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Mapping the Terrain: Emergence of Long-Term Standardization in a Diverse Setting

Master's thesis

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Abstract

The process of technological standardization relies on an epistemic community that is in consensus regarding the goals the standard aims to achieve. Archives constitute a unique case of a complex epistemic community with a diversity of actors, organizations, and resources. Archival description, which is the practice of describing the collections and the records in them so that are available for research and to the public, is one of the most difficult problems for standardization: it varies and is adjusted and dependent on an archive's judgment, resources, and position. Yet, in this complex epistemic community a new international information standardization has been emerging over the past decade: Records in Contexts (RiC). RiC is a new standard for archival description that brings a new conceptual model and a major change to archival science. Using a research design that relies on professional exchanges, scholarly publications, and semi-structured interviews with implementors of RiC, this case study tracks the emergence of RiC between 2012 and 2021 by comparing two groups. In the first group there are archivists who implemented RiC and who are also a members of professional committee that oversees its design. In the second group there are archivists who are implementing RiC and are not part of the professional committee. Four theoretical approaches to contextualizing technological innovation are used to examine the process of standardization: Boundary Object, The Social Construction of Technology (SCOT), Actor-Network Theory (ANT), and the theoretical model of the Duality of Technology (DoT).

The research concludes that contrary to the perception of standardization as a fixed process with a defined terminal point, SCOT and DoT explain how a standard that involves a diverse community of actors can manifest flexibility, over time, while allowing constant change. Both approaches show how implementation of conceptual standards in a complex environment is not an end goal, but an ongoing process of policy making with temporary closers (Humphreys, 2006). This research suggests that this may characterize standardization in a diverse setting that aims for maintenance and long-term processes.

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Introduction

Standards are the rules, qualities, and practices that are maintained as a benchmark and dictate the way in which the world operates. Whether it is a standard for regulating traffic or a standard for a musical work, there are sets of rules and conditions that steer and affect human behavior and actions. In the examples above, the standard can be a change of light for crossing the road, or 100-140 BPM (Beats per Minute) in typical rock and pop songs. In library and archival sciences, information standards dictate how the books, items, records, and inventories will be presented and discoverable by users, what information about them will be accessible and presented to readers, and how patrons will be able to search and access them.

A standard, according to Egyedi and Blind, is a “document established by consensus that provides, for common and repeated use rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context,” (Egyedi and Blind, 2008, p.3). This definition indeed covers some standards such as pharmacological standards or engineering standards, but it is less evident in cases in which the consensus on the “optimum degree of order in a given context” is equivocal. In addition, Egyedi and Blind’s definition does not address the ways in which standards change. What happens in these cases? Has the consensus changed, and how? Has there been a change of context that caused the standard to change, or to become less relevant?

The issue of standardization in equivocal consensus is especially relevant when discussing standardization as a tool of public policy in technical and conceptual negotiations: what is an optimum degree of order when deciding upon allocating allowance or deciding on a digital privacy legislation? How is a consensus reached when weighing different disciplines that are taught using different educational traditions? Agreeing on an optimal degree of order – that is, a standard - with many actors and where consensus is a goal that is hard to reach and vaguely defined.

Archives constitute a unique case of compliance to information standardization within information organizations: while a book is the same book in any library around the world and is associated with the same information wherever it is, archival collections differ in content, purpose, and provenance. For example, an archive dedicated to preservation of lepidopterology science works in different ways than an archive dedicated to the preservation of national history or to audio-visual archives. In addition, archives currently use a variety of standards – or none at all – to describe the materials in their custody. Archival description is an expertise that is mostly unknown in theory and in practice to most people, that is, in the answers to the questions

“why are the files described like this?”, and “how does one describe an archival record?.”¹ Information about an archival record or a finding aid is not “just there”, and was created by a professional following a policy, standard, or decision.² Some archives are centuries old, and some are much younger; they have different resources and belong to different professional associations (audio-visual archivists, fashion archivists and records managers, for example, are very different archival specializations). While their end goal is similar – to preserve documents, records, and items and make them accessible – not all are working on preservation or accessibility at the same time, in same capacity, and with the same methods.

Elizabeth Yakel (2003) describes archival description (representation) as:

a fluid, evolving, and socially constructed practice. Representation refers to both the processes of arrangement (respecting or disrespecting order) and description, such as the creation of access tools (guides, inventories, finding aids, bibliographic records) or systems (card catalogs, bibliographic databases, EAD databases) resulting from those activities. It is clear how the creation of surrogates relates to representation. Yet, archival arrangement is also a representational act. [...] Archival representation processes are neither objective nor transparent. [...] Archival representations speak not only about the collections for which they act as surrogates, but also about archival practice and archivists. (pp. 1, 25)

Adding to the flexibility and complexity of archival description is the question of the unit of description (Alsberg, 1962):

The question asked in archival science is what is the unit of description. The archival unit of description is not the same as bibliographical unit of description [...] It may be the single item, or the file of the series of files or even the fonds itself. The answer to this question depends on the structure of the fonds and the importance that is being attributed to the items in the fonds, for the processing of archival material is not set according to strict classification details but according to the potential use of the material, the object of the process. (p. 207)

Thus, archival description, the practice of describing the collections and the records in them so that they will be available for research and to the public, is one of the most difficult problems for standardization: it varies and is adjusted and dependent on an archive’s judgment, resources,

¹ In archives a file is a physical or digital object, and it may contain different things. It may contain, for example, a letter, a manuscript, some photographs, a biological specimen, digital photograph, or a weapon. A record is the digital/electronic representation of the file, designed to bridge the items in the inventory and the digital catalog, or the digital database.

² It is important to clarify that there is a difference between models of information standardization, digitization, and digital preservation. Digitization is a technical process of transforming analog information to digital information. Digital preservation is a field which administers the long-term preservation and access to digital information. Information standardization handles all aspects of how data and information should be organized, processed, maintained and accessed, and does not relate only to digital information.

and position. Therefore, archives seem to be a less likely environment for an international standardization to occur, as it is highly contextual and localized.

Since late 2012 a committee in International Council on Archives (ICA) has been working on a new standard for archives – Records in Contexts (RiC) – that is intended to replace several existing archival standards. Records in Contexts is one of the newest cultural heritage standards that are drafting the digital and technological infrastructure that allows to search, browse, access, and view historical documents. Here, I am trying to answer the question of how a singular international standardization process in a complex environment with a great diversity between the different actors in it emerged. In order to do so, this thesis tracks the initial implementation of that standard by comparing two groups that implemented the standard: one that includes members of the committee who designed the standard, and the others who were reporting to the committee regarding the implantation of RiC. Their experiences and understandings were then compared with the current literature regarding theories of standardization.³

Literature Review

Prior research of standardization in society and technology studies (STS) tends to focus on standards as social artifacts. Most of the research on standards as social artifacts tends to examine standards that are not international in nature, or that are set in an international network with up to dozens of participants (Borgman et al., 2015; Gasson, 2006; Khazraee & Gasson, 2015; Millerand & Bowker, 2009; Orlikowski, 1992; Schultze, 2017; Yeo, 2011). In addition to that, only a small portion of the research has focused on standardization of technology for long-term purposes, or for maintenance. In this research I study an early implementation of international standardization in complex context(s), with a large potential number of participants. In addition, the research contributes on the conceptualization of standards that are designed for maintenance or to serve for long-term purposes.

In this thesis I am looking into the implementation of RiC through four theoretical frameworks. These theoretical frameworks are: Boundary Object, The Social Construction of Technology (SCOT), Actor-Network Theory (ANT), and the theoretical model regarding the Duality of Technology (DoT). These frameworks are useful to understand and conceptualize standardization that is based on a technological change, or a conceptual change that is based on a technological change.

The idea of boundary object is a theoretical approach that helps to conceptualize standardization as a social process. A boundary object is an object that a wide community or network can agree on, while it can change and adapt in different local circumstances and carry

³ I encourage the readers who are not familiar with archival science and semantic web technology to use the glossary, attached as an appendix.

different meanings to different parties. An international standard that is agreed upon by many actors world-wide, while still concrete enough for local uses of different archives in various contexts, may fit into the concept and model of a boundary object. Star and Griesemer's model describe boundary objects as (Huvila, Anderson, Jansen, McKenzie, & Worrall, 2017):

Scientific objects, which both inhabit several intersecting social worlds and satisfy the informational requirements of each of them; objects plastic enough to adapt to local needs and constraints of several parties employing them yet robust enough to maintain a common identity across sites; weakly structured in common use, becoming strongly structured in individual site use; abstract or concrete; having different meanings in different social worlds but a structure common enough to more than one world to make them recognizable, a means of translation. (p. 1808)

A boundary object is an artifact that different groups can share without a consensus, and yet cooperation continues to take place. Star and Griesemer (Star, 2010) further defined the dynamics in which boundary objects exist as one in which:

The object (remember, to read this as a set of work arrangements that are at once material and processual) resides between social worlds (or communities of practice) where it is ill structured.

When necessary, the object is worked on by local groups who maintain its vaguer identity as a common object, while making it more specific, more tailored to local use within a social world, and therefore useful for work that is NOT interdisciplinary.

Groups that are cooperating without consensus tack back-and-forth between both forms of the object. (pp. 604-605)

While boundary object as a concept explains the standard in itself, it is less useful coming to explain the process of standardization. The standard as boundary object explains the result, but not the process.

Another approach that studied technological innovation is the Social Construction of Technology. SCOT looks into two major stages in the emergence of technology, and the four groups that are involved in it: producers, advocates, users, and bystanders. The first major stage in the emergence of a technology is interpretive flexibility in the cultural way in which artifacts – in this case, the standards - are constructed and interpreted. The second is when the problems that were being debated during the first stage of the technological design and interpretation “disappear”, not because they are solved in the technical aspect, but because the social groups that are involved in the design and interpretation agree that what once constituted a problem is now solved (Pinch, 1987).

Humphreys (Humphreys, 2006) further develops SCOT and broadens it: according to her reconceptualization of the theory, producers and users have a direct relationship with the artifact, and advocates and bystanders, have an indirect relationship with the artifact. In addition

to that, the process of negotiation over the creation of an artifact does not begin and end in innovation and also expresses itself in the stages of closure and stabilization, with differing degrees of stabilization: flexibility of language, flexibility of use, and flexibility of structure. Flexibility of language refers to the interpretive flexibility of an artifact, in which the different groups can assign different meanings to an artifact. Flexibility of use relates to the different ways and appropriations in which an artifact can be used. And lastly, flexibility of structure relates to the different levels of structures an artifact has, and in which a change cannot occur on the abstract level but can and may occur in other levels of the structure.

Thus, the emergence of an international standard for archival description may be explained by the interpretive flexibility that is debated by the different social groups. In this case, a standard may emerge from the activities of producers and advocated that have identified a problem, and later close and stabilize according to the different interpretive flexibilities that are suggested and accepted by the different groups.

Actor-Network Theory (ANT) is another social constructivist approach in (STS), which looks into artifact differently than SCOT. It examines the trajectories and actors that constitute a network (or networks, often in a scientific or a professional arena), the human and non-human actors in it, and the ways and processes in which it builds itself. An example to this approach that is used to study standardization can be found in Millerand and Bowker's (2009) research of the development of the EML (Ecological Metadata Language) standard. In the case of ANT, the standard in itself is an actor that is constructed as a network. As Latour (Latour, 1996) writes:

“Literally there is nothing but networks, there is nothing in between them, or, to use a metaphor from the history of physics, there is no aether in which the networks should be immersed [...] Explanation is ex-plicated, that is unfolded [...] it is now indistinguishable from the description, the deployment of the net. [...] No explanation is stronger or more powerful than providing connections among unrelated elements or showing how one element holds many others. This is not a property that is distinct from networks but one of their essential properties (Latour 1988b).” (pp. 375-376)

To this Millerand and Bowker (2009) add: “Standards nonetheless constitute the necessary base for distributed cognitive work. In order to understand the modalities of collaboration in collective work – scientific and other – we need to understand standards.” (Ibid., 150). Similarly to SCOT, they later conceptualize the EML standard as a support for the coordination of different social worlds, and emphasize the role of the standard as a mediator in different organizational arrangements:

organizational arrangements (routines, standards, norms, and politics) [that] mediate the enactment of technologies, which in return contribute to the refashioning of these arrangements [...] When combing metadata across the disciplines, metadata do more than provide a convenient label; they structure the conversation that ensues. (pp. 152, 154)

Huvila, Anderson, Jansen, McKenzie, & Worrall (2017) add that the translational activity of standardization and the negotiation of standardization itself, enables the focus to turn from representation, as a mental activity, to inscription, as a social activity: “There is much more in the functioning of information than merely getting informed or informing others. Information interactions are entangled as a part of the texture of the multitude of human pursuits.” (p. 1816).

Wanda Orlikowski’s work on the duality of technology provides a fourth approach to understand the emergence of RiC. Orlikowski suggested a model based on Giddens’ theory of structuration to describe the relationship between human actors, technology, and organizations. Her model distinguishes between technology and human beings, and maps a set of possible relations between the two to include both structural and socially constructed interactions. According to Orlikowski (1992), structuration is a social process that “involves the reciprocal interaction of human actors and structural features of organizations [...], that human actions are enabled and constrained by structures, yet that these structures are the result of previous actions.” (p. 404).

Orlikowski maps the influences between the human actors and technology across three stages in the adoption of technology: initial development of technology (stage I); institutionalized use of technology (stage II); and ongoing interaction with technology (Stage III) (Ibid., pp. 413-420).

The influences between the human actors and technology mapped as a network of products, media, and consequences, and include:

- Technology as a *product* of human action: by design, development, appropriation, or modification;
- Technology as a *medium* of human action: which facilitates and constrains human action through the provision of interceptive schemes, facilities, and norms;
- Institutional *conditions* of interaction with technology: intentions, professional norms, design standards, and resources;
- Institutional *consequences* of interaction with technology: influences on institutional properties of an organization through reinforcing or transforming structures of signification, domination, and legitimation.

Hence the importance of the research into changes in knowledge organization and into the circumstances in which epistemic communities are changing the ways and standards in which they are operating: information standards are not merely created out of thin air, they depend on the cooperation and negotiation between different and diverse actors, human and non-human alike, and they are entwined parts of everyday life – especially in cases in which they are meant to be long-lasting.

Case Background and Hypothesis

The galleries, libraries, archives, and museums community (GLAM) has been taking steps in the past few decades in order to cooperate on data and metadata sharing issues within the community. Each field has its own norms and documentation practices or standards, and its own needs. An open discussion in the Rare Books and Special Collections Section (RBSCS) of the International Federation of Library Associations and Institutions (IFLA) that took place in 2016 in Lisbon demonstrates some of the issues and difficulties at hand (Farneth, 2016). The discussion grew out of a previous panel discussion held five months earlier at the annual conference of the International Council of Museums/International Committee for Documentation (ICOM/CIDOC) in 2015 in New Delhi, and sought further commentary and expansion of the discussion at an international level.

The challenges the GLAM community has to face in its way to shared data and metadata practices that Farneth names are lack of resources and cross-trained staff; lack of unified practices in and across the sector; the need to harness various actors – the open-source community, researchers and users, IT professionals and software developers. Farneth concluded that discussion with the following statement:

accomplishing this amount of change on an international level remains a daunting challenge. The task will be aided if continued “top-down” and “bottom-up” discussions can occur in tandem. A few convincing, cross-sector “bottom-up” pilot projects as a proof-of-concept would help to demonstrate the value of this work, and the knowledge gained would help to build enthusiasm within our professional organizations and convince the leaders of our institutions to pursue it more aggressively. (pp. 303-4)

This notion has indeed evolved into working on a standard that takes into account connectivity with other GLAM standards and makes use of conceptual models and work in the sector (ICA: EGAD, 2016).

As stated previously, archives are a diverse field. There are thousands of professional organizations and standards within the archival world: they may be national, regional, international, or topical (for example, concerning audio-visual issues). Compliance with international standardization varies from one archive to another and depends on its resources: its staff, their professional knowledge, their budget, their ideas of what a finding aid - a description that describes information about an archival resource – should consist, and their ability to push and publish data to the web.⁴ An organization can use different standards for similar purposes simultaneously: at the organization where I work, for example, the archives

⁴ Sharing and publishing data in this case is often referred as “push metadata”, as in pushing metadata (to the linked web).

department is using Machine Readable Cataloging (MARC) – a library standard that is not recommended for archival data and mostly used to describe books and journals – for organizational and budgetary reasons, while other archival projects within the library are using General Standard for Archival Description (ISAD(G)) or Encoded Archival Description (EAD), which are archival standards.

As a simplified way to illustrate the different actors in the field, Figure 1 demonstrates the different situations in which standards, resources, archives, and organizations co-relate to one another. It is possible, for example, that an archive will be without budgetary resources and organizational connections, but their professional staff will be familiar with relevant standards that are developed through other archives, resources, and organizations. It is also possible that organizations and associations will not focus their efforts on information standards, but on other aspects of archival work (for example, an association that focuses on working conditions). Here I will focus on the relationships that exist between standards, archives, and professional organizations and associations, marked as 1, 2, and 3 in the diagram below.

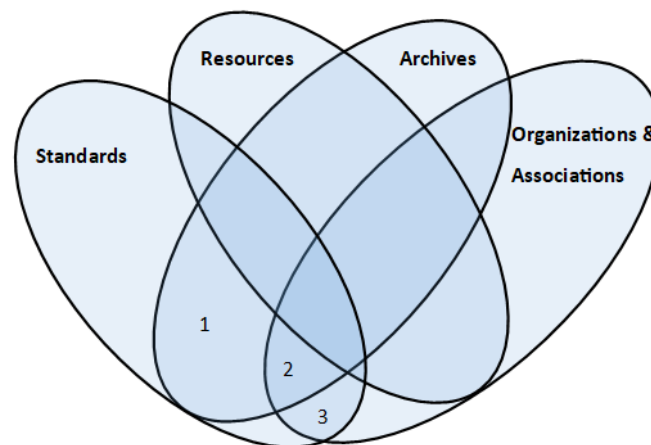


Figure 1: an abstraction of the main elements in the field and their relationships.

In the case of RiC, I am focusing on the actions of the ICA regarding standardization of archival data, and the reaction of the professional archival community to these efforts as actions. These are taking place at the same epistemic community.

The ICA (ICA: EGAD, 2016) published International Standard Archival Description (ISAD), the first international standard for archival description, in 1994. It was followed by the International Standard Archival Authority Record (ISAAR) that was published in 1996, the International Standard for Describing Functions (ISDF) that was published in 1999, and the International Standard for Describing Institutions with Archival Holdings (ISDIAH) that was published in 2004. The ISAD and ISAAR were revised and re-published in 1999 and 2004, respectively, and are currently known as ISAD(G) and ISAAR-CPF. All these standards are

defining the fields that are mandatory in a finding aid to access information, for different purposes.

EGAD (Expert Group on Archival Description) was formed in ICA in late 2012. EGAD is a group of experts who are working voluntarily as a committee within the ICA, containing members from 13 countries. EGAD developed a new conceptual model based on the four existing archive description standards. That model is based on the technology of RDF graph representation and changes archival representation from multi-level approach to multidimensional. By 2016 it was clear to the group members at the ICA that the standards needed to be revised as a whole, and not one by one, and that the new proposed way will change the current conceptual thinking about archival data and archival principles. The solution they presented was the RiC standard, which addressed both the technological aspect of adopting RDF technology, and the question of whether to revise the current standards one by one, or as a whole. In October 2021, following feedback from the professional community, EGAD presented two additional components to the standard: Introduction to Archival Description (RiC-IAD), and Application Guidelines (RiC-AG). The two additional components are expected to be released for community feedback during 2022.

Following the literature reviewed in the previous chapter, If, according to SCOT, ANT or DoT, standards are artifacts that are either negotiated, socially interpreted, appropriated, or mediated in the lives of organizations and archives, then the invention of RDF technology alone cannot explain the time and effort that went into the development of a new international and encompassing standard, and the revisions of past standards. A large social effort by many actors within and outside of archives had to take place for a new international standardization to emerge.

My hypothesis in this research is that the RiC standard was created and formalized mostly due to external constraints and the process of rethinking the place of archives in the field of cultural heritage institutions. Despite the technological changes in Web technology and linked data, an encompassing conceptual model would have been less likely to emerge in the diverse environment of archives, organizations, and standards.

Methodology

The research is a case study of early implementation of international standardization suggested by the ICA in archives. The time frame of analysis is between 2016 and October 2021. September 2016 marks the publication of the first draft of the conceptual part of the standard, RiC-CM. Two more updated versions of the standard were published in December 2019 and in July 2021, the latter can be used with the ontology part of the standard, RiC-O, that was published

in February 2021.⁵ After each version EGAD published a call for comments from the community. In October 2021 the annual ICA conference was held, in which the most recent changes to RiC were announced, based on the feedback from the professional community. These changes are the addition of new components to RiC: Introduction to Archival Description (RiC-IAD), and Application Guidelines (RiC-AG).

The discussion of changes in archival description in the frame of RiC is taking place both in professional and academic settings. The professional setting includes standardization and archival description dedicated committees, conferences (local and international), professional listservs, and communication from EGAD in form of announcements on the ICA website, as well as the website dedicated to the standard, and a GitHub with three contributors and 28 watchers.⁶ The academic setting includes archival science studies, academic publications and research. The products of both settings results in recorded lectures and sessions and written emails, manuals, and documentation. These were the basis of the research design that relies on a triangulation of exchanges, scholarly publications, and semi-structured interviews with five implementors of RiC.

In order to track the reaction to the new standard and its implementation in the field I analyzed two professional listservs (the ICA listserv and the RiC-O listserv), collected the scholarly literature within the time frame, and reviewed professional conferences' material – mainly those of the ICA.⁷ In terms of scholarly literature, searches in EBSCO databases and Google Scholar were done to find scholarly literature on Records in Contexts in the English language between 2016 and 2021, as well as browsing in the main archival and library science publications: *The Journal of Contemporary Archival Studies* (JCAS), *Archival Science*, *Archives and Records, Cataloging and Classification Quarterly*, *Journal of Archival Organization*, and *Comma*. Articles that were not in English or that have merely mentioned the standard's existence but did not weigh on its purpose were eliminated from the literature review. The material from the conference lectures, listservs, and scholarly literature was then thematically analyzed in order to understand the themes and claims of the community and the committee, using an analytical frame of grounded theory (Böhm, 2004), and followed by Schultze's insights (Schultze, 2017) on the ethnography of information systems.

Additionally, I have used semi-structured interviews with five archivists who have been implementing the new standard in their archives and workplaces between 2016-2020. These were five of the six archivists that have been publicly known to implement RiC up to May 2020. I have been using pseudonyms, following ethnographic and social science research traditions.

⁵ Ontology in library and archival sciences is a common and formal vocabulary and that contains subjects, their attributes, and the possible links between them.

⁶ The GitHub was last checked in December 2021.

⁷ The ICA listserv is publicly available at <https://www.ica.org/en/ica-list-serv>. Registration to the RiC-O listserv is done by emailing an EGAD committee member directly.

Two of the five archivists are also members of EGAD: One is Beatrice, the head of a data lab in a French national archive and a lecturer of archival science. The other is Peter, the head of a software company that specializes in software solutions for archives and digital heritage institutions in Switzerland and an archival science' lecturer. From among the archivists who are not members of EGAD and are working with RiC I have interviewed three archivists and librarians from Germany, Belgium, and Brazil. In Germany I interviewed Karl, a department head in a German state library who has established a project of historical sources for network analysis based on the metadata in the library's catalog; in Belgium I interviewed Thomas, head of the digital archiving department in the Belgian state archives; and in Brazil I interviewed Antonio, associate professor in department of archive studies and coordinator of a digital collections' laboratory. The transcribed interviews were then also analyzed as text as part of a grounded theory approach (Böhm, 2004), and Schultze's work (Schultze, 2017). Karl and Beatrice read the thesis' draft and provided comments and feedback in early 2022. Here I will add that some of the interviewees to this study are also the authors of some of the scholarly literature that was reviewed. Thus, since the institutional ethics committee requested that I use pseudonyms, I have paraphrased parts of their papers instead of citing them directly. At times I have also included direct quotes from other archival sciences papers by other authors that express similar claims to ones made by the interviewees.⁸

To track the implementation and adoption of the standard, the interviews and textual materials were divided to two groups: archivists who were part of EGAD, and those who implemented the standard and have not been involved in EGAD working groups. Following the model in figure 1, this was done in order to distinct between the influences and contributions of the archivists who are EGAD members, and the influence and contributions of archivists who are not EGAD members; and to see if there are differences regarding the development and implementation of the standard between the groups. The findings were then compared to the four theoretical approaches that were reviewed in the previous chapter.

Reflexivity

I keep coming back to a quote by one of the interviewees, who said "Language and so on, it's all we have." Perhaps, in the case of RiC and archival description, the model is that language. In the case of this thesis, I found myself thinking a lot about how to explain archival science and practice to an academic audience while knowing that esteemed archivists and colleagues will be reading it as well, and knowing that I would have written it very differently if they were the primary audience. But language is indeed all we have, so here I aim to describe the way in which a professional community took upon itself a great epistemological challenge of changing the way – the language – in which it practices. This change is being done while trying to maintain decades of professional knowledge and open the profession to new opportunities as part of the

⁸ Additional literature that was not used directly in the research can be found in the appendix.

cultural heritage community, new research initiatives in the digital humanities, in a technological shift with RDF technology, and lastly, in a professional community with great difference between the actors that are in it.

As a metadata librarian and an accidental archivist, I have emic knowledge of some of the field's language and ways of communication.⁹ For defamiliarization purposes, I have researched archival standardization that I am not familiar with nor working with, in order to learn about it directly from the field and not through my own professional experience.

Findings and Discussion

1. EGAD and the Archivists as Standard Makers

1.1 “We cannot start from zero”: Planning a Flexible Framework

Records in Contexts standard has been developing slowly, and in stages: the first official and stable version of the standard was published in July 2021, almost ten years after EGAD officially started its work and meetings. Prior to the publication of the stable version of the conceptual model, EGAD published public versions of drafts of the standard for consultation in September 2016 and December 2019, and a draft of the ontology component was released in February 2021. Following the releases of both drafts, the international archival community was called to test the standard and respond to EGAD in emails, listserv, and conferences that discussed the standard. This was done as the archivists in the different listservs, emails, conferences, and those who engage in scholarly literature are slightly different from one another and can be mutually exclusive in terms of professional affiliation, practice, and academic training.

Among the announcements on conferences, workshops, and publications, there were only a few emails in the listserv that referred directly to professional innovation and work on standardization, including RiC. In the emails that directly discussed RiC, members of the listserv commented on the gap between the creation of a technological standard and its adoption as a standard for archival discovery. Some of the members also were in favor of a more open discussion in the listserv and not just as email responses to the committee and a limited number of more “open” responses posted with critique on the first draft of RiC-CM. This call to open the discussion in the listserv quickly faded and the responders were encouraged to send their thoughts and observations via email to EGAD directly. It is important to note that this listserv is rarely used for discussions, and is mostly a vehicle for announcements and consultation requests between thousands of archivists and archivist-adjunct professions and interests worldwide.

⁹ The term “accidental archivist” is used within the profession to describe those who found themselves to be working as archivists without previous training as archivists or premeditated plan. This also describe my own experience as a metadata librarian who found herself employed in a national library's archives department.

In the scholarly literature within GLAM discussing RiC that was not published by EGAD members, the following claims were generally made. One, that the resources are too limited for an encompassing and a complex change, to which the archive sector was slow to respond (Farneth, 2016; Bak, 2018). Two, there has been criticism that the standard was lacking in interconnectedness or interpretation of certain agents and relationships (Jones, 2018; Douglas, 2018; Rozenberg, 2021). An example from Rozenberg's paper (Rozenberg, 2021) follows:

Records in Context operates on a belief that the context and relations of a record needs to be documented, described and categorised as rigorously as possible. It is thus helpful in developing an understanding and formalisation of the discursive relations of digital records. But it certainly falls short as a coordinate for a thinking that sets relations as the constitutive aspects of digital records. It is in itself an instance of individualisation of a technical aspect of digital archival milieus, but less able in my view to account for the existential relations of digital records, and their continual individuation, genesis, over time. (p. 207)

With this feedback, and with the cooperation of the community, EGAD has been working on the development of RiC extensively, especially since 2016.

1.2 Mapping White Spots: Looking for Gaps in a Cartography of Standards

The members of EGAD that I interviewed referred to the creation of the standard in an ongoing process of comparison and revision between different standards, drafts, and actors. One of them, Peter, is the head of a software company who specializes in software solutions for archives and digital heritage institutions in Switzerland, an archival science lecturer, and a member of EGAD. He describes the process of standard-making as mapping white spots (in German: *weißer Fleck*). A white spot refers to a blank or white spot on a geographical map, signifying lack of knowledge about a place. In telecommunication, it is also the term for an area without service or coverage – a dead zone. Here, Peter describes the process of taking existing metadata files and manually converting them into the new standard (Peter, personal communication, January 5th, 2021):

I didn't write conversions, but normally I took XML metadata, then wrote my own turtle files with the new standard, the RDF files, and just thought how... I don't know how to write convectors, I'm not a programmer, but I can do to the conversion in my head and then write down the result. This helped me a lot to check are there white spots, are there white regions, on the standard map. And for example, one white map with existing archival standards are the rights: who has what rights on regarding what records. There were no such sections in existing standards. So to me it was important that this was introduced in Records in Contexts. It's a whole class of rules now. [...] So this conversion, not only the

theoretical work but mainly this manual conversion, led me to these white spots. In a way that is the way I work when developing new standards.

For Beatrice, data manager in a French national archive and another member of EGAD, the standardization process is creating map of a world (or a universe) that is based not only on the current proofs of concept, but on earlier work of predecessors as well. The map has already been sketched; the new standard is not a revolution, but a continuation of the sketch (Beatrice, personal communication, February 1st, 2021):

It's about what is the universe of archives. What is in this world? [...] You dive into universe of archives. You don't only speak of the metadata. It's kind of... very important difference, in fact. But it doesn't mean it's a revolution. I mean, we have to build on what we have. And the most important [thing] now is to succeed in this transition. We have to take into account all the things, all the metadata our predecessors created. And this is very important to understand. We cannot start from zero, it's not possible, simply not possible. And what the predecessors did is very important and interesting. It's just about reloading these metadata, doing things a bit differently, but not doing things from zero.

For Beatrice and Peter the map that they are creating is a map designed in collaboration with the international community of archival professionals, present and past. In Beatrice's case, the metadata in her institution is hundreds of years old (Beatrice, personal communication, February 1st, 2021):

[The archive] was created during the French Revolution in the end of the 18th century and its holds, archives, are coming from the Middle Ages to nowadays. For example, we have several finding aids that were created from the Middle Ages to nowadays and are describing the same record.

Beatrice expects that the standard will continue to change:

It may last many years before we come to something very different. It has to be done step by step. There are complex questions. Another issue is to consider the metadata as a whole. I mean, whatever you are describing, may be digital native records or another ones, or images digital images of analog records. We have to build a unique global framework for describing all this. [...] RiC has to do this because it's exactly the kind of framework that have to consider metadata another way and to have to envision other systems.

Hence, through implementing and reviewing, RiC standard in its initial stage is a living, adapting artifact that goes back and forth between EGAD and the international archival community, in the past and in the present. The process of standard-making evokes questions about the nature of archival description, the role of the archives in describing the archival material and sharing the data with GLAM institutions, and ICA's model of standardization change. In a conference that took place in September 2021, two EGAD members defined main principles for RiC-O, the ontology component that accompanies RiC-CM. They defined that RiC-O 1. Has to be immediately usable; 2. Has to provide a flexible framework for archival

description; 3. Must open new potential for archival description and discovery: i.e., explore new directions with existing data, and 4. That it should be extensible, i.e., able to use and connect to other ontologies, or parts of ontologies.

Beatrice and Peter's approach follows the first stage of SCOT theoretical approach. According to Pinch (Pinch, 1987, p. 34): "the demonstration that technological artifacts are culturally constructed and interpreted.", as the standard is structured by on-going process of tests, comparisons, and feedbacks. Additionally, Beatrice and Peter's approach also correlates with the notion of designing an artifact with a *flexibility of use* (Humphreys, 2006), which "suggest that technologies offer varying possibilities for appropriation". The design of the standard as a flexible artifact that archives can appropriate and adjust their use of based on their material and practices correlates with this idea. This also idea of the standard as a boundary object (Star, S.L., Bowker, G.C., & Neumann, L.J, 2003), as an artifact that many actors in the archival community can use and that does not require consensus. Lastly, it is also interesting to note that in their approach Peter and Beatrice resemble to what Michel Callon (Callon, 1987, 78-81) called "engineer-sociologists": professionals who are deeply involved with sociological questions about and in their field.

1.3 "A standard that is not used and doesn't evolve is not [a] standard": Change and Structural Flexibility

As described above, Beatrice's expanded understanding of a standard is different than what is described in current scholarly literature regarding boundary objects. In most of the literature dedicated to the study of scientific and technological standards and inventions such as boundary objects, a standard is designated to serve as a fixed reference, even while it is formed and debated. It may be flexible and adaptable (to some extent), but the boundary object itself, especially after its official release, is stable and fixed (Huvila, Anderson, Jansen, McKenzie, & Worrall, 2017, p. 1808). Beatrice describes her view of RiC and standardization in general as follows (Beatrice, personal communication, February 1st, 2021):

Today a standard that is not used and doesn't evolve is not standard. So after [the release of the stable version of the standard], this work it has to be continued. Continuously. And not like ISAD(G) or EAC-CPF where you have two successive editions [of previous standards], separated by a few years. It's not possible to go this way. We have to continuously assess this kind of standard now. It's a challenge [...] the community has to look at it, test it, use it. And the group that maintains the standard has to work with the community and it will be very important in the future.

Beatrice's understanding correlates with what Humphreys described as 'temporary closure' in SCOT. According to Humphreys (Humphreys, 2006, p. 242): "closure is a rhetorical process (e.g., how is safety defined), it can never be irreversibly closed. The term temporary closure is

therefore a more descriptive term to refer to the long-term processes of technological innovation and evolution. Rhetorical problems are only temporarily closed because they always have the potential to resurface in a different context.”

On this, Peter continues, describing the software development of the ontology as a potential prison (Peter, personal communication, January 5th, 2021):

You're a prisoner of your own standard. Because the application they [the customers] follow, [...] or they follow the decisions that you took, and if you're all of the sudden come and say “no, this information is not any longer in EAD”, or “it's in another standard or another field.” You have to rewrite, readapt the applications, the software. And this is a tedious and hard task to do. So what I found out with standards, once you take a decision it has a very long vector, and it's very hard to change decisions afterwards. So it makes sense to really do the brain work first and think how [...] do you really do the right thing? Do a proof of concept, try it out, discuss it - discuss it openly at a conference, or something - don't do it on your own. And only then start to develop production software.

This notion was emphasized a year after the interview, in ICA's international congress in October 2021. Peter added in his presentation about RiC that “you [the implementer] are not a prisoner of RiC-O. You can relate RiC-O to other ontologies and to other descriptive standards.”

The process of finding the white spots and to not creating a standard or a software that is a prison requires continuing discussion and consultation with the international and professional community. This is done deliberately and intentionally, as Peter continues to describe the importance of constant consultation in the development process of RiC-O (Peter, personal communication, January 5th, 2021):

All the standards, they don't fall down from heaven. They are made by human beings who are discussing things, and everybody has his or her cultural background, university background, archival background of how do you do daily things, and they're all different. So we have North American way of doing it, [we have] Beatrice who has a strong French approach. I mean Switzerland is just right next to France but we're doing things differently. And we have Australians within that group, they're doing things differently. And I think it's really important to always become aware, if you want to promote or work on a standard. Do you just implement the work that you have in a given moment, or do you make standard as flexible that you can put other believing systems or something within the standard? Because there are many, many different kinds of archives [...] if you take people from different National Archives and then you let them to define a new standard, then you perfectly can encode a national archive, but you can't encode a feminist archive, you can't encode a social history archive, you can't encode... whatever you have, on very different levels, is not made for that. [...] It's really, a huge task to open the standard, make it applicable for all different contexts, archival contexts that may exist.

Egyedi and Blind (Egyedi and Blind, 2018, p.1) write that “to an onlooker, changing standards may seem to contradict the intuitive perception that standards are stable entities. In practice, nevertheless, they are dynamic and do change.” From the point of view of the members in EGAD, this is immanent in the way RiC is constructed and developed as standard. In the constant back and forth between EGAD, the feedback from the professional community, and the proof of concepts projects, RiC continues and will continue evolving and changing. This kind of relationship and constant dynamic between EGAD, the standard, and the community creates a map of a world that has to be updated to eliminate as many white spots as possible.

From the point of view of the creators and the developers of RiC, the process of mapping the white spots, avoiding “prisons”, and developing the standard requires a constant and continuous work that is only echoed in the idea of a standard as a boundary object. The interpretive flexibility relates mostly to the artifact itself, while in RiC some of this flexibility can be found in the dialog and communication between the different parties that are needed in order to establish a consensus on future of archival description. In other words, the flexibility can be found in the process, not only or mostly in the standard.

According to Orlikowski’s model (Orlikowski, 1992) the steps that are described by Beatrice and Peter in the development of RiC are mostly in stage 1, *the initial development of technology*, with some initial beginnings of stage 2, *the institutionalized use of technology*, especially as the work on RiC-CM progressed between the drafts that were published in 2016, 2019, and the stable version that was released in July 2021 and the beginning of institutional cooperation. In addition, they are correlating with the notion of the standardization process as a *product*: they are working on the design, development, and appropriation of the standard. However, there are hints of other types of influences, namely of the standard as a *medium* of human action as it “facilitates and constrains human action”, and of institutional *conditions* of interaction with technology, as the ways the archives implemented the standard at the stage of development had to do with their intentions, norms, previous standards that have been in use, and their resources (or lack of). These are the “prisons” that the design, development, and appropriation of the standard are trying to anticipate and avoid.

As described earlier, Peter and Beatrice’s ideas correspond well with SCOT: culturally they are situated in the professional space constructed between EGAD and the international community, and in the case of RiC, continuously interpreted by and with the professional community that it serves. In their task to develop a standard that will fit almost all the archives, the differences between the archival practices and the materials described in different archives and institutions in the world bring up many questions regarding the process of describing archival material, and potential “white spots.”

1.4 From Infinite Contexts to Flexible Descriptions

In 2021 Antonio, associate professor in department of archive studies and coordinator of a digital collections laboratory, published a paper on the standard. In this paper some of EGAD's members shared thoughts on their ideas about contexts and provenance, following their work in the committee. This paper is also discussing the impact of the new standard on what is perhaps the core of archival science, the principle of provenance. The principle of provenance is considered to be comprised of two aspects: *respect des fonds*, which is to recognize and maintaining records according to their origin and in the units in which they were originally accumulated, and respect for original order, that is respect for organization and sequence of records established by the creator of the records (SAA, 2021). This is also criticized, re-assessed, and develops with the times. Therefore, it is also being re-evaluated with the creation and implementation of RiC.

Although there are some disagreements between the members regarding the ideas of contexts and provenance, four major themes appeared in their responses: first, that the new standard will be more flexible and will be able to accommodate broader notions of contextualization, that will also appeal to new audience who will use archival material differently. Second, that archivists and archives will have to adapt and change their ways of work. Third, that adopting RiC will allow archives to connect to other ontologies and resources within GLAM and outside of it. And four, that if the conceptual model is adopted, it will be more sustainable to implement it in the long term, compared with the current standards.

2. Weaving an Infrastructure of Meanings: The Archivists as Implementors

2.1 The Archivist and Change: Implementing RiC

In this part of the findings I will discuss the standard from the point of view of its implementors who are not members of EGAD. Archives are not the only factor in the field that is diverse. Archivists in themselves are a diverse crowd. Some are academics, some historians, some practitioners, some volunteers. Some studied archival studies or records management, while others rose to the occasion and taught themselves some of the profession's basic principles to preserve a community's legacy and history. Others know many languages, or just looked for a temporary job. And yet, there are a few characteristics that are shared by many in the profession, either by nature or nurture. One of them is that archivists are fixed on handling their work in certain ways.

Archivists in institutions that are affiliated with ICA are supportive of the idea of standards (ICA, 2021). According to an ICA report from 2021 on global practices in archival arrangement and description, 87% of respondents see standards as 'very or extremely important, and 84% see them as 'very or extremely useful'. Yet, 58% of the respondents have not adopted

ICA standards (ISAD(G), ISDF, ISAAR (CPF) and ISDIAH) in their work, or ‘Adopted in theory, but not begun to be implemented’. 52 different standards mentioned in response to the question on which standards the respondents are using to describe and arrange archival material; 48 are national/regional standards and 22 are technical/exchange formats. There were also 17 mentions of records management, quality and library standards, and six mentions of superseded standards. The survey concludes by stating that “there is a disconnect between the value people place on standards in theory and the implementation of standards in practice” (ICA, 2021, pp. 5-9).

This gap between the theory of adopting new work procedures and its practice was also noted in literature. Bak (Bak, 2016) lingers on the idea of archivists as a difficult audience to accommodate to change. In a paper on the redefinition of content and metadata, Bak writes that: “Archivists sometimes describe themselves as “risk averse.” [...] Already in 1993 Hugh Taylor [...] had his response ready: do not confuse being change averse with being risk averse. To refuse to change is to take the biggest risk of all. [...] archivists need to think more flexibly about data, use, records, recordkeeping, and archives”.

Antonio shares a similar perception on this subject, as well as some of EGAD members in his paper. According to Antonio (Antonio, personal communication, June 18th 2021):

The new standard, because using the link open data and semantic web technology, is so difficult for the community of archivists [...] complex for the community of archivists to understand these technologies. For me the great challenge is the archivists, the community of archivists, to absorb this new standard and apply this new standard. Because it’s totally different [than] the last.

Emily, who has joined the interview with Antonio, elaborates on the difficulties of archivists to accept the new standard. Emily is a literary translator who is working with Antonio in the digital humanities lab he coordinates (Emily and Antonio, personal communication, June 18th 2021):

Emily: I have been observing Antonio’s work for the past three years. And something’s I have noticed, [...] because it [digital humanities] arrived so late here, people are opening their minds to digital humanities and the possibilities of interdisciplinarity. And this also, maybe, paves the way for RiC. In the way that people think about it. Antonio’s concerns have been that archives aren’t necessarily ready to think interpretively, and so that in the way that it demands... That’s why he’s trying to create an interface with them.

Antonio: Not only here, in all parts of the world. [...]

Antonio: Not all [archivists] don’t want to interpret, but because it’s difficult to understand. Because they use another approach and another technology. It’s not trivial for the archivist.

Emily: So how does it make the archivist think differently?

Antonio: I think the archivist, the mind of the archivist is so conservative: to preserve the records, to preserve the documents. So I think this...

Emily: is a different movement to open [the records]?

Antonio: It's difficult to open...

Emily: to connect?

Antonio: To connect others, to use approach, to use tech... But not all archivists [...] [It is] different from people who work in museums. Because in museums [they] need to expose the documents. The libraries too, they need to expose more and have many other copies of the same documents, not necessarily to acquire, preserve [...] I think it is more important to the success of the new standard, depends on your acceptance for the archivist. So the archivists need to open their minds for this approach, of these new technologies. For to standard to be a success.

Antonio is also working on an interface to help archivists to make the transition between the current archival standards and RiC:

because I understand the archivist, [it is] not trivial, not easy for archivist to make this transition[...] So I am developing an interface. In our case, we use NOBRADE [Brazilian Norm of Archival Description], the standard for Brazil, ISAD(G) for Brazil. I am making this interface to guide the archivists [to] make this transition.

In the archives in Belgium, Thomas expands on question of platform that will support the internal work of archivists (Thomas, personal communication, July 15th 2021):

One of the main tasks internally is seeing how does it affects our work process and how can we ask from our colleagues who are now using a very basic... when we create our EADs we start with a Word template. So, every colleague taps its inventory into a Word template. And then we convert to Word template via Excel to an Access database to an EAD with macros, and the macros are also used to link the data from some with the inventories and so on. It is rather complicated. But we did it like this, it's a procedure which is already exist 15 years, because colleagues can work with Word. It's very basic, everyone can use templates, and you don't have to be digital minded. And now staff is also changing but I think the main challenge will be internally: how can we provide the platform that's easy to use for all colleagues, that we can evolve to RiC, and that we have to do because staff is scarce. [So] that you can automate as much as possible of the processes.

Both Thomas and Antonio see the need to mediate the new standard through a new platform, or through a new internal procedure, in terms of implementation and as a local translation.

2.2 “The current standards are already old”: Implementation and Interpretation

A useful explanation of the implementation of RiC in archives can be explained with the concept of boundary objects. This concept was discussed in the first chapter, with the ideas of Beatrice and Peter about the use of the standard in itself as a boundary object. This theme also resonates with the group who implemented the standard and were not a part of EGAD. Archivists who are not members of EGAD described their motivations to experiment with RiC differently. For Thomas, adopting and implementing RiC is a natural progression based on the technological developments and the expectations of the researchers and students today (Thomas, personal communication, July 15th 2021): :

I'm especially looking into RiC because I think for digital archives it becomes a necessary standard. [...] All the processes at this moment are based on the normal standards. But I think it's not feasible into the near future [...] I think the current standards are already old. But they're doing what they have to do at this moment. But at this point you see an evolution with RDF technology and it becomes widely used. And the archival sector is behind. And [...] RDF offers, you can see when you search into collections and you can see with the current standards a basic search pattern and it's OK, it's good. It's also that the students know how it works, that RiC and RDF technology allow you to see things which you can't see immediately. Because you can link elements with each other, or see relations which you can't [currently see]. Or which are not that obvious with current and normal use of heuristic search patterns from history students or other researchers who use our collections. So I think we have to go into time and we have to evolve and it's also the fact that with analog archives, I think RiC can be and will be useful because the element of finding hidden information remains, but certainly with digital collections I think you can do more. You can add extra elements for example.

For Thomas, then, the standard is an apparatus to open the collections and archives for new kinds of research, especially in cases of digital collections.

For Karl, RiC is a useful tool to reach the goals of the project he directed, a historical network analysis. The project then already uses the ontologies and data the library has, and allows the library to offer new services for user and researchers based on the new technology (Karl, personal communication, February 2022):

With regard to RiC, we have evaluated and tested best practice approaches to build a new data service [...]. This service will be mainly about integrating [existing] data from multiple, heterogeneous data sources (i.a. meta- and authority data from libraries and archives). Its purpose is to extract new information, e.g. about agents (social relations, languages, topics etc.) and the resources documenting the information.

In a PowerPoint presentation Karl elaborated on the different data sources and the ability of different audiences to use the interface in the future. Among the heterogeneous data sources, the service will support “data creation about data provenance”, and “extraction of statements about

agents”. Access to the service will be available for researchers via user interface for data retrieval, data visualization, and data download, as well as API for data retrieval and data downloads.

For Antonio, this is his life’s mission. He had been working on a similar standard in concept 30 years ago. That standard he worked on was not adopted then, and now Antonio returned to work on RiC in Brazil (Antonio and Emily, personal communication, June 18th 2021):

Antonio: My first research in archives, was applying new standard that I created [...] Specifically to describe archives, [...] I was influenced by Ranganathan, Shiyali Ranganathan. After I launched this standard 30 years ago, I couldn’t continue the application to this standard. I stopped because...

Emily: He felt let down.

Antonio: About the application. In that occasion it was impossible to [implement the] application. So I stopped. [...] I understand that the new approach of this standard, the multi-dimensional approach is similar to faceted approach of the Ranganathan standard. [...] So now, when EGAD proposed the standard, RiC, with the multi-dimensional approach, I return to my first research from 30 years ago. [...] Because the PMEST of Ranganathan, the personality, the matter, the energy, space and time, is so similar for the principal entities of the RiC: the agency, the record source, the matter the energy of the activity, of the space, of time [...] The first principal entities of RiC, so similar to PMEST of Ranganathan.

2.3 “Put it [in] human readable labels”: RiC and the Users

In addition, this group’s interviews strengthen the idea of RiC as a boundary object in two additional aspects: its ability to lower the threshold of required consensus that is needed for cooperation, and the ability to design local interfaces and installations that adhere to RiC, yet allow specific interpretation of the standard (Star, 2010). Here, Karl addresses this quality (Karl, personal communication, February 2022):

Reusing the concepts describing agents, agent relations, and the relations of agents to resources. RiC-O etc. does not only provide concepts, but both a coherent definition of entities, properties and relations (domain knowledge) and a mean to encode the semantics of the data with the data which means: it is independent of a programmers code or a professionals excel sheet [...] [it] can build on the semantics to extract new information, e.g.: a statement “Agent A isCreatorOf RecordResource” and “RecordResource hasAddressee Agent B” you can infer that “Agent A hasCorrespondent Agent B” (and vice versa).

To illustrate this, Figure 2 is a slide from a presentation of the project that Karl created, explaining the interpretation of the language of the standard:

Example 2: Properties of agents

- | | |
|------------------------------|---|
| ▪ Language of a Resource | = Language of creator |
| ▪ Place of Resource Creation | = Place of activity of creator |
| ▪ Subject of Resource | = Topic of creator (accompanying occupation) |
| ▪ Co-Author | = professional relationship between creators |
| ▪ Co-Publisher | = professional relationships between publishers |

Figure 2: a slide from a PowerPoint presentation on RiC implementation at the German state library, explaining the adoption of terminology for properties of agents

Karl describes the working process of implementing RiC in his institution. In the first stage, he describes the process of taking the data in the catalog and re-recognize it in RiC terms. This work later translates into the interface that will be used by the researchers, using the filter. Filtering options are based on the ontology and the conceptual model. On this Karl adds: “When implemented [...] [the model] will enable users to discover the data dynamically and thus supporting users’ information needs. [...] The exploration page supports the selection of the data (search, facets, time, statistics)”.

Facets

- Data categories
- Select values
- Highlight nodes (entities)
- Highlight edges (relations)
- Reduce nodes (and relations)
- Add nodes (and relations)

FILTER

Personen

- Personen
- Körperschaften
- Sachbegriffe
- Konferenzen
- Ressourcen
- Werke
- Geografika
- Beziehungstypen
- Beziehungs-Zusatzangaben

+ Weber, Wilhelm	6
+ Kippenberg, Hans Gerhard	5
+ Bücher, Karl	5
+ Smend, Rudolf	5
+ Siebeck, Paul	5
+ Köhler, Walther	5
+ Radbruch, Gustav	5

FILTER

Sachbegriffe

Liste durchsuchen

- + Soziologe
- + Philosoph
- + Hochschullehrer
- + Schriftsteller
- + Historiker
- + Jurist
- + Politiker
- + Wirtschaftswissenschaftler
- + Politologe
- + Volkswirt
- + Übersetzer
- + Publizist
- + Theologe
- + Journalist
- + Staatswissenschaftler
- + Sozialwissenschaftler

Figure 2: a slide from a PowerPoint presentation on RiC implementation at the German state library, showing some of the facets and filtering options

In addition to this approach, the model allows graphic displays and visualization. On this Karl comments:

The visualization approaches also support researchers with the “discovery” of research questions and “operationalization” of a research [...] Researchers will be able to download the data for doing (network) statistics with research tools, e.g. Nodegoat, Gephi. There’s also an alternative approach: to access the data via API.

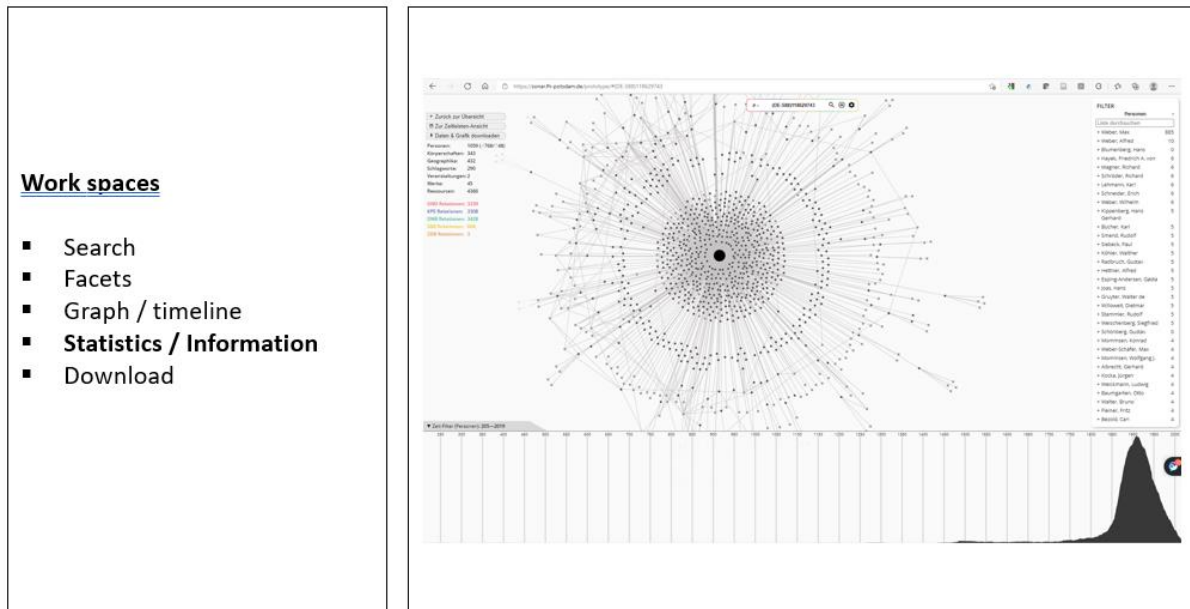


Figure 3: a slide from a PowerPoint presentation about RiC implementation at the German state library, showing some of the visualization options

These examples illustrate the ways in which RiC can be implemented and interpreted by this group and by the way it sees the archives’ users and researchers.

Thomas shares a similar approach toward the users of one of the projects he hopes to fund (Thomas, personal communication, July 15th 2021):

It's a data archive for the social sciences and the humanities. It's out of our normal scope [...] it's for researchers. They upload their datasets and it's like Zenodo but also with the archival part in it. So we assure a long time preservation of these datasets. So this means everything that comes into the state archives, I always say we try to conserve, to keep the information in here eternally [...] And you see from students and universities that they want more than that the traditional search [...] And I think RiC can be used, can be an asset. This was also one of the cases we introduced into the proposal, how for example using RiC in combination with repository for research data for the humanities and social sciences and in of in the future also for all sciences which are on federal level. So for this it was a test case, what can we do, what can't we do.

As stated above, the notion of boundary objects is clearly presented from the point of view of both groups. However, it does not explain the mechanics of how the standard was developed, and the different stages of standardization. I believe this relates to the way Star defined infrastructure, that is, the terrain in which the boundary objects, and specifically to a

certain characteristic of an infrastructure: “Because infrastructure is big, layered, and complex, and because it means different things locally, it is never changed from above. Changes take time and negotiation and adjustment with other aspects of the systems involved. The fact of infrastructure as relative to the knowledge of particular communities of practice, and redefining it in other ways as above, has led to many articles and research projects trying to understand the nature of the growth, maturation, and death of infrastructures.” (Star, 2010, pp. 611-612).

The relationship between the object and the infrastructure is the process of standardization. For this kind of analysis, I find that SCOT and DoT are more useful. In terms of SCOT, if in the group of implementers who are also EGAD members the design allowed temporary closure, then within the group who is implementing RiC and are not members of EGAD the process allows a *flexibility of structure* in the phase of stabilization: in it the artifact is quite fixed, but variations of it can still be flexible enough to be interpreted differently in different implementations (Humphreys, 2006, pp. 244-245).

From the point of view of DoT and similarly to the finding in the first group, in the case of the group of implementers who are not members of EGAD is still in stage 1, *the initial development of technology*, with and approaching stage 2, *the institutionalized use of technology*. Unlike the first group, however, they are correlating with the notion of the standardization process as a *medium*, and with institutional *conditions* of interaction with technology: the norms, schemes and resources both from the institution and from the standard are dictating the behaviors and use of RiC-CM and RiC-O. In fact, the lack of resources in other archives might just be another institutional *condition* of (lack) of interaction with technology. I conclude that the influence of the institutional *consequences* of interaction with technology, which is “reinforcing or transforming structures of signification, domination, and legitimation”, will be more apparent only if and when RiC will enter the third stage, *Ongoing Interaction with the Technology* (Orlikowski, 1992).

2.4 Politics and Resources

Following Peter’s saying, just as standards don’t fall from heaven, they are also not implemented without proper staff and budgets. Any model, conceptual or practical, cannot translate into action without resources and professional staff. These resources, of course, are largely dependent on the politics in which the standard is implemented. In Belgium, Thomas explained how the budget to implement RiC comes from grants, which are allocated to universities, and are affected by open-source politics that was adopted in the European Union. This changes both the scope and nature of how the implementation is handled, and is a reason in itself to choose RiC as a linked data model (Thomas, personal communication, July 15th 2021):

On the political level, one of the consequences of the open data politics is that with European support, all Belgian entities on the federal level and federated entities are talking about using the same standards and developing the same standard for linked data [...] And then there is a second part [...], that the EU is adapting the legislation for open data. And all European countries have to implement this legislation and have archival collections as open data online, it's better that you used the linked model [...] It's also one of the obligations when we get money, so we have to have all the software insert has to be published as open data, and the results and the analysis [...]

At the time of interview, Thomas was waiting to hear if the grant application will be funded:

This means, and now I come to the RiC part, that we can apply for grants like university on this. The grants are also divided into three: we have the possibility of grants on a federal part, on the Flemish part, and the French speaking part. What concerns us is our access to that in the federal part. This is the easiest, it is mostly in collaboration with a university, a Flemish one or Walloon one. And each year, sometimes it's two years, all the ten scientific institutions go in competition and we can apply for grants for projects. And one of the projects that we introduced but it was not funded was RiC. [...] This means we have to adapt RiC, if we won't get the external funding, we will have to do it with our own development team. The process will be a little bit slower and scope [the collections included] will be smaller.

While EGAD in itself is working voluntarily on the standard, without resources and funding, it is more difficult for archives to find the time and funding to test the standard.

Interpretive Flexibility in SCOT, ANT, DoT and boundary object

RiC is both a challenge and an opportunity for re-interpretation of archival description. The theories that are reviewed in this research are leaning on the idea of the ability of persons to be interpretive in their understanding and use of technology. However, each is relating to how this process and role of interpretation a bit differently.

In boundary object the object itself is flexible and open to some interpretation without much consensus needed, while in ANT (Latour, 2005) it is the *actor-network* and the *actor-world* who are structuring and interpreting the possible uses of technology.

One can describe the environment in which RiC came into existence and tested as an environment of networks that are influencing one another, as described in Bruno Latour's work on Actor-Network Theory (Latour, 2005). Using this approach, it is possible to describe this environment as one that includes six distinctive, yet intertwined networks.

The networks in the case of RiC are:

1. The professional archival community, including ICA and EGAD, who suggested and are developing RiC;
2. GLAM (Galleries, Libraries, Archives and Museums), the cultural heritage community that among other duties, is discussing and promoting standardization of the data about the objects in its care;
3. Governmental funding for cultural heritage projects and institutions that provides funding for implementation of RiC under certain conditions;
4. The semantic web and RDF technology which set the technical grounds and opportunity for the development and use of RiC;
5. Digital humanities laboratories that are involving academics and practitioners from different backgrounds and that are making use of data based on semantic web standardization;
6. And finally, RiC in itself, which creates a conceptual network of the records in and between institutions and archives in graphical representation.

All of the networks above are contributing to RiC both in themselves, but also in relation to the work that is being done in other networks. To illustrate this, I will use two examples: in the first example, Antonio's project about the Trans-Atlantic slave trade is done in a digital humanities laboratory (5) which includes academics from the GLAM community (2) who are testing RiC (6), which is based on semantic web technology (4), and the academic involved are reporting their conclusions to EGAD (1). Here, Antonio speaks about the networks of the professional community, of GLAM, and of the semantic web technology (Antonio and Emily, personal communication, June 18th 2021): :

For example, I want to connect my archives with other archives about the Atlantic slave trade, in Lisbon, in Portugal, and Angola. Because the Trans-Atlantic slave trade [went] through Lisbon, Portugal, and Africa. So, I have another kind of record set in Portugal, in Torre do Tombo. [...] The record set of the archives in Portugal is different than the record set of the archives in Angola, in Africa. [...] the challenge to use the new standard is to application in new kinds of difference of the record sets.

There are another fashion or another interesting aspect of the use in future RiC. It's the possibility to connect the archives documents or archive records from other libraries and museums. [...] in my case, in my application about the Atlantic slave trade, I can get another document from a library and a museum to send the same subject [...] So it is possible to use the RiC and the new technology, the open linked data and semantic web, to help us to make these connections.

Emily, who is working in Antonio's laboratory on two projects, elaborates on GLAM:

Antonio has been teaching, giving workshops and presenting, I think more practitioners have been coming to him than archivists. And so he is finding that

people are really interested, but it's not the archival community necessarily. [...] the libraries and the museologists, people from museums, developers.

On a conference in 2021, Emily has also commented on the assembly of the laboratory: that is comprised of archivists, historians, literary analysts, and an IT expert.

In the second example, Thomas's use of RiC (6) is based on semantic web technologies (4) on the technical and conceptual side, and governmental funding (3) in order to fund the project. Some of the ideas for this project have been originated in inter-cooperation within the archival community (1), and the conclusions of the grant are also likely to be published in that community as well.

On RiC, RDF and semantic web technology, Thomas explains (Thomas, personal communication, July 15th 2021):

At this point you see and an evolution with RDF technology and it becomes widely used. And the archival sector is behind. [...] RiC and RDF technology allows you to see things which you can't see immediately. Because you can link elements with each other, or see relations which you can't [see immediately]. Or which are not that obvious with current and normal use of heuristic search patterns from history students or other researchers who use our collections. [...] in RiC you can add extra elements which are interoperable with the link standard, and you can widen your search pattern.

Following his description of the adoption of open data in the EU and its influence on funding, Thomas also speaks about the mechanisms and networks that are needed for the creation and funding of the project:

So it is the building of functional open source prototype but that can be, that is a compatible with our current processes. It was also a tool, like this at this moment, the French already have it, but an adapted version also to convert to the convert of current inventories and archival descriptions of collections into RiC. [...]

The second part we introduced, we introduce the same project but we added two institutions. So as a small partner to the project it was the Royal Library because they have collections, library collections. But we have the archive part they have the library part. We wanted to analyze if it was possible to use or to describe with RiC heterogeneous collections. [...] there was also the Museum of Art and History. Because they have also historical documentation about their pieces in the museum. So with RiC we wanted to test if it's feasible because the Royal Library and the Art Museum are also scientific institutions on the federal level, to use one model to describe different collections.

On working in and creating working groups and networks, Thomas elaborates:

I'm also in the European group, the sustainable working group DARIAH. it's the European working group for research and discussion in the humanities, for

sustainable publishing of metadata [...] we did a workshop, where we brought the different places together, archives from Europe, people from Europeana and people from DARIAH. It was a combination with people different sectors and we had a workshop about things, which was already a few years ago, and it halts at that moment.

[In] one example, [...] pre-RiC [...] it was a collaboration with between DARIAH, EHRI, the European Holocaust Research Infrastructure [EHRI] and it was a project with our colleagues, it's also state archives. The CegeSoma, who leads the project. And the scope of EHRI is to have all the information about Holocaust collections [...] into a platform. And this started, that it was also a very basic texts on how to adopt archival standards, which standards are there, because a lot of collections were in institutions with no means [...] It was a kind of first aid. And we started this sustainable publishing of archival catalogues of 20th century archives and we evolved as DARIAH working group for sustainable publishing of metadata.

For the purposes of this research, I find that ANT is only of some help as describing the structure of the networks does not convincingly explain the emergence of RiC, and as the epistemic frame of this research is in odds with some of Latour's predispositions. Therefore, since ANT's ontological aim is that the description itself provides the explanation, I currently find that it is limited in its options to provide an answer to the research question of this study, at this time. It does not provide a clear and cutting explanation to the emergence and adoption of RiC in the archival professional community, but it might suggest an explanation in the future, after the standard has been either adopted or rejected by the professional community.

From the interviews and data that I have gathered and in the stage the RiC standard is currently at, I think that DoT and SCOT best describe the interpretive flexibility in the process of implementation and designing of RiC. Following Humphreys (Humphreys, 2006), the interpretation of technology occurs almost throughout the entire process, stopping only in temporary closures and flexible stability. According to Orlikowski (Orlikowski, 1992), the interpretive flexibility of technology exists in the *design mode*, with the flexibility of human agents that are designing the technology, and in the *use mode*, in which human agents can decide how and whether to utilize the technology. Orlikowski adds to this idea that "the ongoing interaction of technology with organizations must be understood dialectically, as involving reciprocal causation, where the specific institutional context and the actions of knowledgeable, reflexive humans always mediate the relationship." (Ibid., p. 34).

In the case of SCOT, one interpretation would be that temporary closure has been achieved by deciding to use an RDF graph that would connect to other ontologies and allow data sharing between archives and different institutions; and that stabilization keep happening in cycles in the case of RiC: the first cycle of temporary closure and stabilization took place during the discussions of EGAD between 2012 and 2016, until the release of the first draft to the

professional community; a second cycle of temporary closure and stabilization cycle took place between 2016, after hearing the feedback from the community, and 2019 and the release of the second draft; and a third cycle that took place after hearing the feedback again, and the new version of the draft that was released in 2021. In addition, in a conference in October 2021, the addition of two new components to the standard was announced: RiC-IAD (Introduction to Archival Description) and RiC-AG (Application Guidelines). Hence, in each cycle there has been negotiation and re-negotiation on the definition of the problem(s), followed by stabilization – which is flexible, too.

However, there is another interpretation, which I think is better. Giving the number of archives that implemented RiC, it is possible that stabilization has not occurred yet. RiC's success, then, would be if the standard has stabilized in the few years and is implemented in more archives.

Here I suggest that neither approach fully encapsulates the interpretive flexibility in cases of technological standardization processes that are meant for maintenance, or to last a long-time. In the case of SCOT, stabilization does not fully occur with RiC. In the case of its success, RiC will adapt and change with future technological developments that may change its shape and even basic categorization (Humphreys, 2016, pp. 244-245). Similarly, the DoT model does not fully address the constant dialog and influences that are between the organizations and the archives. As the flexibility lays both in the standard and its implementation process, these dialogs are imbedded in the design of how the implementors see the standard and its future implementation and development.

Conclusion – Designing Standardization Processes for the Future

Without models, it's hard to work; without a context, difficult to evaluate; without peers, nearly impossible to speak.

—Joanna Russ, *How to Suppress Woman's Writing*

It may be a truth universally acknowledged that a professional community in want of a good function must be in need of some standards, but when this concerns policy, reaching a consensus over standardization that involves a variety of actors is not a clear cut. In this thesis I showed that the common perception of standardization as a fixed and closed process is misleading, and that an implementation of a conceptual and ontological international standard in a complex setting can be a highly flexible and an adaptable process – to the point where the flexibility and the adaptability (interpretation) are how the standard and standardization process has emerged and is constructed. This process takes time (years or even decades, in this case) and relies on hybrid resources, as the actors are different from one another. However, the actions and the discussions that are taking place during that long period of time are considered by the

actors to be an advantage to the process. Furthermore, the actors are expecting that the standard will change in the future, with the involvement and use of other actors and according to technological changes. They are mapping an infrastructure of possible and potential meanings for future travelers and visitors who will use these maps, and hopefully contribute to them. The new standard challenges fundamental concepts in archival science and allows unprecedented sharing of data and information within the archival community and in the GLAM community. Collaboration with various actors is also a key aspect in its implementation.

I have also showed that current theories of technological standardization are explaining either the standard itself or the process of standardization, but usually not both. While they are interrelated, they are also theoretically distinct. Recent developments of SCOT explain a great deal of the social circumstances and socio-technological interactions that have contributed to the emergence of RiC as a standard, and in which RiC is currently in a state of temporary closures until it will reach stabilization. The concept of a boundary object explains the standard in itself as it emerged and negotiated: adaptable, flexible, and open to interpretation by the different actors. DoT explains both the standard and the standardization process well by the interpretive flexibility and the interactions that influences in terms of technology as a *product* by the first group, and as a *medium* of human action and Institutional *conditions* of interaction with technology by the second group. Lastly, ANT describes the different networks that were involved in the emergence of the standardization, but does not explain them – or at least, does not explain the initial state of the standard in the field just yet.

In this case, we can see how a standard that involves a diverse community of actors with limited resources can manifest flexibility, over time, while allowing constant change. In this setting, implementation of conceptual standards in a complex environment is not an end goal but an ongoing process of policy making that emphasis discovery and establishment of a concept of shared (data) future.

There are a few limitations to this study. First, it is set in an early stage of the implementation of the new standardization. That means that while, if the standard is a success, the target audience is hundreds or thousands of institutions, there were less than ten institutions or projects that have implemented RiC in the time frame of the research. From the six institutions and projects that were publicly known and stated as implementing RiC, I managed to interview five. Third, my research was limited to scholarly literature that was published in English; eight papers were eliminated from the study as only their abstract was in English. The fourth limitation is that the responses for the consultation drafts issued by EGAD are not public, so the immediate response of the professional community to the draft is not included in this research. Another limitation is that due to the practice of using pseudonyms in the research I was not able to quote from and refer directly to the scholarly publications that were published by the interviewees, but only to paraphrase them.

My hypothesis was that the RiC standard was created and formalized mostly due to external constraint and the process of rethinking the place of archives in the field of cultural heritage institutions. While the technological change of RDF graphic representation has been a factor in the emergence of RiC, it would not have created and developed without extensive and collaborative network of professionals both within archival science profession and within GLAM.

This thesis opens some other directions of research in the future. First, I have come to believe that some of the distinction between the standardization process that is presented here and the literature that is researching standardization processes is in the difference that is between technology that is for maintenance purposes, and technology that is for innovative purposes (also known as *move fast and break things*) (Vinsel, L., & Russell, A. L, 2020). A great deal of the literature on standardization is focused on the latter. As the objectives of the groups who design and work on the standardization are different, it may be worthwhile to investigate if the difference between these attributes contributes to differences in standardization processes.

In addition to that, when planning standardization there is the question and element of time. Standardization is used in a variety of technological and technical processes to ensure proper function and form. The element of time changes the preparation and complexity in which a standardization process evolves. When relating to technology and standardization that is meant for maintenance, the process takes longer, and thus is designed differently. Hence, it is my estimation that the process of standardization of technology for maintenance should differ in practice from the process of standardization of technology for innovative and ad-hoc purposes.

Other directions to future research are implementation of international standardization in other complex and diverse arenas, and research of standardization that is planned and implemented over a long period of time (> 15 years).

In public policy, this research suggests that processes of conceptual standardization that involve many participants in a diverse setting, or processes of standardization for maintenance and long-term purposes can be successful over time. It also suggests that the idea of standardization is not expressed solely in a process of 1-5 years with a fixed and closed blueprint for all; rather, that standardization can be mutual norms, schemes and technical apparatuses that are flexible, constantly reviewed and adapt to meet the epistemic community's needs. In a world that is saturated with technological standards, it is high time that we come to understand how they are created and manifested, both as a policy instrument and as a policy design.

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Appendixes

Glossary

AIS: Archival Information System.

Archival Representation/Description: The set of data crafted to identify and represent an archival resource or component thereof (SAA, 2021).

Archive: The whole of historical material that is created in the lifespan of a person or an organization. (SAA, 2021).

AToM: Access to Memory. An open source and multilingual application for archival description, based on archival standards.

Authority file: A compilation of authority records that describe the preferred forms of names used as headings in a catalog, along with cross-references from variant forms of the name. A name authority file often includes a few key facts about the entry to help ensure that the name being checked matches the entity represented by the authority record. (SAA, 2021).

Collection: A group of archival records that is created artificially by an organization or a person. A collection can be a part of an archive. Parts of personal or institutional archives, when most of them are in the custody of other institutions, are also called a collection.

DARIAH: Digital Research Infrastructure for the Arts and Humanities. A European working group for research and discussion in the humanities, for sustainable publishing of metadata.

EAC-CPF: Encoded Archival Context – Corporate bodies, Persons and Families is an XML standard for encoding information about the creators of archival materials.

EAD: Encoded Archival Description is a standard used internationally to encode data describing corporate records and personal papers in archives.

EGAD: Expert Group on Archival Description. An ICA committee that is discussing and developing Records in Contexts standard.

File (Archival Hierarchy): A group of documents related by use or topic, typically housed in a folder (or a group of folders) for a large file. (SAA, 2021).

Finding Aid: A description that describes contextual and structural information about an archival resource, usually about a collection, archive, or fonds (SAA, 2021).

Fonds (Archival Hierarchy): The entire body of records of an organization, family, or individual that have been created and accumulated as the result of an organic process reflecting the functions of the creator. (SAA, 2021).

GLAM: Acronym for Galleries, Libraries, Archives and Museums, the cultural heritage sector.

ICA: The International Council on Archives. The leading international authority on archives and the archival profession.

ISAD(G): General Standard for Archival Description.

Linked Data: Collection of interrelated datasets on the web that are using RDF technologies.

MARC: Acronym for Machine Readable Catalog. A library standard for cataloging.

Metadata: Machine understandable information about an object or a process for the Web.

NOBRADE: Acronym for Brazilian Norm of Archival Description. Brazilian version of ISAD(G).

Ontology: A common and formal vocabulary that contains subjects, their attributes, and the possible links between them.

Original Order: The organization and sequence of records established by the creator of the records (SAA, 2021).

PREMIS: PREservation Metadata Implementation Strategies. An archival preservation standard.

Producer: The individual, group, or organization that is responsible for the production, accumulation, or formation of something (SAA, 2021).

Provenance: A core principle of archival science. Comprised of Respect des fonds, and original order (SAA, 2021).

RDF: Resource Description Framework. A standard model for data interchange on the Web, part of the technology used to display data in the semantic web.

Record: data or information stored on a medium and used as an extension of human memory or to support accountability. (SAA, 2021).

Respect des fonds - the principle maintaining records according to their origin and in the units in which they were originally accumulated (SAA, 2021).

RiC: Records in Contexts, the new standard proposed and developed by the ICA. It is currently comprised of two parts: RiC-CM, the conceptual model indicating what to describe in archival description, and RiC-O, an ontology and a tool compatible with the technological standard to display archival description in the semantic web (ICA: EGAD, 2016).

Semantic Web: The vision of the World Wide Web Consortium (W3C) of the Web of linked data that is based on data in databases and vocabularies.

Series (Archival Hierarchy): A group of similar records that are arranged according to a filing system and that are related as the result of being created, received, or used in the same activity.

SKOS: Simple Knowledge Organization System, a W3 standard.

Turtle File: A document that allows writing down an RDF graph in a compact textual form.

Vocabulary: See Ontology.

XML/RDF: A syntax, defined by the W3C, to express an RDF graph as an XML document.

Questions for Interviewees:

1. How long have you been working in archive X?
2. Have you been working in different archives/cultural heritage institutions in the past?
3. What are the collections that you are processing? Do you have a specialization?
4. Are you coming from an archival science background?

5. What is (are) the processing schema(s)/standardization that you are familiar with? What do you make of them?
6. Did you have any difficulties in processing collection X using RiC standard vs. other standards? Were there advantages to this standardization?
7. How long did it take to implement RiC in your archive? What were/are the challenges?
8. If RiC had solved any issues, what have it solved?
9. Who was involved in the discussions around the implementation of RiC?
10. What did you think of the implementation process?
11. Is there anything else you would like to add?

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