

Amsterdam University of Applied Sciences

Determining the value of a digital archive

the framework for the “archive-as-is”

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Publication date

2022

Document Version

Final published version

Published in

From dust to dawn

License

Unspecified

[Link to publication](#)

Citation for published version (APA):

van Bussel, G. J. (2022). Determining the value of a digital archive: the framework for the “archive-as-is”. In A. Ohrberg, T. Berndtsson, O. Fischer, & A. Mattson (Eds.), *From dust to dawn: archival studies after the archival turn* (1 ed., pp. 56-101). (Studia Rhetorica Upsaliensia/Uppsala Rhetorical Studies; Vol. 8). University of Uppsala.

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FROM DUST
TO DAWN

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Archival Studies
After the Archival Turn

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Ann Öhrberg, Tim Berndtsson,
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From Dust to Dawn. Archival Studies After the Archival Turn

Studia Rhetorica Upsaliensia 8

Editors: Ann Öhrberg, Tim Berndtsson, Otto Fischer, Annie Mattsson

<https://www.engagingvulnerability.se/urs>

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Design: Richard Lindmark

Print: Bording AB, Borås 2022

ISBN: 978-91-980081-5-9

ISSN: 1102-9714

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1. The allure of digital archives

Historical research is largely based on archives. The use of archives by historians is aimed at learning details about the activities and daily practices of governments, other organizations or families in the past. Arlette Farge eloquently expresses the *experience* of engaging the archives, of bringing to light knowledge embedded in old documents and scraps of parchment and paper, knowledge that would otherwise have remained unknown and, possibly, forgotten.

The archive’s allure, nonetheless, lives on. The taste for the archives is not a fashion that will go out of style as quickly as it came in. It comes from the conviction that the preservation of the judicial records has created a space of captured speech. The goal is not for the cleverest, most driven researcher to unearth some buried treasure, but for the historian to use the archives as a vantage point from which she can bring to light new forms of knowledge that would otherwise have remained shrouded in obscurity.¹

Farge explains the unavoidable need for *interpretation* when the historian confronts records and documents, for their context is always uncertain.

The seeming limitlessness of the words does not entail a similar limitlessness of information. Rather, the abundance itself should convince the historian that the accumulated clues leave so much unsaid, and cause her to recognize that she is only barely capable of perceiving the reasoning of the individuals she finds immobilized in, and by, these documents. In the eighteenth century, the archives were not lacking, but they created a void and emptiness that no

amount of academic study can fill. Today, to use the archives is to translate this incompleteness into a question, and this begins by combing through them.²

She is convinced of the value of archives:

The archive is a vantage point from which the symbolic and intellectual constructions of the past can be rearranged. It is a matrix that does not articulate ‘the’ truth, but rather produces, through recognition as much as through disorientation, the elements necessary to ground a discourse of truth telling that refuses lies. Neither more nor less real than other sources, the archival documents display the fates of men and women whose surprising and somber actions crossed paths with an authority that had many faces.³

In a digital world, it might not be possible to use archives in the way Arlette Farge describes. Every aspect of today’s society involves some type of technology. Technology offers new opportunities for information access, like multiple language and media compatibility, assistive devices (as screen magnifiers, Braille displays, speech recognition software, and screen readers), adaptive and perceptual interfaces, and software for translation, intuitive search, intelligent data mining, dimensional modelling, information retrieval, data analysis, etcetera. However, the functionalities of technology are complex. Our society’s heritage has been recorded on many different materials, like bones, stone, clay, papyrus, vellum, silk, and paper. All of these writing materials and the information recorded on them have their own accessibility challenges, but none of them needs another interpretive, technological environment to realise access. That has changed in computerized environments: information

exists in digital forms and always needs a software environment to render it. Keeping information accessible over time needs up-front planning, intentional action, and investment.⁴

In a digital world, archives are consciously designed and configured as (especially) organizational constructs, mirroring actions and transactions according to the way an organization (and the legal environment it functions in) wants them to be captured. Organizational information systems are configured to create the digital archive [1] the organization needs to meet external requirements, but also [2] that presents the organization in the best possible way. The digital archive is what the organization wants it to be. Information objects within these archives are appraised, irreparably deleted or preserved based on *our* ideas of information value. Those ideas are most probably not the ideas about information value prevalent in the future.

I imagine, the “Allure of Digital Archives” will differ from the allure of the judicial records from eighteenth century France Arlette Farge wrote her famous book about. For archives are, more than ever, organizational and technological constructs, based on organizational demands, desires, and considerations influencing configuration, management, appraisal, and preservation. For that reason, they are, more than ever, distortions of reality, offering biased (and/or manipulated) images of the past and present an extremely simplified mirror of social reality. The information objects within that archive are (again: more than ever), fragile, manipulable, of disputable provenance, doubtful context, and uncertain quality. Their authenticity is in jeopardy.⁵

The “Allure of Digital Archives” will probably be more about finding knowledge about the archive as a whole than about finding knowledge hidden in the information objects that are its constitu-

ents. It will be determining the value of a digital archive as a “trusted” resource for historical research. To be successful in that endeavour, it will be necessary to assess the possibility to “reconstruct the past” of the digital archive. That assessment would allow historians to understand quality, provenance, context, content, and accessibility of the digital archive, not only in its design stage but also in its life cycle.

In this chapter, I present the theoretical framework of the “Archive-as-Is” as an instrument for such an assessment. In 2017, I developed this framework to allow organizations to enhance Enterprise Information Management (EIM) in such a way that it ends, as John Mancini called it, the existing “information chaos”.⁶ If all the components of the framework are realized in the design, configuration, management, and maintenance of a digital archive, it will ensure that the archive can be used as a “trusted” resource, with a validated origin, quality, provenance, context, content, and accessibility. It is possible for historians to use this framework as a declarative model for the way archives have been designed, configured, managed, and maintained. It will allow historians to understand why archives are as they are, and why records are part of it (or not). Using the framework, historians can determine the research value of a digital archive as a historical resource.

2. The Archival Renaissance

Michel Foucault presented “the theoretical archive”, dissociated from its conventional definition(s) and practices.⁷ The Foucauldian archive does not reproduce but produces meaning; it is a “document” for possible use.⁸ Jacques Derrida used psychoanalysis to reformulate the notion of an archive and pointed out that “nothing

is less reliable, nothing is less clear today than the word ‘archive’”.⁹ For Derrida the process of archivization “produces as much as it records the event”.¹⁰ Both Foucault and Derrida may be viewed as originators of what Marlene Manoff called “the postmodern suspicion of the historical record”.¹¹ Archives are not passive receptacles: they shape and control the way the past is read. As Derrida says, there is no power without control of “the archive”.¹² At the same time, “postmodernists” are ambivalent about archives. They view archives as “trick mirrors distorting facts and past realities in favour of the narrative purpose” of authors and audiences.¹³

De term “archive” and “archives” are “loosening and exploding.”¹⁴ In the resulting inflation of the terms, archives have become “loose signifiers for a disparate set of concepts”,¹⁵ such as: the “social archive”,¹⁶ the “postcolonial archive”,¹⁷ “the ethnographic archive”,¹⁸ “the geographical archive”,¹⁹ and “the liberal archive”.²⁰ It has been suggested that the changes in information technology are responsible for this inflation. The technological revolution has altered “our relationship to the archive”,²¹ and it changed “the archive” into “a metaphor for what we are not yet able to grasp about the nature of digital collections.”²² It is, however, doubtful if this revolution *caused* the inflation of the *term* “archive”. The continuous use of the *term* in multidisciplinary contexts for very different types and collections of information objects and records seems a more probable cause for that inflation.

This preoccupation with “the archive” is characterized as the “archival turn”. This 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. Ann Stoler states, using poststructuralist arguments, that 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.²³ The “archival turn” positions “the archive” as “[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.”²⁴

Archival scholars, as Frank Upward, Brien Brothman, Terry Cook, Eric Ketelaar, and Tom Nesmith are re-thinking archival theory, using postmodern theories and the concept of (Derridean) archiviology, “a general science of the archive, of everything that can happen to the economy of memory and to its substrates, traces, documents ...”.²⁵ These archival scholars are moving away from traditional meaning(s), practices, and environments.

3. The Organizational Archive

Postmodernist archival scholars contributed to the inflation of the term “archive” and forgot one of the most crucial aspects of archives: their organizational (or personal) origin.²⁶ They do not pay much attention to the organizational design of archives and their value for business. It is remarkable, for instance, that in the most recent collection of essays on archival science research, the (organizational) design of archives receives no attention at all.²⁷ Smith and Steadman already acknowledged organizational archives as crucial resources, very important for organizational accountability, business process performance, and reaching business objectives.²⁸ Archives 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. Without these characteristics, it is impos-

sible to realize the primary objectives of archives: a reliable reconstruction of past happenings, delivering evidence, and meaningful production, diminishing their organizational value.²⁹ The neglect in the management of organizational archives has resulted in [1] fragmented storage of 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.³⁰

Two concepts are essential: 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 archive, with a unique (fixed or reconstructable) content, context, and structure, and retained and preserved for whatever reason organizations want to set them aside (business use, compliance, accountability, evidence, future reference, curiosity, historical value, extension of memory, etc.) or for whatever period of time they (or parts of them) are retained.³¹ *Archives* (or data stores) are organizational 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. The term can be used for *any* construct of records that is meant to be retained.³²

For using and studying the digital archive, now and in the future, the genesis of the archive in an organizational environment has to be known. Archives are designed and configured 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 the management of records and archives. They, as a result of their genesis, propose a prejudiced, sometimes an idealized image. It is a body of information, designed by an organization for reasons that have nothing to do with history but everything with organizational practice. They are politicized and are not neutral. For those reasons, historians need to research the genesis of organizational archives, the records within them, and their fundamental components. They need knowledge about their genesis to understand them, to contextualize them, and to use them for reconstructing the past.

4. Archival Theories for Studying the Archive

Archival science offers two theoretical frameworks for studying the archive: the Records Continuum theory and Digital (or Archival) Diplomatics. These frameworks are *not* focused on the organizational design and configuration of archives, the effects of (organizational) behaviour on their evolution and reaching organizational objectives.³³ These frameworks are based on traditions that are on opposite sides of the philosophical spectrum: postmodernism and empiricism.

The Records Continuum framework is influenced by Australian postcustodial practices, postmodernist thinking, and the social

theory of structuration.³⁴ The four dimensions of the theory: create, capture, organize, and pluralize correspond with four steps of time-space distancing mentioned in an example by Anthony Giddens.³⁵ These dimensions describe how organizational archives (and the records captured within them) are disembedded from their original context(s) of use to become part of a collective memory. Their context is represented by the axes of evidentiality, transactionality, record keeping, and identity.³⁶ The theory is not about archives, but about their context(s). Archives are interpreted as part of a continuum of activity related to known and unknown contexts of social, cultural, political, and legal processes. According to the theory, these contexts are vital to interpret and understand the role and value of archives in past, present, and future.³⁷ A continuum approach highlights that archives are both current and historical, representing a core concept 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 descriptive metadata to clarify their meaning and to enable their accessibility and usability over time.³⁸ The Records Continuum theory is (in essence) a context theory that tries to provide a framework for conceptualizing archives in multiple contexts over space and time. The theory's most important contribution is its accentuation of the importance of context and contextualizing for understanding the "contextual narrative" of archives. It now is common thinking in archival science that this "contextual narrative" is an absolute necessity for revealing meaning, for accessibility, and for usability. However, using the theory is problematic: Its philosophical foundation is weak,³⁹ its comprehensibility problematic,⁴⁰ and its implementation in organizational practices debatable.⁴¹

Digital Diplomatics is 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.”⁴² The primary focus of this theory is the “record” (equated with the documents that were the subject of diplomatic science) and all of 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 theory 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.⁴³ Digital Diplomacy emphasizes the importance of authenticity for identifying evidence, and for that reason the continuing identity and integrity of records and archives have to be established. Identity is revealed by documentary form or presentation, the whole of the distinguishing attributes that uniquely characterize records. They [1] have stable content, a fixed form and metadata, [2] reveal together with their metadata the legal, administrative, provenancial, procedural, technological, and documentary context, [3] belong to identifiable organizations, persons or groups, [4] are part of actions, [5] are linked to related records, and [6] are stored within the infrastructure of the organizational archive.⁴⁴ Digital Diplomacy developed the Chain of Preservation, a series of continuous records-centric activities that contribute to the

authenticity and preservation of records.⁴⁵ The biggest contribution of Digital Diplomacy are the detailed frameworks of authenticity and integrity requirements and its Chain of Preservation that allow (ultimately) for computerized processing and archiving of “trusted” records. There are, however, some theoretical problems, too. As Geoffrey Yeo points out, the equation of “records” with the documents that were the subject of diplomatic science may be a problem. Yeo implies that the mentioned equation never has been researched adequately and that, for that reason, Digital Diplomacy is partly based on an unproven hypothesis.⁴⁶ Besides this, 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.⁴⁷

The focus of both theories lays on the cultural (or historical) value (Records Continuum theory) and the evidential value (Digital Diplomacy) of archives. Both theories offer, their theoretical weaknesses notwithstanding, convincing arguments for the value of archives and records for organizations. But they do not explain how and why the archive is as it is. There is, I think, enough space for another theoretical view: an *organizational* one, the view of the “Archive-as-Is”, a view on archives and records, their genesis, design, 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, configured, processed, manipulated, and managed within an organization. A view that explains how it has “grown” to be the archive that the organization that generated it, wants it to be, with all distortions consciously and unconsciously embedded within it. A necessary view for an historian using a digital archive as a historical source.

5. The Theoretical Framework for the Archive-As-Is

5.1. Background of the Framework

The framework of the “Archive-as-Is” is primarily an *organizational* theory on archives, records and their management. The focus of the framework is on the organizations that create, process, manage, and preserve information objects, records and archives in their business processes and activities. For historians, the framework visualizes all components essential for digital archives to be designed, created, managed, and preserved. Missing even one of those components (or a part of those components) compromises the value of archives (and/or the records within it) for reconstructing the past. All components are necessary to generate “trusted” archives and/or records. The philosophical tradition that underlies this framework is pragmatism⁴⁸, “the philosophy of common sense.”⁴⁹ For my understanding of archives, Charles Peirce’s general concept of “continuum” has been extremely important.⁵⁰

5.2. Assumptions

The framework of the “Archive-as-Is” is based on several assumptions. For historians, the following assumptions are important:

1. *The information management function is a continuum.* “Unbroken custody” is needed to guarantee content, context, and structure of records and archives over time, even if records or archives cease to be used in business, even if there are different organizations/organizational units 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 that created the archive, including archival institutions. This (pragmatic) continuum is not bound by spacetime. When this management continuum is broken, the trustworthiness of the digital archive is in peril.

2. *Records pass through a (non-linear) lifecycle.* They are created and will, in the end, be irreparably destroyed (“die”) or indefinitely preserved (“live”), continuously managed 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.”* They are *designed* bodies, configured to retain all those records organizations *choose* to retain, enriched with all the metadata that are *allowed* to be included in metadata schedules. Archives retain (at a minimum) all records that, according to legal obligations, have to be kept. Archives embed all preoccupations, moral codes and preconceptions entrenched in procedures, business processes, legislation, and social environments. They are subjective constructs.⁵¹ 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.⁵²

4. *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 some (but not all) archives, contextualizing them, and realizing access. But they do *not* shape an objective narrative of past occurrences in preserving and contextualizing archives. They are part in deciding which archives will be indefinitely preserved and are accountable for gaps, inconsistencies, and distortions in (and between) them. As Wendy Duff and Verne Harris eloquently state: “what we choose to stress and what we choose to ignore is always and unavoidably subjective, and the value judgments that archivists make affect in turn how researchers find, perceive, and use records.” And: “Archivists cannot describe records in an unbiased, neutral, or objective way.”⁵³ Archivists are not neutral, independent, and objective custodians of organizational, cultural or historical knowledge.

5. *If an organization wants to preserve an information object because it is perceived as valuable for the organization (although it is not evidence nor*

cultural heritage), it can be considered a record. There are information objects that, as Hilary Jenkinson stated, have become a record because “someone decided to stick it into a file rather than the bin.”⁵⁴ They are set aside and preserved, maybe out of a notion of potential future value (as Theodore Schellenberg stated⁵⁵), maybe because of subjective perceptions of employees.

5.3. *The framework’s components*

The framework of the “Archive-as-Is” consists of five components (A-E). The *defining components* A, B, and C are aggregations of several elements:

A. *The four dimensions of information, (primarily) about records themselves:* Quality (1), (Situational) Context (2), Relevance (3), and Survival (4);

B. *The two archival principles, about the archive as a whole:* Provenance (5) and (Environmental) Context (6); and

C. *The five requirements for information access, about the accessibility of records and archives for users:* 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 way information is managed within organizations.

5.4. 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.

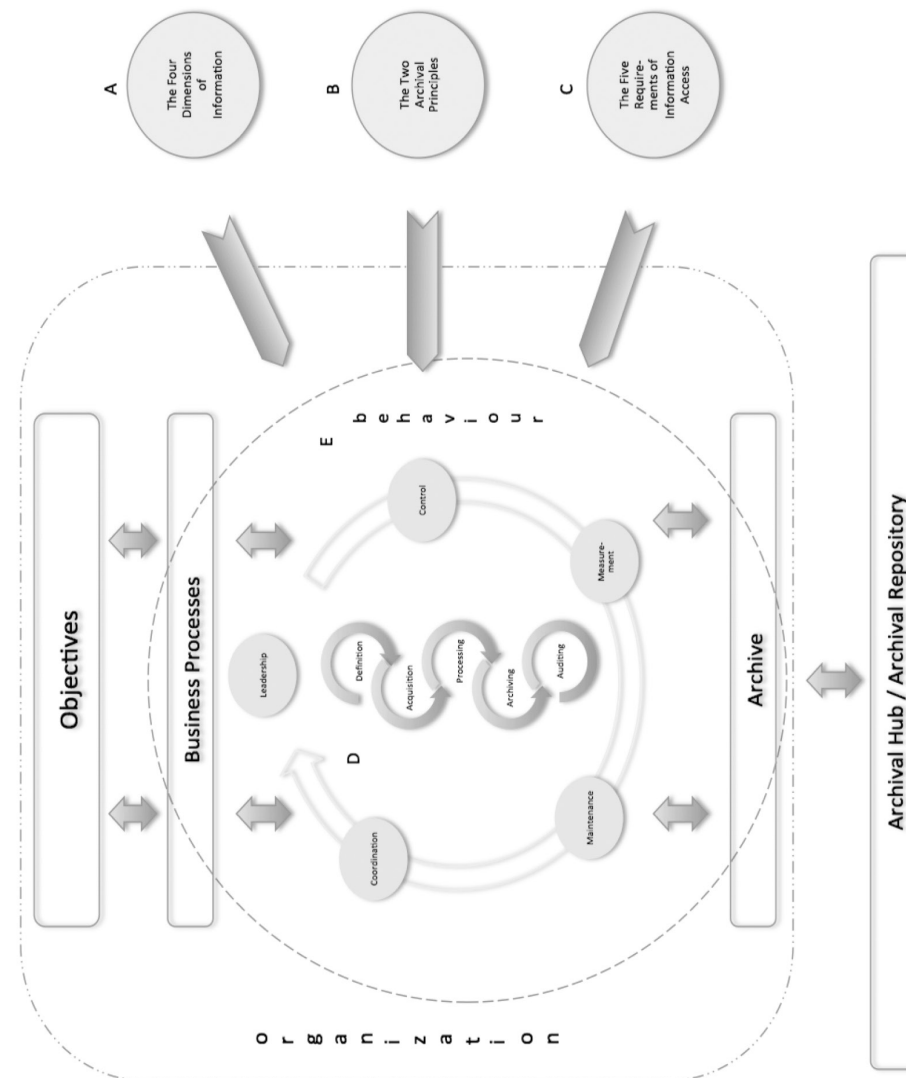


Figure 1. *The Theoretical Framework of the “Archive-as-Is”*

5.5. *The three defining components of the “Archive-as-Is” (A, B, and C)*

These components define the dimensions, principles, and requirements that have to be met by organizations 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 information management continuum. These three components are requirements for organizational records, archives, and their management, imposed on organizations by global legal, accountability, and professional frameworks.

5.5.1. *The four dimensions of information (A)*

In complex computerized environments, the trustworthiness of records is challenged. That is a problem, because records are meant to be (and are used as) evidence for organizational policies, decisions, products, actions and transactions. Citizens, governments, and courts are making increasing demands for their trustworthiness.⁵⁶ Four dimensions of information allow for a reliable reconstruction of these policies, decisions, products, actions and transactions: quality, context, relevance, and survival.⁵⁷

The *first* dimension, *Quality* (1), is about the quality requirements of records: [a] *integrity* (records cannot be manipulated), [b] *authenticity* (records present the required (and original) content and structure), [c] *controllability* (records can be tested on integrity and authenticity), and [d] *historicity* (the content, context and structure of records can be reconstructed at any moment in time). These requirements realize the fixity of records: they are “immutable mobiles.”⁵⁸ Fixity is necessary because records are meant for *later* consultation and are used repeatedly for the reconstruction of *past* happenings. Fixity enables users to trust records.⁵⁹ The information

value chain ensures that records meet these requirements and guarantees that the necessary context is added to allow for identification and sensemaking.⁶⁰ Historians need to verify if records really have been managed as “immutable mobiles” within the information value chain(s) of the organization(s) that managed those records in the past.

The *second* dimension is *(Situational) Context* (2). “There is no term that is more often used, less often defined, and when defined, defined so variously as context.”⁶¹ There are interpretations that use context for defining and operating robotic activities, 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.⁶² The context dimension of records is about the social situation that generates them. It captures the *situational context of individual records*, and provides meaning for the records generated within that situation. The data captured are about 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.⁶³ 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.⁶⁴ Historians need to analyse the metadata schedule(s) and the audit trail(s) used to determine if (and how) this (situational) context can be reconstructed.

The *third* dimension is *Relevance* (3). Records are only relevant for users if they fit the context in which they are used, managed and

retrieved. A special kind of relevance is *appraisal*, determining the “value”, relevance, of records over time.⁶⁵ Appraisal is the complex (and subjective) evaluation of records to determine their economic, financial, juridical, legal, societal, cultural, and historical relevance and to develop organizational retention schedules. Such schedules define the periods of time that records should be “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.⁶⁶ Appraisal assumes that when a retention period has expired, records have lost their relevance and should be irreparably destroyed. Irrelevant records make organizations vulnerable to legal proceedings, for instance in the context of privacy law, fraud or corruption.⁶⁷ The “right to be forgotten” is an essential part of the discussion on the relevance of records.⁶⁸ Knowledge of the way archives have been appraised is crucial for any historical interpretation of the organizations that generated them.

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.⁶⁹ To preserve digital archives (and the records within it), organizations need reliable and durable ICT infrastructures. The features of this infrastructure are fragile and continuously influenced by the restructuring of organizations.⁷⁰ Historians need to know how archives have been preserved and which preservation technologies have been used to validate if the archives are a “correct” representation of the original organizational archives. If that validation is not possible, their trustworthiness may be in peril.

5.5.2. *The two archival principles (B)*

I recognize two archival principles, 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. Without knowledge about provenance and (environmental) context, reconstructing the past will be a very problematic and labour-intensive endeavour.

Archival scholars view the principle of *Provenance* (5) as the “foundation of archival theory and practice.”⁷¹ According to Shelley Sweeney “over the years the principle has been introduced, reintroduced, applied in part, applied in full, studied, and debated without end.”⁷² Tom Nesmith defines provenance as “the societal and technical processes of the records’ inscription, transmission, contextualization, and interpretation, which account for its existence, characteristics, and continuing history”,⁷³ which is an extremely general description and an example of the intermingling mentioned above. Reason for this critique is that 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”, as Luciana Duranti called it)⁷⁴ because it is a reflection of the functions of an organization. Both are needed for an archive to have evidential and informational value. 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.⁷⁵ 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.⁷⁶

In computer science, the focus is on individual items, while in archival science it usually applies to an archive or an aggregation of records. 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, as Nesmith's definition states. 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. The principle implies 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. Tracing the history of individual records is especially important in digital environments to safeguard the four dimensions of information. For that reason, data lineage needs to be added to the implementation of the principle. The principle of provenance preserves the source, the internal structure, and the lineage of an archive, but *not* its context.

The *object* of (Environmental) Context (6), the second archival principle, 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."⁷⁷ 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.⁷⁸ It also concerns the organizational structure, the business process hierarchy, and the legal and regulatory environment in which the archive is generated. Eric Ketelaar adds social-cultural influences from the wider organizational environment to that mix.⁷⁹ His views are closely related to the sensemaking theories of Karl Weick.⁸⁰ To capture a representation of these influences in metadata is, however, extremely complex. 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.⁸¹

I am applying the context principle of Gottlob Frege and especially Ludwig Wittgenstein's interpretation of that principle (and his extension of the range of its application!) to archives and define the rule that an archive (and the records within them) can only have meaning within their environmental, surrounding influences.⁸² The principle of context expresses the rule, in short, to never ask for the meaning of an archive (or its records) in isolation, but only in its context. A direct interpretation of an archive outside its context cannot tell anything about its original meaning. That is a very important lesson for everyone studying digital archives.

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.

5.5.3. *The five requirements for information access (C)*

The requirements for information access, crucial for using and studying a digital archive, 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 for digital archives is one of the biggest challenges for information management in (business) organizations, but also in archival repositories or archival hubs. All organizations (including archival repositories or hubs) will have to meet these requirements, including all technologies needed for users to perceive records. Historians will need to verify if information in digital archives they want to use is accessible and if the requirements of information access are met. Information access for users has to be realized *regardless* of technology, language, disability, or personal capabilities.

Five requirements *together* define if (potential) users have access to archives and records. The *first requirement* is *findability* (7). It concerns the possibility an individual has to discover *where* records are created, published, kept, stored, or preserved. 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.⁸³ 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.⁸⁴ 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, such as legal restrictions or being behind a pay wall, their destruction or disappearance, and/or the unavailability of applicable ICTs. 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. When records are heard, felt, smelled, tasted, and/or viewed, users have the *possibility* to gather their meaning. It is only *possible*, for even if records are findable, available, and perceivable, that does not mean they are “intelligible”.

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.⁸⁵ Facilitating intelligibility may be a burden for organizations. 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. 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.⁸⁶ This requirement allows users to interpret 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 appraisal and by the metadata that were allowed to be captured. Users may try to find other contexts unconsciously embedded into the records or the archive, like Emmanuel Le Roy Ladurie did for Montaignou.⁸⁷

5.6. *The operational component of the “Archive-as-Is”: The information value chain (D)*

The three defining components of the theoretical framework 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 realizes these compo-

nents in the business processes of organizations. The information value chain is organized 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.⁸⁸ Michael Porter and Victor Miller 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.⁸⁹ For everyone using digital archives it will be necessary to analyse and reconstruct this information value chain, to allow for a contextual interpretation of archives and records and to discern differences between the organizations that generated those archives.

The information value chain identifies ten distinct, generic processes and nineteen activities that an organization (an organizational chain) performs when managing its archive and 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 researching the information value chain of the organization that generated the digital archive, a historian can estimate the trustworthiness of the archive and validate its historical value. Tables 1 and 2 give an overview of the information value chain.

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

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 economical 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 economical 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 2. Secondary processes of the information value chain

Information Leadership	Establishing management conditions, ethics, and circumstances that enable and facilitate information management.
Information Coordination	Managing dependencies to ensure that information management 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.

5.7. The behavioural component of the “Archive-as-Is”: Organizational Behaviour (E)

Realizing the success of a business strategy and achieving the objectives of an organization are for a large part dependent on the way individual employees behave. Behaviour can be defined as the actions and mannerisms of individuals (organisms, systems, or artificial entities) in conjunction with themselves or their environment. Behaviour is the coordinated response to stimuli or inputs, whether internal or external, conscious or subconscious, voluntary or involuntary. It is largely based on soft factors, like competences and skills, employee relationships, standards, desires, and values.⁹⁰ Those factors are difficult to measure. They are influencing the climate and culture of organizations and affect motivation as well as perfor-

mance of employees.⁹¹ Organizational behaviour is, as I use it within the framework of the Archive-as-Is, simplified, human behaviour in organizational settings as well as the structure(s) and behaviour of organizations themselves.⁹² Behaviour is studied at macro and at micro level. Studies at macro level do have their roots in sociology and economics. They deal with questions of organizational structure, design, and action within social and economic contexts. At micro level, the study of behaviour is rooted in psychology, and deals with attitudes and behaviour of (groups of) individuals and the way they are influenced by and are themselves influencing organizational settings.⁹³ Behaviour is influenced by (and, in turn, has an influence on) the direct work environment and the wider organizational settings.

Each individual employee brings the organization unique personal characteristics, a unique personal (ethnic) background, unique perceptions, and a unique set of experiences (some of them from other organizations). They have different capabilities for learning and for handling responsibility. They have different beliefs, attitudes, and aspiration levels. Organizational leaders need to be aware of the unique perspective each individual employee brings to a work setting. The behaviours employees exhibit will be different based on their background and experiences, despite the influence of their work group.⁹⁴ Relationships among individuals and groups in organizations create expectations for the behaviour of individual employees. Organizations have systems of authority, status, and power that influence behaviour with specific expectations. Work groups in organizations have a powerful impact on employee behaviour. Although they do not alleviate individual differences, they create ‘common ground’ in beliefs, attitudes, and ‘shared’ behaviour. How stronger the systems of authority, status, and power of the organization are, how more this ‘common ground’ mirrors the

organizational expectations and desired behaviours. Group-driven expectations are communicated within the group and structure, hierarchy, and norms come into being, focused on accomplishing goals.⁹⁵ Behaviour influences the information value chain directly.

From a psychoanalytical point of view, Juhani Ihanus recognizes three phases of archival registrations: archivalization, archivization, and archiving.⁹⁶ *Archivalization* has been defined by Eric Ketelaar as “the conscious or unconscious choice (determined by social and cultural factors) to consider something worth archiving”.⁹⁷ Ketelaar refers to the social psychologist Geert Hofstede, 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.”⁹⁸ This mental programming affects the way people intuitively consider something “worth keeping” — or not. After archivalization, a more conscious choice is made about *archivization*, about externalizing archivalization’s choice in inscribing a trace in an external location.⁹⁹ 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 in relation to information, to records, and to archives. They define behaviour that influences the way people construct, process, and use archives and records, and the way archivists acquire, contextualize, and appraise them. Ketelaar assumes that people working *within the same organization* will use and create records in different ways.¹⁰⁰

For understanding records and archives, employees and archivists of organizations are to be known in their social, religious, cultural, political, and economic contexts.¹⁰¹ 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. Behaviour reflects morals, preconceptions, and the limitations of the social and cultural environment of employees and offers only a distorted view of reality (which is embedded in the records and archives organizations create). The information value chain is largely configured by this behavioural component of the theoretical framework. Behaviour can have detrimental effects on archives.

The effects of behaviour in organizations on information and information management are already known for a very long time. There is considerable evidence of organizational dysfunctions attributed to failures in the information value chain.¹⁰² The hypothesis of Benjamin Singer was that organizations suffer from psychotic and pathological behaviours, just like people do, but are rarely diagnosed with it or treated as such.¹⁰³ According to Singer, 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”.¹⁰⁴ More recently, Ronald Rice and Stephen Cooper 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.¹⁰⁵ Robert Zmud argued that the use of ICTs makes organizational functions vulnerable to strategic information behaviours such as distortion of records.¹⁰⁶

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 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. Historians using and studying archives and records need to be prepared for distorted archives because of behavioural effects. When they are lucky, archivists have contextualized the way organizations work and the way employees behaved. But it is extremely difficult to capture human behaviour within (subjective) metadata schedules.

6. Concluding Remarks

In the archival spectrum, the framework of the “Archive-as-Is” finds its place between the *context-oriented theory* of the Records Continuum and the *records-oriented theory* of Digital Diplomats. Both of these theories have influenced the framework, but it stands on its own as an *organization-oriented archival theory*. This 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 that generated it, wanted it to be.

Archives shape and control the way history is read. They do, and every historian knows. But archives are, from the moment of their

creation, distortions of reality, only presenting 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 themselves also be distorting reality. In the end, the archive is as it is, a construct configured, managed, and preserved according to organizational demands and desires, with gaps as a result of appraisal and selection, contextualized by archivists influenced by their own “software of the mind”, 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.

Knowing all this, using and studying a digital archive will be a challenge. Historical interpretations not only need to consider the information captured in records and archives *but also how this information was allowed to be captured and contextualized in organizational settings*. To use digital archives as “trusted” sources, knowledge of their organizational origin and generation is crucial. That, beyond anything else, will define the challenge for historians in using digital records and archives for their research. This will be the “Allure of Digital Archives” in a digital age.

Endnotes

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- 3 Farge, *The Allure*, 96–97.
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10 Derrida, “Archive Fever”: 17.

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24 Derrida, “Archive Fever”, 27.

25 Frank Upward, “Structuring the Records Continuum, part one. Postcustodial Principles and Properties,” *Archives and Manuscripts* 24, no. 2 (1996): 268–85, and “Structuring the Records Continuum, part two. Structuration Theory and Recordkeeping,” *Archives and Manuscripts* 25, no. 1 (1997): 10–35; Brien Brothman, “The Past that Archives Keep. Memory, History, and the Preservation of Archival Records,” *Archivaria* 51 (Spring 2001): 41–80; Terry Cook, “What is Past is Prologue. A History of Archival Ideas since 1898, and the Future Paradigm Shift”, *Archivaria* 43 (Spring 1997): 17–63, and “Archival Science”; Eric Ketelaar, “Archivalisation and Archiving”, *Archives and Manuscripts* 27 (1999): 54–61, “Archivistics Research Saving the Profession”, *The American Archivist* 63, no. 2 (2000a): 322–40, and “Archival Turns and Returns. Studies of the Archive”, in *Research in the Archival Multiverse*, ed. Anne J. Gilliland, Sue McKemmish and Andrew J. Lau (Clayton: Monash University Publishing, 2016), 228–68; Tom Nesmith, “Still Fuzzy, but More Accurate. Some Thoughts on the ‘Ghosts’ of Archival Theory”, *Archivaria* 47 (Spring 1999): 136–50, and Nesmith, “Seeing Archives: Postmodernism and the Changing Intellectual Place of Archives”, *The American Archivist* 65, no. 1 (2002): 24–41. Quotation from Derrida, “Archive Fever”, 34.

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