation of the elements Provenance (5) en Context (Environmental) (6); and
- C. *the five requirements for information access, about the accessibility of records and archives for users.* This component is an aggregation of five elements: Findability (7), Availability (8), Perceivability (9), Intelligibility (10), and Contextuality (11).

The fourth component is an *operational* one, the information value chain (D) that implements the first three components.

The fifth component is the *behavioural* component (E): organizational behaviour influences the information management function and the decisions that are made within EIM about the management of the information value chain.

#### 4.2. The framework's model

The framework's model is presented in Figure 1.

#### Explanation of the model

The first three components of the framework (A, B, and C) are to be implemented by an organization into the information value chain (D) as mandatory requirements from global legal, accountability, and professional frameworks. The information value chain will manage records and create the organizational archive using its five primary and five secondary processes. The chain is configured to realize the three components A, B, and C, but is also embedded by organizational behaviour (E) that affects the management of records and the creation of archives. The information value chain manages the organizational archive as it is created and will continuously contextualize it when situational, organizational, and social environments change. An organizational archive and its records are accessible for all employees within an organization, of course dependent on security authorizations. When an archive is not mandatory transferred to an archival repository and stays within the organization itself, access from outside users could be arranged using an access hub, maybe (but not necessarily) realized by an archival repository.

The model can also be viewed from the perspective of an archival repository. When an archive is transferred to or acquired by an archival repository, the information value chain (D) of the repository will manage it. The chain is configured to know which archives are accepted, how they are to be processed, contextualized, preserved and continuously checked. The first three components

of the theoretical framework (A, B, and C) define the implementation of the information value chain of the archival repository. Organizational behaviour (E) influences the behaviour of the archivists and their choices (in acquisition, contextualizing, preserving, etc.) are based on social, moral, and professional norms, codes and preconceptions. Archivists are continuously contextualizing the archive. The five requirements of information access (C) are very important for archival repositories. Repositories need to facilitate their users in realizing all requirements of information access and this means, in the end, implementing technologies to facilitate human-computer interaction.

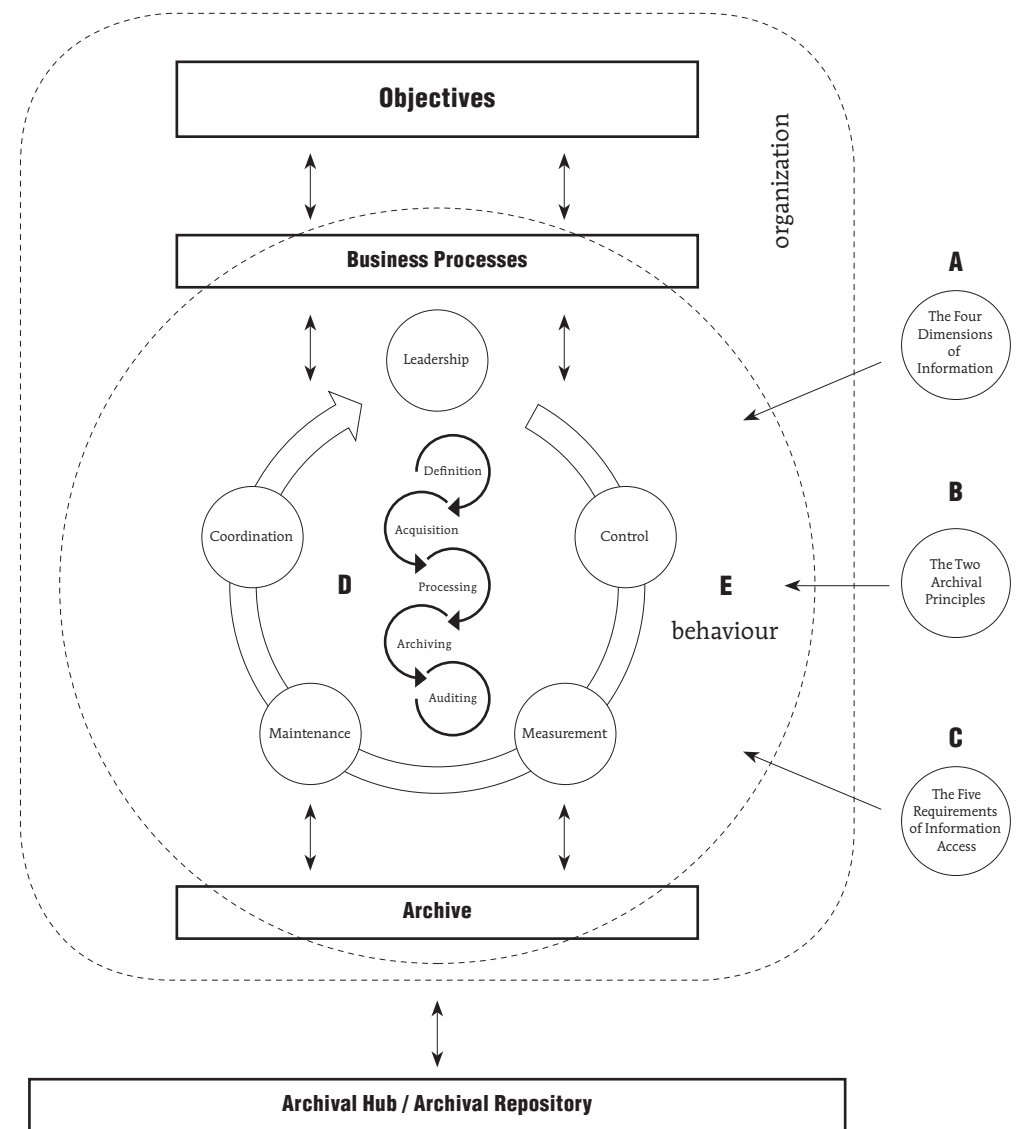


Figure 1. The Theoretical Framework of the 'Archive-as-Is'

### 4.3. The three defining components of the 'Archive-as-Is' (A, B, and C)

These components define the dimensions, principles, and requirements that must be met by organizations to realize EIM to be effective and to retain 'trusted' records that can be used to reconstruct the past. The defining components must be implemented as obligatory requirements in the lifecycle of records and the continuum of the information management processes facilitated by EIM. These three components are requirements for organizational records, archives, and their management, imposed on organizations by global legal, accountability, and professional frameworks.

#### 4.3.1. The four dimensions of information (A)

In complex computerized environments, the trustworthiness of records is constantly challenged. That is a problem, because records are meant to be (and are used as) evidence for organizational (or personal) policies, decisions, products, actions and transactions. Citizens, governments, and courts are making increasing demands for their trustworthiness (El Kharbili et al, 2008). Four dimensions of information allow for a reliable reconstruction of these policies, decisions, products, actions and transactions: quality, context, relevance, and survival (Van Bussel 2012a). These four dimensions are the four elements of the first component of the framework.

The *first* dimension, *Quality* (1), is about the quality requirements of records (according to assumption 7) and the 'information value chain', which will be discussed later as the fourth component of the framework. Van Bussel and Ector (2009, p. 181-214) describe this dimension based on an analysis of organization and information sciences literature about the quality requirements of data and information as well as the results of digital diplomacy research. Four quality requirements are recognized for records: *integrity* (they cannot be manipulated), *authenticity* (they present the required (and original) content and structure), *controllability* (they can be tested on integrity and authenticity) and *historicity* (their content, context and structure can be reconstructed at any moment in time). These four requirements realize the fixity of records. This means that they are (or can be reconstructed as) 'immutable mobiles' (Latour, 1990). Fixity is a necessity because records are meant for *later* consultation and are used repeatedly for the reconstruction of *past* happenings. Fixity enables users to trust records and to use them, for instance as evidence (Levy, 2001, ch. 2). The 'information value chain' ensures that records meet these quality requirements in spite of all necessary handling and guarantees that the necessary context is added, needed to allow for later sensemaking and to identify specific records. The requirements for this value chain are identical to those for organizational business processes, namely reliable time of delivery, effectiveness, efficiency, product quality, alignment of needs, product management, and compliance (Van Bussel and Ector 2009: 205).

The *second* dimension is (*Situational*) *Context* (2). According to Brenda Dervin (1997), context is an 'unruly beast'. 'There is no term that is more often used, less often defined, and when defined, defined so variously as context' (Dervin, 1997, p. 13-14). The concept has been attributed with many definitions, interpretations, and frameworks that can be divided into four classifications. There are interpretations that use context for defining and operating robotic activities in the

((very) near) future, like oracles (Devlin, 1991), for creating a situational environment for a user when using information, for adapting software applications to the personal context of the user, and for sensemaking of (the information in) social situations. This last interpretation of context is the subject of this second dimension of information. The context dimension of records is about the social situation (actions or transactions, cases, process flows, etc.) that generates them. This dimension captures the *situational context of individual records*. This situational context has some characteristics that are agreed upon in literature:

1. it is (in a phenomenological view) a complex social reality that (in a positivist view) will be captured as a simplified metadata construct that is a mere representation of that social reality (Penco, 1999);
2. it encapsulates records and situations to allow for sensemaking (Weick, 1979, 1995; Dervin, 2003);
3. it needs accurate documentation and definition (Groth, 2007);
4. it is in the past (Van Bussel, 2012b); and
5. it is necessary for the tracking and reconstruction of social situations, like business processes, policies, decisions, products, actions, and transactions (Groth, 2007; Self et al, 2007; Van Bussel and Ector, 2009).

The context of social situations provides meaning for the records generated within that situation (Weick, 1979, 1995; Dervin, 2003; Duranti, 1997a). To extract meaning out of situations (cases, process flows, decisions, etc.), EIM users need to gather knowledge of the individual organizational policies, decisions, products, actions or transactions for which records were generated (and their relationships) (Barwise and Perry, 1983; Devlin, 1994). The dimension of context captures data of the existing regulation(s) for the business process the records are part of, the business process itself, the structure of the specific case, the procedures by which records are generated, processed, and used, and their place in the information structure they belong to (Van Bussel and Ector, 2009, p. 215-260). This situational context of records is captured in metadata that try to generate an image of the specific action or transaction records are part of, the changes therein over time, their processing and use, and its management. These metadata have an unbreakable link with the records they belong to (Van Bussel, 2016).

The *third* dimension, *Relevance* (3), is an important concept in human communication and information management. As Saracevic (2007ab) explained, records are only relevant for users if they fit the context in which they are used, managed and retrieved. They need to be relevant for organizational or personal objectives of performance and accountability. They need to have pragmatic quality (Van Bussel, 2012a). A special kind of relevance is *appraisal*, determining the 'value', relevance, of records over time (Van Bussel and Ector 2009, p. 301-309). Appraisal is the complex (and quite subjective) evaluation of records to determine their economic, organizational, financial, fiscal, juridical, legal, societal, and historical relevance and to develop organizational or personal retention schedules. Such schedules define the periods of time that records should be kept or 'retained' (as, for instance, stated in law and regulations), including indefinite retention for records of 'enduring value' and the (not always mandatory) acquisition of organizational archives by archival repositories (Cox and Samuels, 1988). Appraisal is based on the

assumption that when a retention period has expired, records have lost their organizational, legal, and historical relevance and should be irreparably destroyed (Van Bussel, 2012a). For organizations of local, regional and national governments the subsequent selection and disposal of records are most often mandatory. Although not mandatory for non-governmental organizations, disposing of irrelevant records saves (potentially high) costs for retention and accessibility. Besides that, irrelevant records make organizations vulnerable to legal proceedings, for instance in the context of privacy law, fraud or corruption (Van Bussel and Henseler, 2013). The much disputed ‘right to be forgotten’ is an essential part of the discussion on the relevance of records (Mayer-Schönberger, 2009; Stupariu, 2015).

The *fourth* dimension of information concerns the *Survival* (4) of records over time. It pertains to the security and durability challenges, which have to be overcome to realize access, retrieval, and preservation of records in spacetime (Bearman, 2006). It stresses the importance of a reliable and durable ICT infrastructure to enable the continuous and secure storage of records. The features of this infrastructure are fragile and continuously influenced by the restructuring of organizations (Boudrez et al, 2005). The challenge of preservation is almost overwhelming. First, hard- and software configurations are always needed for accessing, retrieving and viewing information, which means that a solution for technological obsolescence should be available. Secondly, the large influx of information requires automated archiving and retrieval functionalities. The ICT infrastructure needs to adapt, transform, renew and grow, but this enhances the risks for obsolescence. Thirdly, records are of a diverse nature. There is a diversity of object types, operating systems and applications. The handling of this diversity is not self-evident, while it is, at the same time, not impossible to change the content of records, which endangers the trust in their reliability. Fourthly, records can only be reliably used, when they can be interpreted by users in their original situational context. A case-based review of this dimension has been offered by, among others, Hockx-Ju (2006).

#### 4.3.2. The two archival principles (B)

I recognize two fundamental archival principles, an ‘old’ and a ‘new’ one, the principle of *Provenance* (5) and the principle of (*Environmental*) *Context* (6) respectively. Both principles are closely interrelated. It may even be difficult to differentiate between them as a result of the intermingling of both principles within archival scholarly literature. The principles are about the archive as a whole and, indirectly, about the records within it.

The ‘old’ archival principle of *Provenance* (5) is seen as the ‘foundation of archival theory and practice’ (Horsman, 1994, p. 51). This ‘ambiguous concept’ (Sweeney, 2008) has been a topic for scientific discourse since its introduction in the eighteenth and nineteenth centuries. It still is. According to Shelley Sweeney (2008, p. 194) ‘over the years the principle has been introduced, reintroduced, applied in part, applied in full, studied, and debated without end’. Giovanni Michetti (2016) defines provenance (based on ICA definitions) as the relationship between archives and the organizations or persons ‘that created, accumulated and/or maintained and used [them] in the conduct of personal or corporate activity’. It is also the relationship between them and the functions that generated their need. The word

‘provenance’ refers, hence, to ‘the origins of an information-bearing entity or artifact’ (Sweeney, 2008, p. 193). That is important, because archives ‘should be arranged according to their provenance in order to preserve [its] context, hence, [its] meaning’ (Michetti, 2016, p. 59). From its early history, the principle of provenance was meant, first, not to intermingle archives from different origins (‘respect des fonds’) and, second, to maintain the internal structure of an archive in its ‘original order’ (‘archival bond’) because it is a reflection of the functions of an organization or an individual. Both are needed for an archive to have evidential and informational value (Schellenberg, 2003; Posner, 1967; Horsman et al, 1998; Reilly, 2005).

Provenance has become a research object in other disciplines to see how it can be used and represented in different contexts. In computer science, the interpretation of provenance is that of data lineage, a description in the ownership history of how a data object was derived (Buneman et al, 2001). Records can become an aggregate of several information objects, may be stored in several locations, may be (part of) databases, documents, spreadsheets, or emails, may cross organizational borders, and may become part of one or more archives. Along the way, their origin and its logistic history may become obscure, may contain gaps, or may be lost (Puri et al, 2012). Systems are developed that trace and analyse provenance across distributed, networked environments, like Chimera in physics and astronomy, myGrid in biology and CMCS in chemical sciences (Simmhan et al, 2005). In visual analytics, it is recognized that the need to trace provenance extends beyond computing and into the realm of human analysis (Lemieux, 2016). In computer science, the focus is on individual items, while in archival science it usually applies to an archive or an aggregation of records. Tom Nesmith (1999) associates provenance with the social and technical processes of inscription, transmission, contextualization, and interpretation of archives, which account for their existence, characteristics, and continuing history. It broadens ‘the idea of provenance ... to include its societal dimensions’ (Nesmith, 2015, p. 286). It is a postmodernist interpretation that unmistakably intermingles provenance and context. Using the principle of provenance proves to be complex when there is a ‘parallel provenance, ‘two or more entities residing in a different context as establishing the provenance of [archives], even when they are involved in different kinds of action, for example creation and control’ (Ketelaar, 2007, p. 186-187, based on Hurley (2005)).

The *object* of the principle of provenance is the (business process) archive of an organization or an organizational chain *as a whole* and the *structure of relationships* within that archive. It is *not* meant to contextualize archives. It *only* wants to ascertain that: [1] archives (or aggregations of records) can be traced back to their creator(s) and their creation, and [2] the ‘archival bond’ in which their records are embedded can be reconstructed (Duranti, 1997b). For EIM the principle means that metadata about the creation and logistic history of organizational archives are to be preserved and that their internal structure(s) must always be reconstructable. Nevertheless, tracing the history of individual records to safeguard the four dimensions of information seems to be necessary in digital environments (Cui and Widom, 2003). In reconsidering the archival principle of provenance, this is an important reason to add data lineage to the implementation of the principle.

(Environmental) Context (6), the second archival principle, is a 'new' principle. It is comparable to the 'ambience function' introduced by Chris Hurley (1995). Its *object* is *not* the archive, but the environmental circumstances that give the archive meaning and that allow for its interpretation. It defines and captures the surrounding influences of the archive in metadata. It is an 'outside' phenomenon 'even if it conditions meaning and, in time, its interpretation' (Duranti, 1997b, p. 217). This context captures metadata about the organizational, personal, and social environments of the archive, the environment the organization directly experiences and that modifies its responses (Pfeffer and Salancik, 1978, p. 72-74). It also concerns the organizational structure, the business process hierarchy, and the legal and regulatory environment in which the archive is generated. Eric Ketelaar (2000b) adds social-cultural influences from the wider organizational environment to that mix. His views are closely related to the sensemaking theories of Karl Weick (1979, 1995) and Brenda Dervin (2003). To capture a representation of these influences in metadata is, however, extremely complex.

No one disputes the contextuality of archives. But the boundaries of the principle of provenance have been stretched to include environmental context, neglecting the fact that the object of provenance is the archive, its internal structure of relationships, and its lineage. Its object is *not* the environment of the archive that allows for sensemaking. Michetti (2016, p. 59), thus, is incorrect in stating that the arrangement or archives according to their provenance preserves their 'context, hence [their] meaning'. It preserves their source, internal structure, and lineage, but not their context. The building blocks for the understanding and interpretation of archives are their environmental influences, their environmental context, in a very simplified way captured within archival metadata (Van Bussel, 2016).

Context is an axiom. But it has never been considered a principle within archival science, although an archive (and the records within it) without a context is a meaningless aggregation of data that cannot realize the organizational or cultural objectives archives are constructed or used for. I am applying the context principle(s) of Frege (1980 (1884)) and Wittgenstein (1961 (1922)) to archives and define the rule that an archive (and the records within them) can only have meaning within their environmental, surrounding influences. The principle of context expresses, thus, the rule, in short, to never ask for the meaning of an archive (or its records) in isolation, but only in its context. That context is what EIM needs to capture in metadata to ensure that archives can contribute to the realization of organizational objectives (Van Bussel, 2016).

The context *dimension* of a record is guided by the context *principle* of the archive in supplementing the situational context of a record with the environmental context of the archive. Both contexts help in reconstructing the situations that generate(d) records and the organizational, personal, cultural, economic, and/or social circumstances that determine(d) creation, management, and preservation of archives. Situations and surrounding archival influences are captured in a simplified way in metadata.

#### 4.3.3. The five requirements for information access (C)

Almost twenty-five years ago, Michael Buckland (1991, p. 77) stated that 'access emerges as a recurrent theme' within information science, but information access is hardly conceptualized. In archival science, there is work done about the access to archives. It concentrates on access permissions, freedom of information, legal restrictions, and the arrangement of archives (Kozak, 2015; Thomassen et al, 2001). There are no overall concepts of information access in archival science. In information science, however, two theories modelling the concept of information access have been developed. Both theories have contributed to the understanding of its dimensions. None of these theories have explained what the facets, or requirements of access are (McCreadie and Rice, 1999; Burnett et al, 2008). Kay Mathiesen (2014) recognized five facets of access, largely corresponding to the five requirements of information access I have defined.

Information access for users has to be realized *regardless* of technology, language, disability, or personal capabilities. Its importance is growing in an age of an expanding digital universe, expanding legal frameworks and organizational accountability, and changing notions of privacy, economy, literacy, and daily life. Because of its complexity, it can 'be a burden' (Mason, 1986, p. 10-11). I recognize five requirements for information access that *together* define if (potential) users have access to archives and records.

This *first requirement* is *findability* (7). It concerns the possibility an individual has to discover *where* records are created, published, kept, stored, or preserved. Finding something refers to locating something in a known space. So, finding records is not a search problem (which attempts to locate something in unknown spaces), but an EIM problem (Baker, 2013). Findability is an essential part of both social and organizational information architectures. These architectures try to ensure that users can find records easily in spaces where complexity, information overload, and unfamiliarity hamper findability (Resmini and Rosati, 2007). Such architecture is necessary because the inter-subjectivity between the person or organization that created and/or organized archives and records and the persons looking for the content of those archives and records complicates finding them (Berlin et al, 1993; Narayan and Olsson, 2013). Information architectures try to realize cognitive and informational continuity between different environments. That way, users do not have to shift constantly between different, often colliding patterns of information structuring (Resmini and Rosati, 2007). Finding-aids are of the utmost importance for users to find the archives and records they need.

The *second requirement* is *availability* (8). Even if archives and records are 'findable' (the potential user knows *where* they can be found), that does not mean they can be retrieved and be made 'available' at a certain moment in time. There may be barriers that could make obtaining records difficult or, even, impossible. There may be legal ownership restrictions that do not allow their availability. Archives may be deemed confidential by the organization that preserves it. Records may have been irreparably destroyed or may have disappeared. They may be in a repository that is hosted behind a pay wall. The ICTs needed to obtain them may not be available. Even if ICTs are available, it is not unlikely, especially when trying to retrieve 'older' records, that software cannot decipher the data formats originally used. Archives and records may

be deemed as not of enduring importance and, as such, not acquired by archival repositories or kept by their creating organizations. So, although a user knows where archives and records are ('they are findable'), he or she cannot obtain them ('they are not available').

When archives and records are findable *and* available, they should be *perceivable* (9), the *third requirement* of information access. It should be possible to perceive them, to hear, feel, smell, taste, or view their content. If potential users are disabled in ways that prohibit hearing, feeling, smelling, tasting, or viewing, there should be assistive and interactive technologies in operation that allow them to perceive records (Hill 2013). When records are heard, felt, smelled, tasted, and/or viewed, users have the *possibility* to gather their meaning (Jones 2011). It is only *possible*, for even if records are findable, available, and perceivable, that does not mean they are 'intelligible'. To ensure accessibility and usability at both perceptual and cognitive levels of human-computer interaction, designers of archival systems need to be constantly aware of such design issues and should integrate those issues in evaluating their designs (Kato and Hori, 2006).

The *fourth requirement* of information access is *intelligibility* (10). Perceivable records can be read, heard, felt, smelled, and/or viewed, without the user having the capabilities to *understand* them. Understanding is only possible if the information literacy capabilities of users enable them to do so. According to the Karlsruhe concept of comprehensibility, the most ideal level of intelligibility depends on six dimensions: simplicity, structure, correctness, motivation, concision, and perceptibility. If an information user cannot (completely) gather one (or more) of these dimensions, it becomes more difficult to understand the records (Göpferich, 2006). Facilitating intelligibility may be a burden for organizations (archival repositories among them), because even in very literate countries large minorities of the population can only read simple texts in their own language (OECD 2015). Those minorities may be less educated people, immigrants, untrained readers, or people with dyslexia, aphasia, intellectual or cognitive disabilities, learning disabilities, or neuropsychiatric disabilities. Much above the level of 'simple text' is for most of those people *unintelligible*. For that reason, for large minorities of the population accessing records will be problematic. To have access to ICTs will not solve the problem, which makes the dissemination of knowledge quite difficult.

The last, *fifth requirement*, is *contextuality* (11). Archives and their records may be findable, available, perceivable, and intelligible, but if their contextuality is in jeopardy, it may be impossible to reconstruct the situational and environmental context in which they were generated, used, and managed. This requirement is connected with the dimension of (situational) context (2) and the principle of (environmental) context (6) as it allows users to access archives and records in context. Archives and records have a specific meaning in the context in which they are (were) generated and used. If their situational and environmental context cannot be reconstructed by a user, the meaning they were meant to have at the moment of their creation or as a consequence of their use, will be lost. At that moment, they lose their function as reference, as evidence of actions and transactions, or as source of organizational knowledge. If that context is unavailable

or impossible to reconstruct, archives and records may be interesting for users, but only in their own context of information seeking (Kuhlthau, 2006). This requirement allows users to interpret the meaning of archives and records in a way that was intended by the organization or person that constructed the archive. That interpretation will not be complete and will be restricted by the metadata that were allowed to be captured during creation, use, management, and preservation of the archive and the records within it. What is done with that context by users is dependent on their (research) questions. They may try to find other contexts unconsciously embedded into the records or the archive, like Emmanuel Le Roy Ladurie (1975) did for Montaignou or Catarina Bruschi (2009) for the Waldensian heretics in the Languedoc.

The requirements of information access are defined from the viewpoint of the *users* of the archive and its records. For them to be useful for the user, they should be accessible. Meeting information access is one of the biggest challenges for EIM. The five requirements of information access define this challenge. It means that EIM will have to meet every requirement of information access, including all technologies needed for users to perceive records, including generation or maintenance of information architectures that allow users to quickly access archives, and including all contextual metadata for archives and records to allow for a reconstruction of the past.

#### 4.4. *The operational component of the 'Archive-as-Is': The information value chain (D)*

The three defining components of the theoretical framework of the Archive-as-Is are to be implemented by organizations as mandatory requirements in the *operational component* of the framework: the *information value chain*. This chain of information processes, organized by EIM, realizes these components in the business processes of organizations. That way EIM assists these business processes to reach organizational objectives. EIM organizes the information value chain to identify, control, and manage archives, records, and ICTs in and between organizations. The chain ensures that the informational and evidential value of records is utilized in and between business processes to improve performance, privacy and security by safeguarding the four dimensions of information, the two archival principles, and the five requirements of information access (Van Bussel and Ector, 2009; Van Bussel, 2012ab). It is recognized that managing records is a critical source for competitive advantage (Holsapple and Singh, 2001). Michael Porter and Victor Miller (1985) point out that between organizations, differences in the management of information (thus, archives and records) have an effect on activities and lead to differences in their competitiveness.

The information value chain identifies ten distinct, generic processes and nineteen activities that an organization (an organizational chain and/or even a person) performs when managing its records. The chain is comprised of five primary processes, used to manipulate the organizational archive and its records, and five secondary processes that guide performance of the primary processes and their activities. These primary processes and their corresponding activities do not need to be performed in a strict pattern, but there can be various sequences and overlaps among them. The secondary processes influence these variations. In structuring the



<b>Information Definition</b>	Defining the four dimensions of information, the two archival principles and the five requirements of information access within organizational policies, procedures, rules, and systems.	
Activity 1	<i>Configure</i>	Configuring policies, procedures, rules, and systems to implement the four dimensions of information, the two archival principles, and the five requirements of information access, using requirements of all activities of the information value chain.
<b>Information Acquisition</b>	Generating and/or acquiring records (and/or archives) from internal and external sources to make it suitable for subsequent use within specifically set procedures and conditions.	
Activity 2	<i>Generate/receive</i>	Creating and receiving records (and/or archives).
Activity 3	<i>Identify</i>	Identifying records (and/or archives) and adding context.
Activity 4	<i>Capture</i>	Capturing records (and/or archives) in defined and configured information and archiving systems
Activity 5	<i>Store</i>	Store records (and/or archives) in information and archiving systems and making them suitable for subsequent use
<b>Information Processing</b>	Processing and analysing records (and/or archives) in business processes to get work done and using/re-using them for reference, performance, accountability, and evidence, and for economic and historical reasons.	
Activity 6	<i>Process</i>	Using and manipulating records (and/or archives) within case management in business processes for reference, performance, accountability, evidence, and/or economic reasons.
Activity 7	<i>Distribute</i>	Distributing records for use within organizations.
Activity 8	<i>Structure</i>	Adding relevant structures to records (and/or archives) that help users in quickly finding and identifying them.
Activity 9	<i>Publish</i>	The external and/or internal publication of records (and/or archives), according to procedures and legal obligations.
Activity 10	<i>Analyse</i>	Analysing records (and/or archives) for knowledge gathering or management decisions based on defined or random queries or analysing tools using various (defined or random) algorithms
Activity 11	<i>Use/re-use</i>	Using and re-using records (and/or archives) for reference, performance, accountability, and evidence, and for economic and historical reasons.
<b>Information Archiving</b>	Archiving records (and/or archives) based on the four dimensions of information, the two archival principles, and the five requirements of information access.	
Activity 12	<i>Contextualize</i>	Continuously adding new metadata to capture changes in situational and environmental contexts.
Activity 13	<i>Appraise</i>	Defining the relevance of records (and/or archives).
Activity 14	<i>Select</i>	Selecting records (to retain or to destroy).
Activity 15	<i>Retain</i>	Retaining records until the end of their retention period or indefinitely.
Activity 16	<i>Dispose</i>	Destroying records that have lost their relevance at the end of their retention period.
Activity 17	<i>Preserve</i>	Using preservation tools and techniques to retain records (and/or archives) indefinitely (or for a very long time).
Activity 18	<i>Secure</i>	Using information security measures and technologies to secure records (and/or archives).
<b>Information Auditing</b>	Auditing records (and/or archives) according to the four dimensions of information, the two archival principles, and the five requirements of information access.	
Activity 19	<i>Audit</i>	Audit records (and/or archives) according to arranged requirements.

Table 1. Primary processes of the information value chain and their activities

information value chain, three models were crucial: [1] the model of the knowledge value chain of Holsapple and Singh (2001), [2] the recordkeeping model of Peter Horsman (1999, 2001), and [3] the InterPARES Chain of Preservation (Jansen 2015).

The value chain allows EIM to:

1. provide proper control of the performance of business processes;
2. provide trusted information;
3. assist in the realisation of the governance and compliance efforts of organizations;
4. provide legal readiness;
5. provide in the protection of sensitive records; and
6. assist in the construction of trusted archives.

The information value chain can be used by EIM to identify possible risks for the organization and to take proper actions if breaches of laws and regulations take place (Bearman, 2006; Van de Pas and Van Bussel, 2015ab). Tables 1 and 2 give an overview of the information value chain.

<b>Information Leadership</b>	Establishing management conditions, ethics, and circumstances that enable and facilitate EIM.
<b>Information Coordination</b>	Managing dependencies to ensure that EIM processes and resources are used adequately at appropriate times.
<b>Information Control</b>	Ensuring that information professionals and resources are available in sufficient quantity and quality, of course subject to security requirements.
<b>Information Measurement</b>	Assessing values of resources, information professionals, and their deployment.
<b>Information Maintenance</b>	Ensuring that the original condition of assets or resources within the information infrastructure are conserved as nearly, and as long, as possible, are compensated for normal wear and tear, and are renewed when necessary.

Table 2. Secondary processes of the information value chain

#### 4.5. The behavioural component of the 'Archive-as-Is': Organizational Behaviour (E)

From a psychoanalytical point of view, Ihanus (2007) recognizes three phases of archival registrations: archivalization, archivization, and archiving. *Archivalization* has been defined by Eric Ketelaar (2000a, p. 329; 2001, p. 132-133) as 'the conscious or unconscious choice (determined by social and cultural factors) to consider something worth archiving'. Ketelaar refers to the social psychologist Geert Hofstede (1997, p. 5), who defined 'culture' as 'the software of the mind', the 'collective programming of the mind which distinguishes the members of one group or category of people from another'. Humans do have, according to Hofstede, the ability to deviate from this programming, but it is clear that it affects the way employees are acting and thinking in business processes. This mental programming affects the way people intuitively consider something 'worth keeping' – or not. After archivalization, a more conscious choice is made about *archivization* (in the

Derridean sense (see Part I of this article)), about externalizing archivalization's choice in inscribing a trace in an external location. The last, conscious phase is *Archiving*, capturing and filing a record into the (organizational) archive. Between these three phases are psychological filters, and interplays between unconsciousness and consciousness. The first two phases of registrations determine whether (and how) actions are externalized and inscribed in archives. They determine the way people behave. They define behaviour that influences the way people construct, process, and use archives and the way archivists acquire, contextualize, and appraise archives and records. Ketelaar assumes that people working within the same organization will use and create records in different ways (Ketelaar, 2000a, p. 328).<sup>1</sup>

Different organizations are implementing the information value chain differently. Professional standards lead to different ways of creating and using records and archives. For understanding records and archives, employees and archivists of organizations are to be known in their social, religious, cultural, political, and economic contexts (Ketelaar, 2000a, 2001). These contexts define the 'software of the mind', and the effects of human behaviour that are its consequences. The 'software of the mind' impresses the fact that archives are not neutral, not complete, and a result of human behaviour within organizations. That behaviour reflects morals, preconceptions, and the limitations of the social and cultural environment of employees, and offers only a distorted view of reality. Or, maybe better, they allow for the construction of realities, excluding, other realities as a result of archivalization and, later, appraisal and selection (Ihanus, 2007).

The information value chain is embedded and largely configured by this behavioural component of the theoretical framework. Behaviour can have detrimental effects on organizational and personal archives. Managing records and constructing archives is strongly dependent on the working of organizational systems of controls, the methods and instruments used to strengthen such controls, and the behaviour of employees when confronted with these systems, methods, and instruments. When entering an organization, an individual employee brings personal characteristics, a personal social, ideological, ethical, religious, and cultural background, and experiences from other organizations. Employees have their expectations, goals, and ambitions. Those can change when they are interconnecting with other employees when working and collaborating. This affects the organization itself, and the organizational morals and ethics agreed upon may change those of the individual employee, or the other way around. It may explain why some people choose to leave an organization and others elect to stay (Griffin and Moorhead, 2014: 4-5). Hofstede (1997) found that specific attitudes and behaviours of employees differed significantly because of the values and beliefs that characterized their environment. The ways employees are handling information, the choices they are making, and the way they are behaving when confronted with systems of (information) control are heavily affected by these values and beliefs.

Study of behaviour and culture has never been part of archival science. The first to connect behaviour and culture explicitly with records and archives management are Gillian Oliver and Fiorella Foscarini (2013). They use the viewpoint of information culture to 'tackle the people problem'. Based on an inadequate introduction of information culture, they try to use the Information Culture Framework<sup>2</sup> for

analysing and assessing recordkeeping behaviour and practices. Although it is a very courageous and interesting exploration, they, in my opinion, do not really succeed in the endeavor to 'tackle the people problem'. It is not really a practical guide and only offers superficial ideas for assessment techniques and training that cannot be used to develop behavioural change programs. More problematic is that their work is extensively based on work of archival scientists and cultural theorists, which probably accounts for irrelevant chapters on records continuum, information continuum, and record keeping informatics. But their work neglects very relevant work done on organizational behaviour and culture within organization studies, such as Weick (1979), Shein (1992), Kotter and Heskett (1992), Simon (1997), O'Donovan (2006), Robbins and Langton (2007), and many more.

The effects of behaviour in organizations on information and information management are already known for a very long time. Campbell (1958), Wilensky (1967), Downs (1967), Janis (1972), Kaufman (1973), Athanassiades (1973), O'Reilly (1978), and others, have provided considerable evidence of organizational dysfunctions attributed to failures in the information value chain. The hypothesis of Benjamin Singer (1980) was that organizations suffer from psychotic and pathological behaviours, just like people do, but are rarely diagnosed with it or treated as such. According to Singer (1980, p. 48), dysfunctional organizational behaviours often take the form of 'crazy systems' that generate 'confusion, error, and ambiguity' and even 'inscrutability and unaccountability, involving harm to the victim and often to the system itself, [breeding] a new kind of organizational trap' called Kafka circuits. These involve 'blind alleys, crazy situations', and processes that 'end where they began'. More recently, Ronald Rice and Stephen Cooper (2010) confirmed that information is often blocked or distorted in organizational communications. They state convincingly that organizations allow employees to (consciously or unconsciously) misuse, distort, or suppress information and records (Rice and Cooper, 2010, chapters 7 and 8). Zmud (1990) argued that the use of ICTs make organizational functions vulnerable to strategic information behaviours such as distortion of records. It is quite clear that employee behaviour can have detrimental effects of the way records are created, processed, managed, and communicated (Singer, 1980; Clegg et al, 2016).

Especially in bureaucratic organizations, information access might be (or will be) influenced by the intentional or unintentional choices employees make when handling records and when deciding which information to keep (or not). These

<sup>1</sup> Although the concept of archivalization is mentioned many times in archival literature, there is almost no research done on the concept since its introduction almost seventeen years ago. The concept is completely misrepresented in literature and is identified as (a step in) the appraisal of records and archives. But it is a psychological phenomenon that influences human behaviour. As such, it defines appraisal and selection, but it cannot be considered part of them. For an interesting study in which the concept is applied on archival institutions and social communities and in which some of its psychological nature is expressed: Mark A. Matienzo, 'Canonization, Archivalization, and the 'Archival Imaginary'', Paper presented at Archive Fervour/ Archive Further: Literature, Archives, and Literary Archives, Aberystwyth, Wales, July 9-11, 2008. Online source. Archived at: <http://hdl.handle.net/10150/216929> (retrieved on December 22, 2016).

<sup>2</sup> The name of their framework is not unique. The name has been used for completely different Information Culture Frameworks by M.N. Khan and F.T. Azmi (2005). 'Reinventing business organisations: the information culture framework'. *Singapore Management Review*, Vol, 27, No. 2, pp. 37-62, and Y. Zheng (2005). 'Information culture and development: Chinese experience of e-health', *Thirty-Eighth Annual Hawaii International Conference on System Sciences*, (Hicss 38). 2005. Big Island, Hawaii, Los Alamitos, California IEEE Computer Society, pp. 153a, 1-11.

choices affect logistics, access, quality, and context of records. Employee choices are influenced by many variables and reasons, among which 'power', resistance to overbearing control systems, and their specific individual background are extremely important ones.

The legal frameworks that are usually created to curb organizational misbehaviour, and the internal compliance processes that are implemented in many organizations are specifically designed to identify and punish those individuals and organizations that are implicated in misbehaviour. These measures attempt to dissuade organizations and their employees from engaging in misbehaviour by threatening to hold them to account for their actions and decisions. The prevalent views of the organization as a 'machine', characterized by stringent rules and procedures, standardization, centralization, task specialization, and ignoring relational (and social) dynamics, is (in scientific literature) increasingly being replaced by an awareness of the way relational dynamics within duties, responsibilities, and accountability requirements are developing (Painter-Morland, 2007ab). As Melvin Dubnick and H. George Frederickson (2011, p. 7-12) explain, accountability relationships are mostly in evidence *after an event* ('post factum'). These relationships include 'post factum' attempts to handle responsibility for human or organizational errors based on 'pre-factum' (*before an event*) expectations and assumptions on organizational behaviour, configured in ICTs. Such attempts are largely based on records about these facts. ICTs are defined and configured 'pre-factum' and reflect expectations and assumptions of behaviour, but they do not reflect the activities and behaviour 'per factum', *during an event* (Heidelberg, 2015). Neglected also are how these activities relate to decisions within real actions and transactions and how to be accountable for those 'per factum' activities (Heidelberg, 2015). Organizations try to eliminate this stage by designing ICTs to avoid social relations, to avoid political discussion and debate, and to avoid infringement on rules. But these rules are only strengthening the bureaucratic system itself. That system hides 'spaces of contestation', spaces that should be filled with possibilities for political discussions, negotiations, and debates, where decisions are reached and where accountability should be prominent. Heidelberg's 'per factum' theory stresses the situated, relational dynamics *during* current policies, decisions, actions, and transactions (Heidelberg, 2015, p. 10, 18). But because 'per factum' is neglected (or, maybe, denied), these activities are not or only marginally captured in records and archival systems, therefore prohibiting records to document the most important spaces of decision making within organizations.

The activity theory can be used to explain the conflicts that exist within such a mechanistic view on information processing (Kaptelinin and Nardi, 2012). Bonnie Nardi (1996, p. 5) argued that mediation is a core concept of activity theory: human experience is shaped by the tools and sign systems in use. Nardi (1996, p. 7-13) emphasizes the importance of motive and consciousness, which are human characteristics that differentiate between people and things. People are not 'nodes' or 'agents' in a system. They are actors using systems as a tool to realize objectives. People and machines process information differently. They cannot be modelled in the same way. When that happens, deviant human behaviour will be a result. This explains why configuring systems 'pre factum' to avoid 'per factum' is not going to

work. It is not the way humans process information. EIM will need to address human behaviour in a way that allows employees to use ICTs as a tool that allows for relational dynamics in the 'per factum' stage.

The accountability metaphors of the Agora and the Bazaar, proposed by Ciarán O'Kelly and Melvin Dubnick (2015) to characterize neglected 'spaces of contestation', stress the importance of relational dynamics in the 'per factum' stage. An Agora is a social environment in which purposes, reasons, and norms are developed. It is 'a fluid, contingent and localised accountability space, founded on an unending cascade of social situations and relationships' in and between organizations (O'Kelly and Dubnick, 2015, p. 9). This space is linked to collaboration between participants in that space, based on norms that focus on the fairness of aims and procedures. Organizational procedures, managerial power structures, and organizational purposes are 'informed' about the standpoints and decisions emerging as results from these collaborative relationships. These results are developed within a context where people combine moral sentiments with ethical requirements and constraints. The defining reasons for action are generated 'per factum'. Within the Agora, the metaphor of the Bazaar describes exchange in mutual pursuit of *each other's interests*. The focus of the Bazaar is on the negotiations that generate results, and the exchanges needed for those negotiations to be successful. These exchanges assist people in developing standpoints and decisions, trying to find a mutual interest and willing to trade favours, information, or esteem to achieve their purposes (O'Kelly and Dubnick, 2015, p. 9-16). It is what is happening in daily organizational practice. Exchanges within the Bazaar may not be open to description, formal scrutiny, codified rules, or bureaucratic control. Such spaces may involve psychotic and pathological behaviours (Singer, 1980).

It is spaces like the Agora and the Bazaar where the effects of organizational behaviour are extremely dominant. Much of the exchanges in the Agora and the Bazaar are not captured in records until after the event ('post factum'), according to 'pre-factum' procedures, and, thus, distorting social and situational reality. It will be EIM's challenge to organize the information value chain in such a way that employees use flexible ICTs within spaces of contestation for that will not only allow accountability to be based more on relational dynamics but it will also guide human behaviour to focus on organizational objectives.

## 5. Concluding remarks and future research

I started this research with the objective of finding a viable theoretical foundation for EIM. This foundation should allow EIM to capture unstructured information objects into its management procedures, tools, and ICTs to end the existing 'information chaos' and to improve the organizational ability to reach business objectives and to define business strategies. The concepts of records and archives are crucial for those endeavors. In the first part of this article, I showed that only within archival science theoretical frameworks have been developed using those concepts. Those theories offer valuable contributions and insights for EIM, but do not have a focus on reaching organizational objectives or defining business strategies. Their focus is on cultural (or historical) value and evidential value, not on the

organizations that are generating records and constructing archives. In the second part of this article, I defined the theoretical framework of the 'Archive-as-Is' that emphasizes the organizational value of the archive and the organizational challenges that EIM has to solve.

The theoretical framework of the 'Archive-as-Is' is primarily an *organizational* theory on records and archives. The focus of the framework is on the organizations (and/or persons) that construct archives and create, process, manage, and preserve records in their business processes and activities. The framework is based on the philosophy of pragmatism. As is common with each pragmatic theory, there is an unmistakable relationship with organizational practice. This relationship expresses itself in the framework's components that are all directly influencing organizational policies, business processes, actions, and transactions. They have to be recognized by EIM to improve the organizational processing of records and archives, to fight 'information chaos', and to guide organizational behaviour.

In the archival spectrum, the framework finds its place between the *context oriented theory* of the Records Continuum and the *records oriented theory* of Digital Diplomatics. Both theories have influenced the framework. It may be called an *organization oriented archival theory*. That is an orientation that is just as indispensable in a digital world as the context and object orientations are. It has been 'forgotten' in the frenzy of exciting research following the 'archival turn'. The framework is a declarative model for understanding the archive 'as is', how it has been designed, constructed, processed, manipulated, and managed, and how it has 'grown' to be the archive that the organization or the person that generated it, wants it to be. The three defining components of the theoretical framework can be used by EIM as an analytical tool to ascertain if all conditions for managing records and archives are met. The fourth component, the information value chain, offers a model for EIM to define and implement primary and secondary processes (and related activities) to realize the dimensions of information, the archival principles, and the requirements of information access. Organizational behaviour, the fifth component, stresses the necessity for EIM (and for archivists) to contextualize organizational practice, to allow for flexible ICTs to offer employees the possibility to use spaces of contestation 'per factum', and to be prepared for distortion of archives.

Archives shape and control the way history is read. They do. But archives are, from the moment of their construction, distortions of reality, leading to biased images of the past. Contextualizing will be crucial to 'correct' that distortion as much as is possible although the simplified metadata that capture context will also be distorting reality. In the end, the archive is as it is, a construct configured, managed, and preserved according to organizational (or personal) demands and desires, with gaps as a result of appraisal and selection, and, as a consequence, presenting a social reality that is only mirroring a very simplified and distorted view of the contexts in which the records and the archive were generated.

Further research is an absolute necessity. It is necessary to see if the theory can be used as an analytical tool for EIM. The relationships between the components of the framework need to be studied more in depth. The relationship between EIM, the

theoretical framework, and the realization of organizational objectives needs more research. Research is necessary to see if Muller, Feith, and Fruin's statement about 'organically grown archives' is correct within digital environments. The effects of organizational behaviour on records and archives in daily organizational practice are neglected in archival research projects at the moment, although they are crucial to explain why the archive is as it is. I think the biggest challenge for EIM is to find ways to guide organizational behaviour in constructing and contextualizing archives. More research is needed in organizational behaviour and human-computer interaction within spaces of contestation that extremely influence accountability and archiving. Activity theory may be a very useful theory for research in that regard.

## Literature

- Acland, G. (1991). Archivist-Keeper, Undertaker, or Auditor. *Archives and Manuscripts*, 19(1), 13-14.
- Arnold, J., with J. Silvester, F. Patterson, I. Robertson, C. Cooper, & B. Burnes (2005). *Work Psychology: Understanding Human Behaviour in the Workplace* (4th ed.). Harlow: Pearson Education Ltd.
- Athanassiades, J.C. (1973). The distortion of upward communication in hierarchical organizations. *The Academy of Management Journal*, 16(2), 207-226.
- Baker, M. (2013). *Findability is a content problem, not a search problem*. (May 28). Retrieved from <http://everypageispageone.com/2013/05/28/findability-is-a-content-problem-not-a-search-problem/>. Archived at <http://web.archive.org/web/20160405191132/http://everypageispageone.com/2013/05/28/findability-is-a-content-problem-not-a-search-problem/>.
- Barwise, J., & J. Perry (1983). *Situations and Attitudes*, Cambridge, MA: MIT Press.
- Bearman, D. (1993a). Record Keeping Systems. *Archivaria*, 36, 16-36.
- Bearman, D. (2006). Moments of risk. Identifying threats to electronic records. *Archivaria*, 62, 15-46.
- Berlin, L.M., R. Jeffries, V.L. O'Day, A. Paepcke, & C. Wharton (1993). Where did you put it? Issues in the design and use of a group memory. In B. Arnold, G. Van der Veer, T. White (eds.), *Proceedings of the INTERACT'93 and CHI'93 conference on Human factors in computing systems* (pp. 23-30). New York: ACM.
- Boudrez, F., H. Dekeyser, & J. Dumortier (2005). *Digital Archiving. The new challenge*. Mont Saint Guibert: IRIS.
- Bruschi, C. (2009). *The Wandering Heretics of Languedoc*. Cambridge (UK): Cambridge University Press.
- Buckland, M.K. (1991). *Information and information systems*. Westport: Greenwood Publishing Group.
- Buneman, P., S. Khanna, & W.C. Tan (2001). Why and where. A characterization of data provenance. In J. Van den Bussche, V. Vianu (eds.), *Database Theory. ICDT-2001. Proceedings of the 8th International Conference on Database Theory, London, January 4-6* (pp. 316-330). Berlin / Heidelberg: Springer.
- Burnett, G., P.T. Jaeger, & K.M. Thompson (2008). Normative behavior and information: the social aspects of information access. *Library & Information Science Research*, 30(1), 56-66.
- Campbell, D.T. (1958). Systematic error on the part of human links in communication systems. *Information and Control*, 1, 334-369.
- Clegg, S., M. Pina e Cunha, I. Munro, A. Rego, & M. Oom de Sousa (2016). Kafkaesque power and bureaucracy. *Journal of Political Power*, 9(2), 157-181.

- Cook, T. (1997). What is past is prologue. A history of archival ideas since 1898, and the future paradigm shift. *Archivaria*, 43, 17-63.
- Cook, T. (2007). Electronic Records, Paper Minds: the revolution in information management and archives in the post-custodial and post-modernist era. *Archives & Social Studies: A Journal of Interdisciplinary Research*, 1, 399-443. (reprint from 1994).
- Cox, R.J., & H.W. Samuels (1988). The archivist's first responsibility. A research agenda to improve the identification and retention of records of enduring value. *The American Archivist*, 51(Winter/Spring), 28-42.
- Cui, Y., & J. Widom (2003). Lineage tracing for general data warehouse transformations. *The VLDB Journal - The International Journal on Very Large Data Bases*, 12(1), 41-58.
- Cunningham, A. (2015). Postcustodialism. In L. Duranti, P.C. Franks (eds.), *Encyclopedia of Archival Science* (pp. 274-278). London: Rowman and Littlefield.
- Dervin, B. (1997). Given a context by any other name. Methodological tools for taming the unruly beast. In P. Vakkari, R. Savolainen, B. Dervin (eds.), *Information seeking in context* (pp. 13-38). London: Taylor Graham.
- Dervin, B. (2003). From the minds eye of the user. The Sense-Making Qualitative-Quantitative methodology. In B. Dervin and L. Foreman-Wernet (eds.), *Sense-Making Methodology Reader*. New York: Hampton Press. (First published in 1992.)
- Devlin, K.J. (1991). Oracles in situation semantics. In J. Barwise, J.M. Gawron, G. Plotkin, and S. Tutiya (eds.), *Situation Theory and its Applications*, Vol. 2 (Chapter 3, pp. 41-49). Menlo Park: CSLI.
- Devlin, K. (1994). Situation Theory and Social Structure. In M. Masuch and L. Polos (eds.), *Knowledge Representation and Reasoning under Uncertainty* (pp. 197-237). Berlin: Springer-Verlag.
- Devlin, K., & D. Rosenberg (2008). Information in the study of human interaction. In J. Van Benthem, P. Adriaans, D.M. Gabbay, P. Thagard, and J. Woods (eds.), *Handbook of the Philosophy of Information* (pp. 685-710). Amsterdam: Elsevier.
- Dewey, J., & J. Tufts (1908). *Ethics*. New York: Henry Holt and Co.
- Dollar, C. (1992). *Archival theory and information technologies. The impact of information technologies on archival principles and methods*. Macerata: University of Macerata.
- Downs, A. (1967). *Inside Bureaucracy*. Boston: Little-Brown.
- Dubnick, M.J., & H.G. Frederickson (2011). *Public accountability. Performance measurement, the extended state, and the search for trust*. Washington, DC: Kettering Foundation & National Academy of Public Administration.
- Duranti, L. (1997a). The preservation of the integrity of electronic records. In *Proceedings of the DLM-Forum on electronic records. Brussels, 18-20 December 1996* (pp 60-65). Luxemburg: Office for Official Publications of the European Communities.
- Duranti, L. (1997b). The Archival Bond. *Archives & Museum Informatics*, 11(3-4), 213-218.
- Duranti, L. (2007). Archives as a Place. *Archives & Social Studies: A Journal of Interdisciplinary Research*, 1(0), 445-466. (Reprint of 1996).
- El Kharbili, M., S. Stein, I. Markovic, & E. Pulvermüller (2008). Towards a framework for semantic business process compliance management. In S. Sadiq, M. Indulska, and M. zur Muehlen (eds.), *Proceedings of the Workshop on Governance, Risk and Compliance for Information Systems (GRSIS 2008)*, CEUR, Workshop Proceedings, Vol. 339, Montpellier (pp. 1-15). Retrieved from <http://ceur-ws.org/Vol-339/>
- Frege, G. (1980). *The Foundations of Arithmetic: A Logico-Mathematical Enquiry into the Concept of Number* (translated by J.L. Austin, 2nd ed.). Chicago: Northwestern University Press.
- Gilliland, A.J., McKemmish, S., & Lau, A.J. (eds.) (2016). *Research in the Archival Multiverse*. Clayton, VIC: Monash University Publishing. [http://dx.doi.org/10.26530/OAPEN\\_628143](http://dx.doi.org/10.26530/OAPEN_628143)

- Göpferich, S. (2006). Comprehensibility assessment using the Karlsruhe Comprehensibility Concept. *The Journal of Specialised Translation*, 6(11), 31-53.
- Greetham, D. (1999). Who's in, who's out. The cultural politics of archival exclusion. *Studies in the Literary Imagination*, 32(1), 1-28.
- Griffin, R.W., & G. Moorhead (2014). *Organizational behavior. Managing people and organizations* (11th ed.). Mason, OH: South-Western Cengage Learning.
- Groth, P.T. (2007). *The origin of data. Enabling the determination of provenance in multi-institutional scientific systems through the documentation of processes*. Doctoral thesis at the University of Southampton. Retrieved from <https://eprints.soton.ac.uk/264649/>
- Hartshorne, C., & P. Weiss (1933). *The Collected Papers of Charles Sanders Peirce*, IV. Boston: Harvard University Press.
- Heidelberg, R.L. (2015). Political accountability and spaces of contestation. *Administration & Society*, April 14, 1-24.
- Hill, H. (2013). Disability and accessibility in the library and information science literature: A content analysis. *Library & Information Science Research*, 35(2), 137-142.
- Hockx-Yu, H. (2006). Digital Preservation in the Context of Institutional Repositories. *Program: Electronic Library & Information Systems*, 40(3), 232-243.
- Hofstede, G. (1997). *Cultures and Organizations: Software of the Mind*. New York: McGraw-Hill. (Most recent (third) edition: 2010).
- Holsapple, C.W., & M. Singh (2001). The knowledge chain model: activities for competitiveness. *Expert Systems with Applications*, 20(1), 77-98.
- Horsman, P.J. (1994). Taming the elephant. An orthodox approach to the principle of provenance. In K. Abukhanfusa, J. Sydbeck (eds.), *The principle of provenance. First Stockholm Conference on archival theory and the principal of provenance, 2-3 september 1993, Stockholm* (pp. 51-63).
- Horsman, P.J. (1999). Archiefsystemen en kwaliteit. In P.J. Horsman, F.C.J. Ketelaar, T.H.P.M. Thomassen (eds.), *Naar een nieuw paradigma in de archivaliektiek*. Den Haag: SAP.
- Horsman, P.J. (2001). *Electronic Recordkeeping. The Recordkeeping System as framework for the management of electronic records*. Amsterdam; Archiefschool.
- Horsman, P.J., F.C.J. Ketelaar, & T.H.P.M. Thomassen (1998). *Tekst en context van de Handleiding voor het ordenen en beschrijven van archieven van 1898*. Hilversum: Verloren.
- Hurley, C. (1995). Ambient functions: abandoned children to zoos. *Archivaria*, 40(Fall), 21-39.
- Hurley, C. (2005). Parallel provenance [Series of parts]: Part 1: What, if anything, is archival description? *Archives and Manuscripts*, 33(1), 110-145.
- Ihanus, J. (2007). The archive and psychoanalysis: Memories and histories toward futures. *International Forum of Psychoanalysis*. 16(2), 119-131.
- Israel, D., & J. Perry (1991). Information and architecture. In J. Barwise, J.M. Gawron, G. Plotkin, and S. Tutiya (eds.), *Situation theory and its applications Vol. 2, CSLI Lecture Notes 26* (pp. 147-160). Stanford, CA: Center for the Study of Language and Information (CSLI).
- James, W. (1907). *Pragmatism: A New Name for Some Old Ways of Thinking*. Cambridge, MA: The Riverside Press.
- James, W. (1909). *The meaning of truth*. Cambridge, MA: The Riverside Press.
- Janis, I. (1972). *Victims of Groupthink: A psychological study of foreign-policy decisions and fiascoes*. Boston: Houghton-Mifflin.
- Jansen, A. (2015). Chain of Preservation. In L. Duranti, and P.C. Franks (eds.), *Encyclopedia of Archival Science* (pp. 133-136). London: Rowman and Littlefield.
- Jenkinson, H. (2003). Modern Archives: Some Reflections on T. R. Schellenberg: Modern Archives. Principles and Techniques. In R.H. Ellis, P. Walne (eds.), *Selected writings of Sir Hilary Jenkinson* (pp. 339-342). Chicago: SAA.

- Jones, W. (2011). No knowledge but through information. In D.J. Pauleen, G.E. Gorman (eds.), *Personal knowledge management: Individual, organizational and social perspectives* (pp. 143-166). Farnham: Gower Publishing Ltd.
- Kaptelinin, V., & B. Nardi (2012). *Activity theory in HCI. Fundamentals and reflections*. Williston, VT: Morgan & Claypool.
- Kaplan, E. (2000). We are what we collect, we collect what we are. Archives and the construction of identity. *The American Archivist*, 63, 126-151.
- Kato, T., & M. Hori (2006). Beyond Perceivability. Critical requirements for universal design of information. In *Proceedings of the 8th International ACM SIGACCESS Conference on Computers and accessibility* (pp. 287-288). Portland, OR: ACM.
- Kaufman, H. (1973). *Administrative Feedback. Monitoring subordinates' behavior*. Washington DC: Brookings Institute.
- Ketelaar, E. (2000a). Archivist research saving the profession. *The American Archivist*, 63, 322-340.
- Ketelaar, E. (2000b). De culturele context van archieven. In P.J. Horsman, F.C.J. Ketelaar, and T.H.P.M. Thomassen, *Context. Interpretatiekaders in de archivatie* (pp. 83-91). Den Haag: SAP.
- Ketelaar, E. (2001). Tacit narratives. The meaning of archives. *Archival Science*, 1, 131-141.
- Ketelaar, E. (2007). Archives in the Digital Age. New uses for an old science. *Archives & Social Studies*, 1(0), 167-191.
- Kotter, J., & J.L. Heskett (1992). *Corporate Culture and Performance*. New York: Free Press.
- Kozak, G. (2015). Access/Accessibility. In, L. Duranti, P.C. Franks (eds.), *Encyclopedia of Archival Science* (pp. 1-3). London: Rowman and Littlefield.
- Kuhlthau, C.C. (2006). Kuhlthau's Information Search Process. In K.E. Fisher, S. Erdelez, L. McKechnie (eds.), *Theories of Information Behavior* (pp. 230-234). New Jersey: Information Today.
- Lane, V., & J. Hill (2010). Where do we come from? What are we? Where are we going? Situating the archive and archivists. In J. Hill (ed.), *The Future of Archives and Recordkeeping. A reader* (pp. 3-22). London: Facet publishing.
- Latour, B. (1990). Postmodern? No, simply amodern! Steps towards an anthropology of science. *Studies In History and Philosophy of Science*, 21(1), 145-171.
- Le Roy Ladurie, E. (1975). *Montaillou, village occitan de 1294 à 1324*. Paris: Gallimard.
- Lemieux, V.L., & the ImProvenance Group (2016). Provenance: Past, Present and Future in Interdisciplinary and Multidisciplinary Perspective. In V.L. Lemieux (ed.), *Building trust in Information. Perspectives on the Frontiers of Provenance* (pp. 3-45). Cham (ZG): Springer International Publishing AG.
- Levy, D.M. (2001). *Scrolling forward. Making sense of documents in the digital age*. New York: Arcade Publishing.
- Mason, R.O. (1986). Four ethical issues of the information age. *MIS Quarterly*, 10(March), 5-12.
- Mathiesen, K. (2014). Facets of access: A conceptual and standard threats analysis. In *iConference 2014 Proceedings* (pp. 605-611). Berlin: iSchools.
- Mayer-Schönberger, V. (2009). *Delete: The Virtue of Forgetting in the Digital Age*. Princeton / Oxford: Princeton University Press.
- McCreadie, M., & R.E. Rice (1999). Trends in analyzing access to information. Part I. Cross-disciplinary conceptualizations of access. Part II. Unique and integrating conceptualizations. *Information Processing & Management*, 35(1), 45-76 and 77-99.
- Michetti, G. (2016). Provenance: An archival perspective. In V.L. Lemieux (ed.), *Building trust in Information. Perspectives on the Frontiers of Provenance* (pp. 59-68). Cham (ZG): Springer International Publishing AG.

- Muller, S., J.A. Feith, & R. Fruin (2003). *Manual for the arrangement and description of archives* (translated by A.H. Leavitt, and with new introductions by P. Horsman, E. Ketelaar, T. Thomassen and M.R. Barit). Chicago: SAA.
- Narayan, B., & M. Olsson (2013). Sense making across space and time. Implications for the organization and findability of information. In F. Bouthillier, B. Yu, A. Grove (eds.), *Proceedings of the 76th ASIS&T Annual Meeting: Beyond the Cloud: Rethinking Information Boundaries* (Article 72, pp. 1-9). Silver Springs, MD: American Society for Information Science.
- Nardi, B.A. (1996). Activity theory and human computer interaction. In B.A. Nardi (ed.), *Context and Consciousness: Activity Theory and Human-Computer Interaction* (pp. 7-16). Cambridge MA: The MIT Press.
- Nardi, B., & V.L. O'Day (1999). *Information Ecologies. Using technology with heart*. Cambridge / London: The MIT Press.
- Nesmith, T. (1999). Still fuzzy, but more accurate. Some thoughts on the 'ghosts' of archival theory. *Archivaria*, 47, 136-150.
- Nesmith, T. (2015). Principle of Provenance. In L. Duranti, P.C. Franks (eds.), *Encyclopedia of Archival Science* (pp. 284-288). London: Rowman and Littlefield.
- OECD (2015). *OECD Skills Outlook 2015. Youth, skills and employability*. Paris: OECD.
- O'Donovan, G. (2006). *The Corporate Culture Handbook. How to plan, implement and measure a successful culture change programme*, Dublin, The Liffey Press.
- O'Kelley, C., & M. Dubnick (2015). *Accountability and its metaphors. From forum to agora and bazaar (Paper presented to the PSG VII track (Quality and Integrity of Governance) of the 2015 EGPA Annual Conference August 24-29, 2015, Toulouse, France, Toulouse, EGPA)*. Retrieved from [http://pure.qub.ac.uk/portal/files/13032528/COK\\_MJD\\_EGPA\\_Paper.pdf](http://pure.qub.ac.uk/portal/files/13032528/COK_MJD_EGPA_Paper.pdf).
- O'Reilly, C.A. (1978). The intentional distortion of information in organizational communication: A laboratory and field investigation. *Human Relations*, 31(2), 173-193.
- Oliver, G., & F. Foscarini (2013). *Records Management and Information Culture. Tackling the people problem*. London: Facet Publishing.
- Painter-Morland, M. (2007a). Defining Accountability in a network society. *Business Ethics Quarterly*, 17, 515-534.
- Painter-Morland, M. (2007b). Redefining accountability as relational responsiveness. *Journal of Business Ethics*, 16, 89-98.
- Penco, C. (1999). Objective and cognitive context. In P. Bouquet, L. Serafini, P. Brezillon, M. Benerecetti, and F. Castellani, (eds.), *Modeling and using contexts. Proceedings of the second international and interdisciplinary conference Context '99* (pp. 270-283). Berlin / Heidelberg: Springer.
- Pettigrew, A.M. (1979). On studying organizational cultures. *Administrative Science Quarterly*, 24(4), 570-581.
- Pettigrew, A.M. (1990). Longitudinal Field Research on Change: Theory and Practice. *Organization Science*, 1(3), 267-292.
- Pfeffer, J., & G.R. Salancik (1978). *The external control of organizations. A resource dependence perspective*. New York: Harper & Row.
- PIVOT (1994). *Handelend optreden. Overheidshandelen: modellen, onderzoeksmethoden en toepassing*. Den Haag: PIVOT.
- Porter, M., & V.E. Miller (1985). How information gives you competitive advantage. *Harvard Business Review*, 63(4), 149-160.
- Posner, E. (1967). Max Lehmann and the genesis of the principle of provenance. In E. Posner, *Archives and the public interest. Selected essays* (pp. 135-144). Washington: Society of American Archivists.

- Puri, C., D.S. Kim, P.Z. Yeh, & K. Verma (2012). Implementing a data lineage tracker. In A. Cuzzocrea and U. Dayal (eds.), *Data Warehousing and Knowledge Discovery. Proceedings of the 14th International Conference, DaWaK 2012, september 3-6 2012, Vienna* (pp. 390-403). Springer.
- Reilly, T. (2005). *From provenance to practice. Archival theory and 'return to community' (paper presented at the First Nations, first thoughts Conference, University of Edinburgh)*. Retrieved from [http://prism.ucalgary.ca/bitstream/1880/47398/1/Reilly\\_From\\_Provenance.pdf](http://prism.ucalgary.ca/bitstream/1880/47398/1/Reilly_From_Provenance.pdf).
- Resmini, A., & L. Rosati, From physical to digital environments (and back). Seven laws of findability. In *Translating Information Architecture: Proceedings of Europe's third Information Architecture summit (EuroIA)* (pp. 162-170). Barcelona: ASIS&T.
- Rice, R.E., & S.D. Cooper (2010). *Organizations and Unusual Routines. A Systems Analysis of Dysfunctional Feedback Processes*. Cambridge (UK): Cambridge University Press.
- Robbins, S.P., & N. Langton (2007). *Organizational Behaviour: Concepts, Controversies, Applications* (4th ed.). North York (Ontario): Pearson Education Canada.
- Saracevic, T. (2007a). Relevance: A review of the literature and a framework for thinking on the notion in information science. Part II: nature and manifestations of relevance. *Journal of the American Society for Information Science and Technology*, 58(3), 1915-1933.
- Saracevic, T. (2007b). Relevance: A review of the literature and a framework for thinking on the notion in information science. Part III: Behavior and effects of relevance. *Journal of the American Society for Information Science and Technology*, 58(13), 2126-2144.
- Schellenberg, T. (2003). *Modern Archives. Principles and techniques*. Chicago: SAA.
- Self, D., A. Armenakis, & M. Schraeder (2007). Organizational change content, process, and context. A simultaneous analysis of employee reactions. *Journal of Change Management*, 7(2), 211-229.
- Shein, E. (1992). *Organizational Culture and Leadership: A Dynamic View*. San Francisco: Jossey-Bass.
- Shields, P. (1998). Pragmatism as philosophy of science. A tool for public administration. In J.D. White (ed.), *Research in Public Administration Vol. 4* (pp. 195-226). Bingley: Emerald Group Publishing.
- Simmhan, Y., B. Plale, & S. Gannon (2005). A survey of data provenance in e-science. *ACM SIGMOD*, 34(3), 31-36.
- Simon, H.A. (1997). *Administrative Behavior: A Study of Decision-Making Processes in Administrative Organizations* (4th ed.). New York: The Free Press.
- Singer, B.D. (1980). Crazy Systems and Kafka Circuits. *Social Policy*, 11, 46-54.
- Stupariu, I. (2015). Defining the right to be forgotten. *A comparative analysis between the EU and the US*. Budapest: Central European University. (LL.M. short thesis).
- Sweeney, S. (2008). The ambiguous origins of the archival principle of provenance. *Libraries & the cultural record*, 43(2), 193-213.
- Thomassen, T.H.P.M. (1999). Paradigmatische veranderingen in de archiefwetenschap. In P.J. Horsman, F.C.J. Ketelaar, T.H.P.M. Thomassen (eds.), *Naar een nieuw paradigma in de archivatie* (pp. 69-79). Den Haag: Stichting Archiefpublicaties.
- Thomassen, T., B. Looper, & J. Kloosterman (eds.) (2001). *Toegang. Ontwikkelingen in de ontsluiting van archieven*. Den Haag: Stichting Archiefpublicaties.
- Upward, F. (2017). The archival multiverse and eddies in the spacetime continuum. In A.J. Gilliland, S. McKemmish, A.J. Lau (eds.), *Research in the Archival Multiverse* (pp. 198-227). Clayton, VIC: Monash University Publishing. [http://dx.doi.org/10.26530/OAPEN\\_628143](http://dx.doi.org/10.26530/OAPEN_628143)
- Upward, F., & S. McKemmish (1994). Somewhere beyond custody. *Archives and Manuscripts*, 22(1), 136-149.

- Van Bussel, G.J. (2012a). *Archiving should be just like an Apple, en acht andere (nuttige?) stellingen*. Amsterdam: Amsterdam University Press.
- Van Bussel, G.J. (2012b). Reconstructing the Past for Organizational Accountability. *The Electronic Journal of Information Systems Evaluation*, 15(1), 127-137.
- Van Bussel, G.J. (2016). An Accountability Challenge. Capturing records and their context in Enterprise Information Systems. In P. Silva, A. Guerreiro and R. Quaresma (eds.), *Proceedings of the 10th European Conference of Information Systems Management. ECISM 2016, Evora, Portugal, 8-9 September 2016* (pp. 204-211). Reading: ACPI.
- Van Bussel, G.J., & F.F.M. Ector (2009). *Op zoek naar de herinnering. Verantwoordingsystemen, content-intensieve organisaties en performance*. Helmond: Van Bussel Document Services.
- Van Bussel, G.J., & H. Henseler (2013). Digital Archiving and eDiscovery. Delivering evidence in an age of overload. In B. John, M. Nkhoma and N. Leung (eds.), *Proceedings of the 4th International Conference on Information Systems Management and Evaluation. ICIME 2013, Ho Chi Min City, Vietnam, 13-14 May 2013* (pp. 281-288). Reading.
- Van de Pas, J., & G.J. van Bussel (2015a). Privacy lost – and found? The information value chain as a model to meet citizens' concerns. *Electronic Journal of Information Systems Evaluation*, 18(2), 199-209.
- Van de Pas, J., & G.J. van Bussel (2015b). Embedding Privacy in ICT Architectures. The citizen as public stakeholder in architecture development. In B. van der Sloot (ed.), *Proceedings of the Amsterdam Privacy Conference (21-26 October 2015)* (14 pages, incl. references (only available on USB)). Amsterdam: APPR. Retrieved from [http://www.vbds.nl/wp-content/uploads/2015/10/Van-de-Pas\\_-Van-Bussel.pdf](http://www.vbds.nl/wp-content/uploads/2015/10/Van-de-Pas_-Van-Bussel.pdf).
- Weick, K. (1979). *The Social Psychology of Organizing*. New York: McGraw-Hill.
- Weick, K. (1995). *Sensemaking in Organisations*. London: Sage.
- Wilensky, H. (1967). *Organizational Intelligence. Knowledge and Policy in Government and Industry*. New York: Free Press.
- Wittgenstein, L. (1961). *Tractatus Logico-Philosophicus* (translated by D.F. Pears and B.F. McGuinness, first published in 1922). London: Routledge and Kegan Paul.
- Zalamea, F. (2003). Peirce's logic of continuity. Existential graphs and non-Cantorian Continuum. *The Review of Modern Logic*, 9(29), 115-162.
- Zmud, R.W. (1990). Opportunities for Strategic Information Manipulation through new information technology. In J. Fulk, C.W. Steinfield (eds.), *Organizations and Communication Technology (Chapter 5, pp. 95-116)*. London / New Delhi: Sage Publications.

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