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DIGITAL ARCHIVAL LITERACY FOR (ALL) HISTORIANS

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For centuries, understanding archives has been key to historians' work. Within the last decades, the increasing availability of sources in digital archives has fostered a growing need to understand how the logics of these influence historical research. Because, even if the digital representations of the individual sources might appear similar to those in analogue archives, using digital archives impact the work of historians in new ways. In this article, I offer an outline for a digital archival literacy which supports a professional reflection on the everyday uses of digital archives. I propose seeing the shift from analogue to digital archives as a shift in medium, which establishes a new set of logics for the production, content, distribution and use. The framework draws upon notions of media literacy developed within the British Cultural Studies tradition.

KEYWORDS Medium, Twentieth Century, Archives, Contemporary Digital Media, Cultural Studies, Media Historiography, Methodology, Literacy.

In recent decades, digitisation of analogue collections has been high on the agenda in archival institutions in affluent parts of the world. Prompted by the easy availability of millions of new sources online scholars have begun to consider what this means to historical research.¹ However, most discussions have focused on changing research practices rather than the digital archives themselves and the cyberinfrastructure in which they are embedded.² The focus on end-users' practices downplays the influence economic, technical and political aspects have on the possible uses of digital archives. However, these are just as important as scholarly practices as they impact the availability, knowledge organisation, and accessibility of digital archives.

In this article, I argue why historians, no matter if their subfield, needs to be able to question the economics, policies and systems design of digital archives. To that end, I offer a framework for supporting a professional reflection on the "everyday use" of digital archives and the powerful forces that shape online content and availability. The framework draws upon Stuart Hall's

encoding/decoding model.³ Hall's model sets out the parameters for a critical exploration of how the production, distribution and circulation of media (in this case, digital archives) influence signifying practices and interpretation (here, historical research). I argue that the shift from analogue to digital archives is a shift in medium which establishes a new set of logics for the production, content, distribution and uses of archives. The quality of historical research depends on an understanding of these logics because they have methodological consequences. A media studies perspective that aids historians' understanding of how archives change when they become digital is, therefore, a needed addition to historical research in general.

Understanding Archives

Knowledge of archives is essential to all historical research, no matter the sub-discipline. Modern French philosophy of the 1960s and 1970s produced two insights that highlighted this point.⁴ The first is that archives are powerful research infrastructures that influence both the representation and (re)production of historiographical traditions. The second is that historians need critical awareness of archives' knowledge organisation if they want to work innovatively with their collections. Even to those who have criticised traditional archives for reproducing existing power structures and historiographical traditions (e.g. serving national, male-oriented political history), knowledge of archival policies has been fundamental for deconstructing the logic of the archive. Thus, archival expertise has been key to historians' central role in interpreting the past.

Despite widespread acknowledgement of how important archives are in shaping the content of historical research and professional historiography, there has been little empirical work addressing the construction and knowledge organisation of digital archives. The impact of digital archives on public memory has received some theoretical interest, and so have end-users related aspects as mentioned above.⁵ However, what is missing is work on the economic, socio-cultural and political aspects of the (cyber)infrastructure that digital archives are increasingly providing for historical research. Only limited work exists in this area, most of it from Digital Humanities and Archival Studies, and most it theoretical, addressing the questions of digital archives and their possible effects on research and memory from a general perspective.⁶ This is a problem because when existing literature falls short in addressing the changes which actual archives undergo (in detail), it cannot provide sufficient guidance on how to be what James Smithies has called a "morally responsible user" of humanities' cyberinfrastructure.⁷ Just as is the case with analogue archives, users need to know the logics of the digital archives where they find their sources to reflect on how they influence their research. Without knowledge about the economic, political and technical aspects of digital archives, users are in the dark when it comes to questioning how digital archives act as co-producers of historical research. Recent work by scholars in

Information Science confirms the problem as they found that a majority of historians are using digital archives' research tools (finding aids, search engines, catalogues, etc.),⁸ but seldom consider their impact on methodology.⁹

Digital archives mean something very different in Archival Sciences, Media Studies, History and Digital Humanities. The digital archives I am particularly interested in here are those made by well-established archives such as national archives, special collections and similar institutions. The trusted position these hold in scholarly communities, and the professional manner in which they present their digitised holdings, may leave users to believe that dealing with their analogue and digitised material is the same. The seeming similarity might also be the reason why the digital collections from such institutions are seldom considered in the literature on mass digitisation from the Digital Humanities and Memory Studies. Nevertheless, they are essential to study. The policies and funding structures that drive them, as well as the way they provide access to sources, are very different compared to these institutions' analogue and digital holdings. Shortage of funds for digitisation projects entails that possibilities for attracting external funding and partnerships determine not only what is available online, but also how it is made available, resulting in smart looking and easy-to-use interfaces rather than transparency. The types of sources that are available online represent a very limited verity and content from what can be found on location. Still, their online presence makes them a thousand times easier to find. The perceived familiarity these digital collections' project, which exists only on the surface, nevertheless lead users to believe that dealing with the analogue and the digital collections in these institutions is the same.

The Archive as Medium

To develop a framework which historians can use to assess the changes collections undergo when they become available in a digital format, we can approach the archive as a medium. An archive (digital or not) is comparable to other media as it channels cultural productions (collections), just as a radio-channel or a website make content available to their users. Like other forms of media, technical infrastructure, design, funding, role expectations, and distribution methods shape the digital archive. Archives are, when they become available online, part of a digital cyberinfrastructure. When archival institutions produce collections, they become part of a digital landscape with its particular logic of production and distribution. This shapes the archive as a cultural form, as a medium, and it means that the framework needs to prompt critical reflections on the institutional, technical and user-oriented aspects related to digital archives.

The British Cultural Studies tradition offers an understanding of the relationship between media and society that can help to situate digital archives within a broader digital landscape. One of the tradition's founders, Stuart Hall, developed a communications theory which illustrates how meaning is encoded

into media products and decoded by users (if they follow a so-called “preferred reading”).¹⁰ Hall’s model was aimed at print and broadcast journalism, but adapted to digital archives it helps to uncover how they encode interpretations of their collections via the way they are produced and made available. Hall’s model conceptualises the entirety of mediated communication as creating meaning at all points in the cultural circuit. In short, it can help us to understand the totality of the new ways archives co-produce history when they become digital. In the Cultural Studies tradition being “media literate” means understanding the many factors that influence media consumption.¹¹ In the case of digital archives, this entails knowing how they affect what users find and how they perceive the digitised sources.

When Digitization Becomes Popularisation

A first step in developing a “digital archival literacy” is to understand how differences in the production of the analogue and the digital archive affect the availability of sources. In the analogue archive, all sources are, in principle, made available to users in the same way when first deemed worthy of preservation. Some collections might be inaccessible, but historians, no matter their subfield, are (ideally) trained to reflect on how that might impact their research (for media historians, for instance, this was long the case with audiovisual material).¹² Detailed finding aids help users navigate many collections and understand how they are structured, and training in historical sub-fields includes guidance on the essential archival institutions. There are of course collections which are not well accounted for, even in well-established archives. Still, most archival institutions make all sources available on equal terms if they are included in their collections. For example, in analogue archives, documents from minor sections of a broadcaster are registered, catalogued, and made available in a way that is not entirely different from documents from offices central to the broadcaster’s governing organs. In digital archives, access and availability are much different because of the selection and re-categorisation that happens in the digitisation process. It is highly unlikely that the documents from the broadcaster’s smaller sections would be the first in line to be digitised because of their limited ability to boost user numbers. Thus, even if hosted by the same institutions, digital and analogue collections represent two different logics for making things available. The production of digital archives is, in many cases, about making more widely available what is (already) popular. This different logic of archival production means that historians always need to consider what they are (not) likely to find online, and what it means to their work.

To understand the logic behind the production of digital archives, it is important to understand that the archival landscape is changing in terms of its funding, policies and usage.¹³ Traditional archives are becoming more user-focused.¹⁴ This can, for instance, be seen in their strategy papers when online presence is coupled with outreach to new and broader user groups. A typical

example would be the Danish National Archives' strategic goal to use digitisation as a means to gain more users, or Library of Congress' aim to reach "all Americans" with its new digital strategy.¹⁵ Digitising what is in high demand, of course, makes sense from the point of view of preservation and resource allocation, but it also sidelines the interests of researchers.

The digital activities of archival institutions often depend on additional or external funding, which means that they are likely to be subject to policies that emphasise popularity, marketisation, or current research trends. In the case of the Danish National Archives, any digitisation project depends on external funding or volunteer work.¹⁶ In Britain, foundations such as the Wellcome Trust and the Royal Collection Trust are huge benefactors when it comes to the digitisation of archival material. Their interests in promoting health research and royal history respectively, of course, influence what projects they fund, ultimately making their interest highly represented in the digital archival landscape. Increasingly, private for-profit companies such as Ancestry, ProQuest, Brepolis and Cengage are also becoming important players. Driven by the commercial interest, these for-profit companies make up another part of the cyberinfrastructure where the content made available online represents commercial interests.

With popularity, prestige, or profit being a benchmark for costly digital projects, particular strands of historical research are marginalised within the cyberinfrastructure. This happens as funding is tied to projects which are likely to increase online activity, or which are held in high regard by funders for ideological or commercial reasons. Africanists, media and gender historians, and people working with indigenous peoples in digital humanities, have pointed out that digitisation may become a driver for re-traditionalising history because external funders only want to pay for what is already popular.¹⁷ If historians at large are not aware of this dynamic, they have no way of addressing the issue in question, how it biases research in their (sub)-fields or their individual research. What helps to understand the dynamic, is knowing how the differences in organisation and financing of analogue and digital activities influence the content available and its consumption.

The Economy of Digital Archives

Economic structures and political/moral decisions influence media institutions and markets by making certain types of production, circulation and content possible. A critical analysis of what could be broadly be seen as the "political economy of digital archives" unearths the economic structures and policy decisions that make certain kinds of collections and technical designs available.¹⁸ The fundamental question to ask in such an analysis is what influences the priorities of the digital archives available in one's sub-field. If the answer is that popularity and user numbers are prominent factors, this could severely limit the range of topics available in online collections. Branding strategies, competitiveness, or profit incentives all influence what we find and,

especially, do not find online. It is clear that commercial enterprises such as ProQuest are digitising collections that they can sell, and Wellcome Trust digitises what supports their overall strategy to improve health for everyone. In the case of branding, making prominent items in a collection digital can demonstrate the high prestige of an institution and, at the same time, ensure widespread access to world heritage.

In other cases, digitisation strategies must be understood in light of regional politics. Archivio di Stato di Torino (Italy) and the City Archive of Aarhus (Denmark) are both significant in size and functionalities compared to many other archives on the same level in the two countries, making these regional archives highly visible in the collective cyberinfrastructure. Possibilities for crowdsourcing can also determine what is made available online, as this is a valuable resource if archives are short on money. A long culture of trust and collaboration between archives and their users in Denmark has meant that almost all of the documents available online from the City Archive of Aarhus and the Danish National Archive are transcribed by volunteers. In these cases, it is the interests of ‘the crowd’ that determines what is digitised, which often means what is useful for genealogy. An analysis of the political and economic factors that drives the online archives available in any subfield can help to lay bare how these different policies affect what is represented (and not represented) in the wider cyberinfrastructure of digital archives.

Historians must begin to consider the consequences for their (sub-)discipline if archives are digitising sources that are already popular. If sources, as existing literature tells us, are increasingly found online, such a bias in the representation of historical subfields will have long-run consequences. Using digital archives for our research, we must, therefore, ask the same questions of digital as analogue archives: what can I expect to find and how does it affect my research as well as the historiography to which I am contributing? Such questions are hard to answer as an individual, but sub-disciplines should consider making tools like the Beyond Citations portal, which has information on the selection of content and search possibilities of databases like ProQuest Historical Newspapers and Early English Books Online. For media history, it would mean collecting knowledge about the pre-selection of documents, clips and programs in archives such as the American Archive of Public Broadcasting, EU Screen and individual broadcasters’ online archives. Another possibility is encouraging reviews of digital archives which collectively would demonstrate the combined extent and content of digital resources available in a specific area.

On the level of the individual archive, it is equally important to understand the selection process *within* collections that are digitised. The Georgian Papers Programme, funded by the Royal Collection Trust and others, have a page called “What’s in the catalogue?”. However, from a methodological standpoint, it would be equally interesting to know what is *not* in the catalogue. Until recently, it was, for instance, not possible to see the medical records of King George III because the owner did not allow it.¹⁹ To

judge what the digitalised material represents, it is important to know what was omitted when the selection of material for digitation was made. Just as when working in analogue archives, this is a crucial methodological question. However, in comparison to the analogue archives where finding aids will often help answer such questions, this information is hard to obtain when it comes to digital archives.

Knowing the limitations of content represented in digital archives and how it might differ significantly from our experiences with analogue archives is one thing. But understanding digital archives also entail being able to ask how their actual interface and systems design influence our conceptualisation and interaction with the sources they contain. In analogue archives index cards, registers and other finding aids cater to certain kinds of needs and use. The policies that drive digital archives also have certain kinds of uses in mind, which influence their design. However, the differences in medium and intended user-groups make these designs and their biases very different from the logic of analogue archives. It is therefore essential to consider how being embedded in a wider cyberinfrastructure affects the design of the entire system of digital archives.

Questioning Systems Design

Digital archival literacy requires understanding how the production of digital archives builds on technical designs that influence their usability.²⁰ This means that (all) historians need to acquire digital competence on a professional level parallel to the skills that we have in understanding how classification and categorisation of sources affect our interaction with analogue archives and shape our research questions. If researchers use digital archives, they must understand (and teach) how different system designs impact finding and working with sources, because in the digital archive the only access to the sources is through its interface. One cannot avoid the technical infrastructure of the archive as it mediates all interaction with the items it contains.

In the following paragraphs, I will concentrate on three general aspects of digital archives' systems design that historians need to be aware of in order to understand how they may work as co-producers of historical research. These three aspects are 1) predefined subject categories and tags, 2) algorithms/search fields and sorting/display of results and 3) metadata.

Predefined subject categories tell us much about the archives' main structure (the conceptual data model). They structure the archive's material in ways that "encodes" certain readings and uses of the sources, as they label content as belonging to a group, e.g. "Second World War", "politics", "folklore", etc. Subject headings or categories are often used to create clarity across vast digital collections. These can be modelled on existing series in the analogue collections, but often they are not. The pre-categorisation make uses of the archive that cut across collections an obvious but methodological difficult choice. 'Tags' that link documents together thematically can do the same cross-

cutting, but are often much more finely granulated and applied on a lower level in the hierarchy, such as on the individual item level. Both predefined subject categories and tags cut across what would be collections, series and folders in an analogue archive by linking items together independent of the context that was attached to the analogue materials. The possibility of linking material together gives freedom from the ‘original’ context (e.g. sub-series, box, folder), but this flat structure only exists in the digital archive. The importance of knowing the context of source still applies, if we want to understand what the source represents within the context where it was created.

Predefined categories and tags can be handy for discovering items in places that one had never dreamed of looking in. Still, it obscures the logic of the analogue collections (such as provenance) that, in the analogue archive, is part of the backbone for methodological rigour. When using an interface’s predefined subject categories and tags for searching it is, therefore, important to 1) ask how these predefined categorisations of the material characterise the content (and if you agree for instance with the periodisation, gender or national/ethnic categories applied) and; 2) investigate if there is an index of the archive which shows the different categories. Having an overview of the possible categories gives users control over entry points. Using multiple entries is desirable because it ensures an extent of freedom from predefined categories when searching an archive and allows for testing the differences and similarity between the archive’s and the researcher’s conceptual models.

Searching via search fields and sorting of results is a second issue that makes digital archives’ affordances different from analogue. When we make use of technical infrastructures for our professional work, we need to understand how the often very central feature of the algorithm behind the search field works, including how it sorts search results. Just as predefined categories, the centrality of search fields to searching and sorting results in many digital archives invite or suggest certain uses of their resources, even if users do not have to follow these “preferred uses.”

Information studies scholars have found that most interfaces historians use in their search for primary sources do not cater to their needs.²¹ This is partly the result of how digitisation projects develop interfaces designed for broad user groups. While the index cards at analogue archives were made most often by specialists and designed for (specific) research purposes, the search possibilities in digital archives are steered by design choices that might favour simplicity (for the general user, not historians) or particular subjects (of interests for the institution). This can have a massive impact on how historians might use this tool.

The important thing is, again, having a system in place that ensures some degree of independence from the logic of the search field in order to maintain methodological rigour. Depending on the type of research project and digital archive, this could mean mixing different searches, including one that targets a given range of related topic, another that targets the production context (sub-

series or folders) of the documents of interest. It could also mean browsing manually through all the digitalised resources related to one's topic (given this possibility is provided). Using search guides is, of course, key, as they will often contain vital information about how to use search fields effectively. If they are good, they will provide useful information on the possibility to use Boolean operators to define and limit searches (AND, OR, NOT), or wildcard searches (using ? or * to substitute part of words or letters). Advanced searches can also be used to filter results by specific periods, areas or collections. This is very helpful, but again the user needs to keep in mind that they might not agree with the way the designers of the system defined those categories. Asking an archivist to provide more details about their system's design can prove extremely helpful, and the more historians ask the better digital archives will be in displaying the information we need.

The trend of having one central single-point entry for searching is one of the areas where the political economy of digital archives relates very explicitly to technical choices. Digitisation strategies often go hand in hand with a wish for broader outreach. This makes system designers favour interfaces and mainly search functions that cater to an audience who is used to Google. The focus on popularisation that drives the political economy of many digitisation initiatives (because they have to bring in external funding or is run by for-profit companies) thus risk hitting historians double hard. It can lead to extreme bias in the selection of material for digitisation in the first place, but might also mean that interfaces are made to cater primarily for other user-groups than historians if digitisation projects first and foremost are intended to ensure increased use and knowledge of the archive beyond academia. Historians thus end up using many digital systems for both primary and secondary sources, which are not a good match for their research needs.²²

Understanding the importance of metadata is a third issue that aids the navigation of digital archives. Sometimes search fields search in full-text documents (of varying quality).²³ Often, however, search fields look for results in the metadata that are registered on a certain collection, series, or item. Metadata is in its essence data about data. It can be what was usually registered in a finding aid (e.g. date, creator, location). But it can also be much more than that including very detailed subject descriptions spread out over categories that describe anything from content to material, preservation needs, or copyrights.

In the situation where searching for sources depends on metadata registration, users should question who did the registration, what the criteria for categorisation were, and if the metadata was evenly and systematically applied to all the material. Because metadata is often the only way to find sources in the case where they are not fully or partly transcribed, registration encodes certain interpretations of the source. And even if sources are fully transcribed, finding them might still depend on metadata because important information might not be part of the actual document. Unlike the predefined subject categories and tags, information about how and what metadata is applied in an

archive might only be partially visible to users. This is unfortunate because it makes it very hard for users to question whether they think the metadata they rely on for their search is sufficient for their purpose. If users are interested in questions about gender or ethnicity, it is essential to know how these categories are defined in a given archive's metadata scheme to judge whether searches will fit research needs.

As with predefined subject categories, metadata reflect the conceptual model of the archival system's design. In the cases where archives use international ISO or similar standards, it is the biases of these that are reflected. This can easily cause problems for historians, both because of the differences in language historically and because our conceptual model does not comply with the metadata systems in use. Gender history presents an obvious problem if we are interested in going beyond the default binaries, but a representation of historical periods can be equally problematic.²⁴ The use of Western conceptual models for metadata registration can also be a big problem for the proper representation of indigenous peoples.²⁵ In cases where information about metadata registration policies is not available, the most efficient way to ensure thoroughness in search is to create lists of synonyms and systematically go through all possible categories related to the topic of interest.

Resourceful institutions allocate vast amounts of time and money on registering and indexing metadata so that they are easier to search and fits the collections they are describing. An excellent way to improve one's skills in judging metadata registration and the challenges it might present to a research area is to read about how developers in these institutions work with metadata.²⁶ The best way to acquire more knowledge about a specific archive's metadata policies and its relation to search functions is often to ask for it, just as with other parts of systems design.

Responsible Users

In the context of digital archival literacy, it is crucial to reflect upon one's use of digital archives and the ways it (re)produces history. Users need to critically assess their practices, including how digital archives target them as part of a larger audience. As I have shown, digital archives challenge (all) historians' position as a central user group when they shift toward a more general public audience. Historians have never been the only users of archival collections (they were not the intended users in the first place, of course), but they have (rightly) been used to archival institutions whose mindset was tuned in on the possible use of their collections for historical research. The necessary context for understanding the collections was provided often with the scholarly community in mind. With archival institutions' focus on creating easy access for much broader user-group, historians may experience a loss of context when searching and finding sources digitally, because it is not provided as part of the way sources are found by searching full text or metadata using keywords. Thus, if historians, no matter their sub-discipline, want to make their (scholarly)

interests matter in the creation of new digital archives, they have to become users who are actively engaged in the discussion about digital archives. Many of the questions a historian with a high level of digital archival literacy would rightly ask cannot be answered without knowledge about the production of digital archives that is often not readily available today. But if historians do not make it clear that these are needed, they are not likely to be provided in the future.

In the existing literature, a number of suggestions on how to make historians share and discuss their own digital practices have been put forward. One of the most important relates to referencing. Studies of reference practices and the use of digital sources have shown that historians do not disclose how they access and use digitised sources in their writing.²⁷ It has been noted that this makes the use of digital sources invisible as it hides the digital practices that are now an embedded part of historical research. Furthermore, it makes the work of building and maintaining digital archives invisible as it obscures their value and impact. In any discussion of the financial situation of archives, it might be hypothesised that the absence of references to the use of digital material makes it harder to justify expenditure on digitisation – and that the lack of references to digital versions is detrimental to the professional interests of all historians. Changing how we cite our digitised sources and what information we ask of others about their uses of digital archives when we peer-review, would be a good place to start a discussion about digital archives and how we can make better use of them in the future.

With “digital archival literacy” I have tried to break down some initial questions historians can ask to their own (and others’) use of digital archives into the categories of production, circulation/distribution and usage. But even if all these individual aspects of digital archives and their use by historians are important, there is a dire need for historians to be able to address the collective significance of these issues. In the cultural studies tradition, the ways in which media (and in our case digital archives) affects culture is not seen as a one-sided process, but a combination of production, distribution/circulation and use. This means that even if there might be powerful commercial mechanism and policies driving the production of digital archives, they are expressed and (often) limited by the technological set-up (the system design) which provides and restricts access in specific ways. And historians are definitely using and conceptualising the sources they find in different ways which are dictated neither by the archival production nor content. What digital archives mean to historical research is thus not an outcome of a one-directional force, as no culture production circuit has ever been. What historians’ use of digital archives will mean to their sub-fields in the future is a combination of significance produced on many different sites of production, circulation, content and usage that, in turn, influence the other. However, as in all media circuits, some forces are stronger than others. If historians are not able to understand the basics of what it might mean to find and use sources from digital archives, their ability to

intervene and respond intelligently to developments on the production side and technical set-up are limited.

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Notes

¹ Fickers, "Towards A New Digital Historicism?"; Hitchcock, "Confronting the digital"; Jensen, "Doing Media History"; Putnam, "The Transnational and the Text-Searchable"; Laite, "The Emmet's Inch"; Romein et al. "State of the Field: Digital History."

² The term cyberinfrastructure builds on James Smithies' systems analysis of the humanities in *The Digital Humanities and the Digital Modern*, chapter 5.

³ Hall, "Encoding/decoding in the television discourse."

⁴ Burton, *Archive Stories*; Moore et al. "In other archives"; Stoler, *Along the archival grain*.

⁵ Mauthner and Gárdos, "Archival Practices"; Noordegraaf, "Who knows television?"; Jacobsen et al "Invoking Collective Memory."

⁶ Bak, "Not Meta Just Data"; Ernst, *Digital memory and the archive*; Dobreca, ed, *Digital Archives*; Thylstrup, *The politics of mass digitization*; Hoskins, ed., *Digital memory studies*; Moss et al. *Is Digital Different?*

⁷ Smithies, *The Digital Humanities*, 119.

⁸ Cook, "We are what."

⁹ Chassanoff, "Historians"; Schonfeld and Rutner, "Supporting the changing research"; Sinn and Soares, "Historians' use"; Solberg, "Googling the archive."

¹⁰ Hall "The Work of Representation."

¹¹ Buckingham, "children and media"

¹² De Leeuw, "European television history online."

¹³ Marty, "Digital convergence."

¹⁴ Given and McTavish, "What's old"

¹⁵ Strategi 2025; Digital Strategy for the Library of Congress.

¹⁶ Correspondence w. vice director of the Danish National Archives on 12 December 2017.

¹⁷ Daly, "Archival research in Africa"; Uricchio, "History and its shadow": Henderson, "Recovery", Gauthereau, "Incubator."

¹⁸ Davis and Endicott-Popovsky, "Pathways to integrating technical legal and economic considerations..."

¹⁹ Correspondence with Senior Archivist Royal Archives, 5 December 2018.

²⁰ Manoff, "Archive and database"; Sternfeld, "Archival theory."

²¹ DeRidder and Matheny, "What researchers need?"

²² Maxwell, "Digital archives"

²³ Milligan, "Illusionary order."

²⁴ Callaghan, "Gender and Georgian Papers."

²⁵ Hasegab, "The opportunities."

²⁶ Oliver, "Metadata enrichment."

²⁷ Blaney and Siefiring, "A Culture of non-citation."

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