The theoretical framework of the ‘archive-as-Is’

an organization oriented view on archives. Part II. An xxploration of the ‘archive-as-Is’ framework

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GEERT-JAN VAN BUSSEL

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 attemps 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 nothwithstanding, 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 McKemmish, 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.

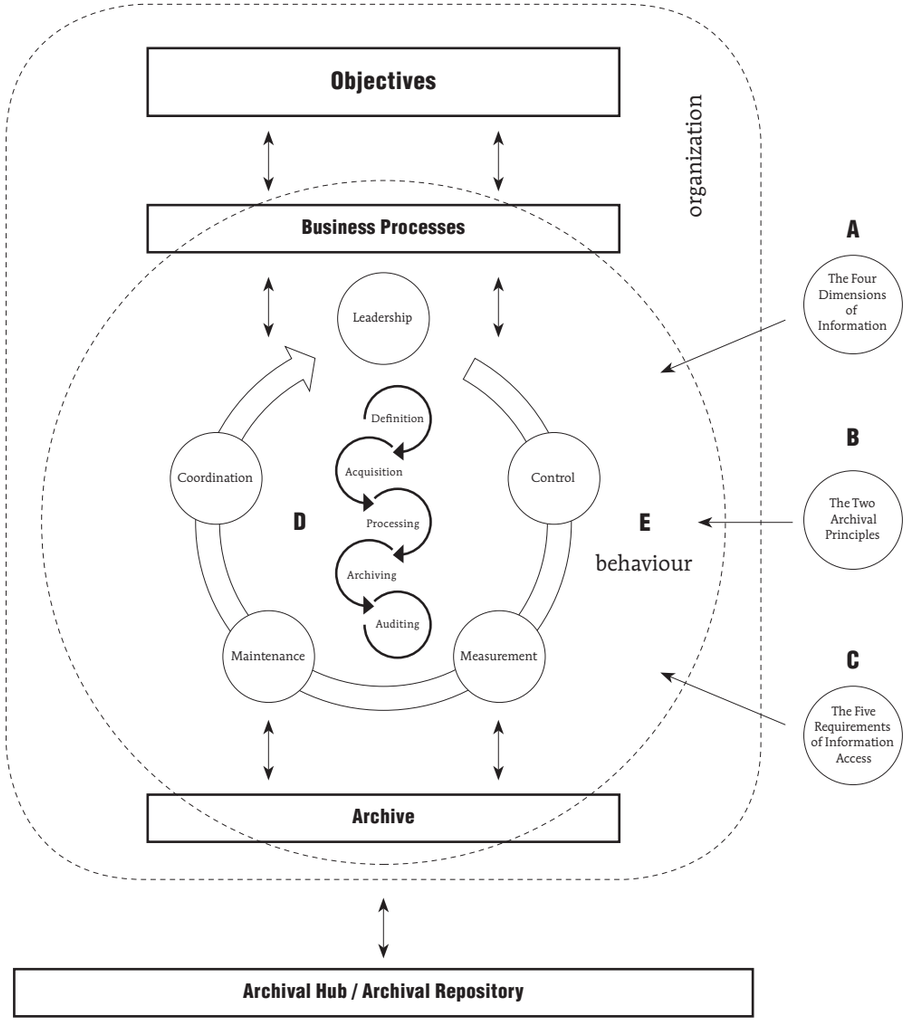

Figure 1. The Theoretical Framework of the 'Archive-as-Is'

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 diplomatics 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 sofware 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 unmistakable 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 principe 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 (Kulthau, 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 Montaillou 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

Information Definition	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	*Configure*	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.
Information Acquisition	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	*Generate/receive*	Creating and receiving records (and/or archives).
Activity 3	*Identify*	Identifying records (and/or archives) and adding context.
Activity 4	*Capture*	Capturing records (and/or archives) in defined and configured information and archiving systems
Activity 5	*Store*	Store records (and/or archives) in information and archiving systems and making them suitable for subsequent use
Information Processing	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	*Process*	Using and manipulating records (and/or archives) within case management in business processes for reference, performance, accountability, evidence, and/or economic reasons.
Activity 7	*Distribute*	Distributing records for use within organizations.
Activity 8	*Structure*	Adding relevant structures to records (and/or archives) that help users in quickly finding and identifying them.
Activity 9	*Publish*	The external and/or internal publication of records (and/or archives), according to procedures and legal obligations.
Activity 10	*Analyse*	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	*Use/re-use*	Using and re-using records (and/or archives) for reference, performance, accountability, and evidence, and for economic and historical reasons.
Information Archiving	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	*Contextualize*	Continuously adding new metadata to capture changes in situational and environmental contexts.
Activity 13	*Appraise*	Defining the relevance of records (and/or archives).
Activity 14	*Select*	Selecting records (to retain or to destroy).
Activity 15	*Retain*	Retaining records until the end of their retention period or indefinitely.
Activity 16	*Dispose*	Destroying records that have lost their relevance at the end of their retention period.
Activity 17	*Preserve*	Using preservation tools and techniques to retain records (and/or archives) indefinitely (or for a very long time).
Activity 18	*Secure*	Using information security measures and technologies to secure records (and/or archives).
Information Auditing	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	*Audit*	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.

Information Leadership	Establishing management conditions, ethics, and circumstances that enable and facilitate EIM.
Information Coordination	Managing dependencies to ensure that EIM processes and resources are used adequately at appropriate times.
Information Control	Ensuring that information professionals and resources are available in sufficient quantity and quality, of course subject to security requirements.
Information Measurement	Assessing values of resources, information professionals, and their deployment.
Information Maintenance	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).[1]

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 heaviliy 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[2] 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

[1] 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).

[2] 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. Heidelbergs '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 different. 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'Kelley 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 wich 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.

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Archives in Liquid Times aims to broaden and deepen the thinking about archives in today's digital environment. It is a book that tries to fuel the debate about archives in different fields of research. It shows that in these liquid times, archives need and deserve to be considered from different angles.

Archives in Liquid Times is a publication in which archival science is linked to philosophy (of information) and data science. Not only do the contributors try to open windows to new concepts and perspectives, but also to new uses of existing concepts concerning archives. The articles in this book contain philosophical reflections, speculative essays and presentations of new models and concepts alongside well-known topics in archival theory.

Among the contributors are scholars from different fields of research, like Anne Gilliland, Wolfgang Ernst, Geoffrey Yeo, Martijn van Otterlo, Charles Jeurgens and Geert-Jan van Bussel. This book includes interviews with Luciano Floridi and Eric Ketelaar, in which they reflect on key issues arising from the contributions. The editors are Frans Smit, Arnoud Glaudemans and Rienk Jonker.

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