# The Historical Hazards of Finding Aids

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**ABSTRACT**

Archivists have traditionally understood access through finding aids, assuming that—through creating them—they are effectively providing access to archival materials. This article is a history of finding aids in American archival practice that demonstrates how finding aids have negatively colored how archivists have understood access. It shows how finding aids were originally a compromise between resource constraints and the more familiar access that users expected, how a discourse centered on finding aids hindered the standardization of archival description as data, and how the characteristics of finding aids as tools framed and negatively impacted the Encoded Archival Description (EAD) standard. It questions whether finding aids are a productive or useful framework for understanding how archivists provide access to collections.

**KEY WORDS**

Finding aids, Archival history, EAD, Access, Usability,
Archival theory and principles, Archival description

M uch of the archival literature in the 1990s was optimistic, even utopian at times, as the Internet seemed to revolutionize what was possible with archival access. Many archivists heavily invested their always-scarce resources by embracing Encoded Archival Description (EAD) and collection management systems to take advantage of new opportunities in access. Yet, by the 2000s and beyond, a large set of usability studies consistently showed that online finding aids were not meeting user needs or expectations.[1] This article demonstrates how the history of finding aids in the archival profession can help us to better understand the phenomenon of "putting finding aids online" and to identify limitations in how archivists continue to conceptualize access to archival materials.

This article addresses the finding aid not as object or artifact, nor as a genre, but as a conceptual model or mental construct that archivists have historically used, and continue to use, to understand how they provide access to archival materials. What started as an innovation in archival practice became the dominant lens through which many archivists came to see how users interacted with their work.[2] The aggregate description central to archival practice became conflated with the narrative document medium, and finding aids became a key part of archives hagiography, primarily in opposition to library cataloging. While neither the principle of *respect des fonds* nor archival description mandated a particular end product, creating finding aids became a core part of archival practice.[3] As we look through archival history, we will see how the characteristics of finding aids as tools consistently colored how archivists understood access and defined the emergence of descriptive standards, often in limiting or negative ways. By the 1990s, finding aids became actively detrimental as they framed the creation of the Encoded Archival Description (EAD) standard. It is more appropriate to describe EAD as encoding finding aids rather than encoding archival description, as the standard preserved the remains of the entire messy history of finding aids within its tags. While online finding aids greatly improve access to archival materials overall, the remnants of finding aids past undermine their effectiveness in multiple ways.

Originally, finding aids were a creative solution to a fundamental tension in archival practice between usability and scale. From the early days of the US National Archives, archivists found it necessary to surrender easy access to grapple with the tremendous volume of their charge. To make the inaccessible at least minimally usable, archivists creatively developed a "kaleidoscopic variety" of paper information systems they called "finding mediums," or later, "finding aids," which were a compromise between managing archival collections in aggregate and the familiar and intuitive systems users expected. Limited access goals were a feature of finding aids, not a bug.

From the beginning, archivists used finding aids to combine multiple functions within a single tool. Archivists created description, managed it, and presented it to users, all by using finding aids. The conflicts within these different roles limited the effectiveness of finding aids at fulfilling all of them. As archivists attempted to use computers to support access, finding aids hindered them from seeing description as data and caused them to both underestimate and underprioritize the human labor necessary to structure description so that computers could manipulate and reuse it. When archivists did make real advancements in usability, they had to develop entirely new "superficial" systems—such as the National Union Catalog of Manuscript Collections (NUCMC) or the MARC Archival and Manuscripts Control Format (MARC-AMC)—at the cost of incrementally improving the structure and utility of the management systems that they and their users primarily relied on. When archivists called for standardizing the finding aid, the single-document consensus that emerged failed to provide enough structure for automated reuse, while preventing much of the local creativity that helped make finding aids minimally usable in the first place. Additionally, prioritizing standardization in structure over standardization in content is a consistent theme, from the *Rules for Descriptive Cataloging in the Library of Congress: Manuscripts*, to preexistence and primacy in the archival literature of EAD over *Describing Archives: A Content Standard* (DACS). Finally, when the Internet transformed the possibilities of information access, the limited access goals inherent in finding aids led archivists to prioritize listing materials rather than addressing the broader challenges that users face accessing and using material. Today, finding aids continue to marginalize the delivery of content, hindering archivists from leveraging the potential of aggregate description to transcend the barriers of the reading room.[4] Overall, addressing access through the framework of finding aids limited, and continues to limit, archivists' conversations and choices as they continue their work of providing more effective access to archival materials.

Today, when archivists speak of "finding aids," they obscure a wide variety of different archival functions, tools, and technologies. While professional jargon can often be useful, the term *confuses*—rather than conveys—information. In providing access, archivists now address and evaluate the complexities of effective description, data models, user-centered design, web applications, Application Programming Interfaces (APIs), and their benefits and challenges. Here, the many conceptual traditions of finding aids do not serve them well, and they deserve to be identified and critically rethought. Finding aids are a hazardous framework for archivists to understand or to describe how they provide access to archival materials.

## The Origin Story

The finding aid emerged in American archives practice during the 1930s and 1940s as a general blanket term that included a variety of paper-based management methods for intellectual control of archival materials. Articles outlining management and description systems for both archives and manuscripts appeared in the first issues of *American Archivist*, "for the benefit of those who may be facing similar problems."[5] In these early days, the finding aid was plural in form, as archivists like William J. Van Schreeven creatively adopted a variety of "finding mediums" that allowed archivists to maintain the original order of materials while providing more accessible access points to scholars. He overviewed lists, inventories, classification schemes, accession numbers, indexes, calendars, "the memory system" (which is exactly what you think it is), and suggested that card catalogs are the most effective finding aids.[6] To T. R. Schellenberg, finding aids included a number of forms, "of various types."[7] By 1952, Herman R. Friis even suggested adding "graphic" finding aids to the mix, utilizing colorful charts, graphs, and maps.[8]

Influenced by British calendaring and registrars, and an instinct to celebrate dominant cultural figures, manuscript libraries developed a variety of localized management systems and commonly described individual items. University of Michigan's Clements Library divided manuscripts into two rooms of Old World and New World collections, which were ordered on shelves by collection name and then in chronological order. The archivist, Howard Peckham, also maintained a "confidential" accession register that maintained collection descriptions, sources, costs, and general "remarks."[9] Peckham applauded researchers with little faith in archivist-prepared finding aids and later complained, with unabashed elitism, about how kids these days, "who wish to have laid before them only the documents relevant to their particular topic, and no extraneous matter, please."[10] He valued spending countless hours perusing every single document—if, that is, Peckham even let you through the door.

The newly formed US National Archives found most of these practices to be infeasible. Instantly charged with accessioning and providing access to over seven million cubic feet of records, the agency settled on description of records in bulk exactly how they found them, which led to the codification of "record groups" based on the governmental unit that created the records. The arrangement of file series was hierarchical to reflect the perceived natural structure of American bureaucracy. The advantage of this practice was that records could be pragmatically described at multiple levels of detail, depending on "time and physical facilities."[11] That this hierarchy documented how the records were created and used was an important additional benefit.

While the National Archives settled on its description practices rather quickly, the agency went through a number of administrative and procedural changes attempting to develop effective "finding mediums," so "members of the staff and others may locate desired information without undue expenditure of time."[12] In the 1930s, the National Archives first developed a card cataloging system, with Division cards describing the creating governmental unit, which then referenced Series cards that documented each file-series in its original order. Yet, John R. Russell admitted that "series cataloging probably can never be applied to all of the collections in the National Archives, although that procedure may be desirable."[13] As accessions piled up, this provenance-based cataloging system proved to be difficult to maintain with the volume of records it had to manage. Schellenberg would later describe how the National Archives found card cataloging to be infeasible except in special cases.[14] Philip M. Hamer also argued that because subject classification was impossible, "the catalogue did not prove to be a useful finding medium."[15] To be useful, cataloging simply required much more detail and uniformity than was feasible to manage the volume of modern public records. Instead, archivists relied on "Preliminary check lists and preliminary inventories," which "can conveniently be assembled within a short time after the records have been brought into the National Archives building."[16] This provided the flexibility for archivists to describe each new accession rapidly, incorporating any existing documentation "acquired" from the creating unit.[17] Perhaps the best quality of the preliminary inventory was that it provided archivists with tremendous flexibility at the lower levels of the descriptive hierarchy. Inundated by records managed by a wide variety of agencies, this model provided collection-level control but incorporated any existing, modified, or hastily made "finding aid" to lead users to relevant material. This would evolve into the collection-level control and flexible container lists that are still familiar to archivists today.

The National Archives moved away from catalog cards not because it based its descriptive practices on record groups, but because cataloging did not fit its scale and demand. Looking at the inventory format through today's finding aid lens can easily confuse the physical format of the access tool with the intellectual arrangement and description system. Schellenberg himself stated that catalog cards "simply represent another form in which information similar to that contained in preliminary inventories may be made available."[18] Preliminary inventories were easier to create quickly to manage records at scale and did not require the same level of rigor as cataloging. The National Archives relied on single-document inventories merely because staff could create them quickly, they were flexible enough to incorporate existing description, and they could be summarized and published for wider discovery. The contrast between archival description and catalog cards was not inevitable and would evolve later.

However, the finding aids created by the National Archives were actually not very effective at providing access. Schellenberg described preliminary inventories as "provisional in character" and "primarily for internal use."[19] Archivists were quite anxious and apologetic that finding aids were not complete or easy to use. Hamer hoped that over time archivists would create "final inventories," typically with series-level description, with titles, dates, and "information about its quantity, arrangement, and contents, necessary cross-references and other pertinent matter."[20] Archivists treated finding aids as being unfortunately incomplete with the implicit hope that someday detailed final listings would be possible, assigned to the permanence of ink on paper, a process that "may have to wait for many generations."[21] Card catalogs, typically accessible by title, creator, and subject, were much more familiar and user-friendly than a variety of creator-made descriptive tools structured by provenance. Archivists of this era were concerned that by not providing this level of detail and ease of access, they were not adequately caring for collections. From the start, finding aids were a creative compromise between scale and usability. Access was never the sole priority of finding aids.

In the 1930s and 1940s, archivists combined the creation of archival description with both the management and presentation of that data in one omnibus finding aid system. The combination was necessary because the technology of the time did not allow archivists to easily connect and repurpose metadata across multiple systems. This included collection management information as well as descriptive metadata. Repositories often kept an internal system such as an accession register, but once archivists created any detailed description, it made sense to create one authoritative record instead of duplicating the information across multiple documents. In the early days, the National Archives also made internal collection information that was not in finding aids available to users by request.[22] The result was that finding aids became internal as well as external documents, and archivists relied on them as much as users, which affected the format itself. Finding aids were also physically tied to the collections they described. Archivists typically assumed that they would mediate access to materials in some way. Commonly, at least in state archives, the use of the archives consisted of a user submitting a reference question to an archivist, who would then access the collection and provide an answer. Thus, it was convenient for the archivist, finding aid, and collection to be all located in the same place.[23]

The dual internal/external use of finding aids was, and would always be, somewhat problematic. In one example, Canadian public archivists began a major change in how they developed access tools around 1950 by shifting away from hyperdetailed calendaring to a system of Preliminary and General Inventories, much like the American system. As Jennifer Douglas and Heather

MacNeil recount, this shift accompanied major changes in the language used in these access tools, in "a move to a generally more professional tone."

> . . . "papers" became "documents," "presented by" became "acquired from," and records that were "divided" into sections were said instead to have been "organized or re-arranged."[24]

The dual uses of finding aids forced archivists to display archival jargon in public-facing descriptive tools. Major advancements in the professionalization of Canadian Archives not only transformed internal documentation, but also began to make archival access tools less familiar and more difficult for uninitiated users.

Archivists originally conceived finding aids as a creative solution to the problem of tremendous scale, the benefits of maintaining context, and a reality where staffing and other resources would always fall short of fulfilling their nearly unlimited mission. They were developed primarily to effectively service arrangement and description according to archival principles, and secondly to provide minimally effective access. Archivists used finding aids to both manage collection metadata and to present description to users, resulting in one omnibus tool that was limited for both management and usability. Finally, as finding aids were often physically near the materials they described, they had no mechanism for the delivery of content apart from listing items that an archivist could retrieve.

## The Discovery Problem

Archivists made use of the flexibility of finding aids to manage records at scale, yet finding aids never really permitted effective discovery across repositories. They developed a creative workaround with a two-tiered system of discovery using published notices and repository or regional guides. In 1940, the National Archives published the *Guide to the Material in The National Archives*, which Hamer called "the most fruitful activity of this period."[25] Because archivists only had limited control over record groups, the *Guide* was a sort of meta-finding aid, arranged and indexed by the creating unit. It "included references to any finding mediums received with the records, prepared in The National Archives, or otherwise acquired."[26] Other archives followed this model and published repository guides of their own, or banded together to print guides by region or topic. This model allowed archivists to present description in print, the most familiar form at the time, and generally met user expectations. Researchers would head to a nearby library where in the reference stacks they would find a regional, topical, or repository guide, which would direct them to travel to a relevant archives.

By the 1950s, demand was increasing for a national registry for manuscripts and archives, primarily from professional historians. This effort required presenting archival description from across repositories at least somewhat uniformly, and the variability of finding aids was an obvious barrier. The first attempt at standardizing archival description was made by the *Rules for Descriptive Cataloging in the Library of Congress: Manuscripts*, a collaboration between the library's various cataloging divisions and its Manuscript Division. Its creators naturally intended it to fit the library's existing infrastructure of descriptive standards and catalog cards. Here, much as with finding aids, the *Rules* conflated description and presentation. At the same time, the creators outlined ten fields, describing their content and their position within a single record. The structure of each record was prioritized over strict prescription of the content of each element, as "many of the rules are stated in somewhat general terms."[27] The *Rules* allowed for the first true interrepository discovery tool, the *National Union Catalog of Manuscript Collections*, or the NUCMC.

The NUCMC filled such a wide demand that it garnered widespread affection. According to Terry Abraham, the only significant early critic of the NUCMC was Richard C. Berner, who pointed out that the *Rules* demonstrate the major descriptive conflicts between libraries and archives, and that the "the librarian seems to have prevailed in the final result."[28] He was critical of description by manuscript groups and what he saw as the NUCMC's encouragement of item-level cataloging, which he describes elsewhere as "the descriptive glorification of selected items."[29] Berner was less concerned with the formatting of the NUCMC than with its influence on the descriptive practices of individual repositories. Abraham described how, much like the discovery power of major search engines governs web development today, "[the] NUCMC has emerged as the institution dominating manuscript description."[30] Berner singled out the final Provenance element in the *Rules* as being particularly poisonous to archival practice. To Berner, who romanticized Schellenburg and the early practices of the National Archives, provenance was not something to be merely written down in a metadata field, but was naturally reflected in the maintenance of a collection's original order. Berner feared that "There is a strong probability that [the NUCMC's] techniques will be simply carried over," and the organic *fonds* of collections would be undermined.[31]

Abraham waved away those worries, describing them as Berner's "uneasiness over the adoption of a superficial descriptive program."[32] According to Abraham, cataloging was inevitably incompatible with archival descriptive practices, and he described the state of access by the late 1970s, which commonly included a separate top layer for discovery: "The main use of the catalog is in providing access to the finding aids, which give direct access to the container, folder, or item in the manuscript group."[33] Yet, we could see from the National

Archives' first attempt, the catalog format was not doomed to be in conflict with provenance-based descriptive practices, only the Library of Congress's union catalog model was. When archivists like Abraham started contrasting cataloging with finding aids in the 1970s, the cataloging they were opposing was the Library of Congress systems, and particularly the practice of some manuscript repositories of splitting up collections into artificial manuscript groups for cataloging.[34] This concern, in combination with the adoption of a "superficial" bibliographic discovery system, separate from provenance-based local description practices, is where a myth of the superior single-document finding aid starts to emerge. Archivists' caricature of cataloging served not only as a cautionary tale to prove the superiority of their descriptive systems, it also provided the opportunity to ignore the persistent usability problems of finding aids.

## The Early Computing Era

Since at least the late 1960s, the archival literature has often assumed that the computer would revolutionize the profession. The first national attempt at archives "automation" targeted the biggest drawback of finding aids by attempting to make the subject-based access that was more familiar to users feasible by requiring less labor. One archivist imagined optimistically how "A computer generated index . . . might improve intellectual control over archival materials without an expenditure of staff time beyond that already employed in collection processing."[35] Influenced by earlier specialized manuscripts access projects such as the Library of Congress Presidential Papers indexing, the National Archives led a consortial effort funded by the Council on Library and Information Resources (CLIR) to develop SPINDEX II (or Selective Permutation Indexing), an adaption of computational methods like IBM's KWIC indexing to finding aids.[36] After a series of fits and starts, the National Archives selected seventy already-consistent finding aids, eliminated still more variations, and produced working software that could be run on the computer systems of large universities.

Cornell University required quick information retrieval for its presidential papers and described how its current finding aids, "do not necessarily provide adequate intellectual access."[37] For its SPINDEX II implementation, Cornell developed a special "computer-compatible listing format" for its finding aid container lists and wrote each file onto coding sheets for punchcards, which were remarkably similar in structure to the spreadsheets still in use today by some repositories for file-level description, showing that much of the underlying processes remains the same. After conversion to punchcards, operators would feed listings of thousands of folder headings into a computer, which counted and sorted key words and printed a large 992-page index with references to

individual files. SPINDEX II allowed archivists to maintain the original order of a collection, but still produce listings by subject, personal name, and organization that were more familiar to users. Yet, the cost was tremendous. Cornell poured a large amount of unsustainable resources into one collection of about ninety linear feet over two years, and still did not finish the project. Archivists found that their approach to subject indexing was inefficient, but deemed the results, "satisfying," by meeting only the broad qualification that "The quality of a finding aid can be judged by its success in providing access to collection content."[38] In his review of the report, Cornell archivist Douglas A. Bakken cautioned the perceived failure of SPINDEX II in the profession and stressed that the project was really only applicable to large repositories dealing with a "paper explosion." He remained optimistic about future consortial efforts to use computers to facilitate access.[39]

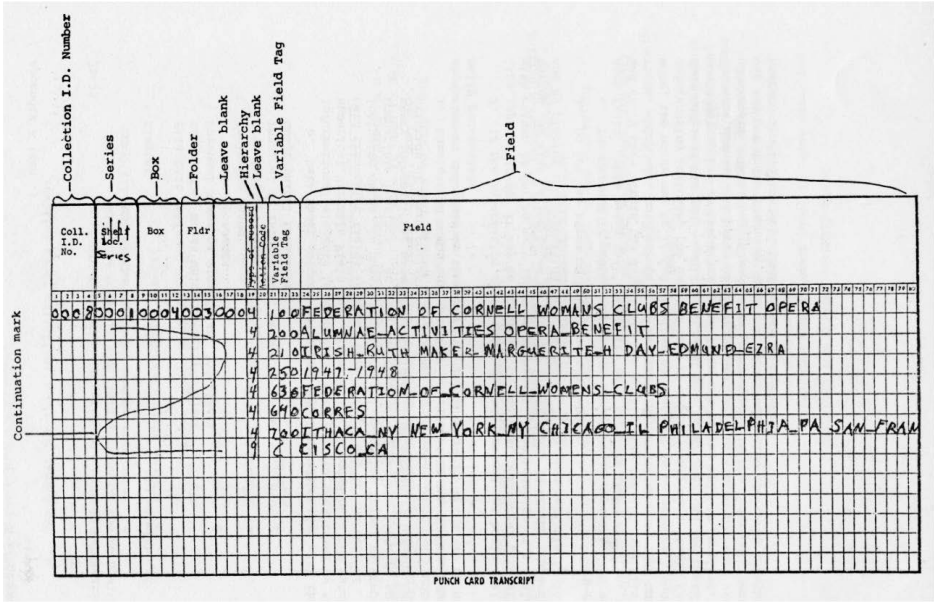At around the same time SPINDEX was faltering and Richard Berner was



**FIGURE 1.** Cornell SPINDEX punchcard transcript[40]

celebrating record group inventories, the National Archives found its "administrative and descriptive programs inadequate for controlling archival records."[41] Staff developed the A-1 computer system for internal collection management, which would become the first archives-specific software designed to manage and store descriptions in digital form. Data entry accounted for 60 percent of the data costs, so administrators purchased a specialized tape-typewriter microcomputer that provided automated data validation, which even "sound[ed] an

alarm."[42] A-1's creators designed the system for "batch text editing," during which old descriptions could be amended, modified, or corrected. Data were stored in MARC-like fields on magnetic tape that the system copied to disk storage during each addition or edit before writing it back to tape. The system always maintained tapes for the last three generations of changes.[43] The system only managed series descriptions that averaged about 500 characters, and the output was too large for paper, so the A-1 system only exported its data to microfiche twice a year. The National Archives budgeted the equipment over twenty years, which is how long administrators estimated it would take to enter 200,000 series descriptions, and they expected the entire program to cost $75,000 annually, or over $250,000 today.

SPINDEX II, which made hopeful appearances in many early 1970s publications and was featured prominently on the cover of the 1972 Society of American Archivists Annual Meeting program, was mostly absent from the archival literature by the late 1970s. The National Historical Publications and Records Commission (NHPRC) did use a modified SPINDEX system for the 1978 *Directory of Archives and Manuscript Repositories in the United States*, but even by the late 1970s, the National Information Systems Task Force (NISTF) would reject SPINDEX as the basis for a descriptive national standard.[44] Cornell's report mostly discusses the failure of what we would now call community-building efforts, and its "Today and Tomorrow" conclusion focuses on improvements in "institutional networks" rather than in the technology itself.[45] The A-1 report focuses mostly on humans, and Calmes stresses that it was a "computer-assisted system rather than a computer-centric one," describing how "an overwhelming part of the A-1 system involves people." The paper concludes with skepticism and a "fair warning," for similar projects to weigh if "there is enough time, enough people, and enough money to convert the finding aid information into machine-readable form."[46] Today, the collection discussed in Cornell's SPINDEX II report does not appear to have an easily accessible online finding aid.

Much like card catalogs in the 1930s, computers in the 1970s were not able to handle the scale of archives. Yet, in both cases, the problem was not necessarily the formats themselves, but the human challenge of developing efficient and scalable workflows around them as well as the lack of a professional community to share knowledge and resources. Failures were not caused by the "cost of system development," as the National Archives and federal granting agencies were certainly willing to spend money to chase the dream of automation.[47] What had begun as a positivistic and technocratic labor-saving vision actually shed light on the tremendous labor costs of converting unstructured metadata into computer-actionable form.[48] This was a hurdle it would take not just thirty years for archivists to cross, but also required a new conceptualization of archives as points of data rather than narrative prose or bibliographic

fields—an effort where finding aids were unhelpful and distracting. Only after archivists understood the scope of this challenge did they value and prioritize structuring description, or making it "machine-readable." Instead, archivists first attempted to use computers to make finding aids, only at reduced labor costs. Many of them saw punchcards and reels of magnetic tape as the Whiggish solution to the essential conflict in finding aids between scale and usability.

## Standardization Wars

The branching off of separate "superficial" systems like the NUCMC solved an immediate need by enabling cross-repository discovery, but as descriptive systems did not allow for data reuse or collection management by repositories, published guides typically sat completely apart from local descriptive systems. By the 1970s, the further professionalization of archives and the increased volume of records led archivists to become more and more concerned that their traditional methods failed to provide enough intellectual control. The first wave of optimism around the NUCMC and the NHPRC's publications had given way to disappointment. Early computers seemed to offer tremendous labor-saving potential, if only archivists could work together. All of these factors contributed to a growing call for repositories to standardize their descriptive practices.

In 1973, Edward Papenfuse lamented a mostly imagined "retreat from standardization" since the 1940s and blamed the absence of national leadership for the lack of collaboration. He saw the variability of local practices only "magnified" by shoehorning them into the NUCMC, but still believed it demonstrated the potential of standardization. He adeptly described individual local practices as causing "instant obsolescence" in finding aids.[49] Papenfuse saw that by relying on a variety of unstructured paper formats to hold description, archivists were creating an enormous long-term metadata management problem.

Still, archivists were creatively developing dynamic local descriptive practices to salve the accessibility problems of finding aids and arrangement by provenance. In this era, card catalogs were a relatively familiar, comfortable, and intuitive system for researchers. The Minnesota Historical Society developed a system of "individual collection inventories with access provided through a dictionary card-catalog."[50] While many repositories adopted the National Archives' inventory system, they still maintained card catalogs and a variety of other systems to facilitate discovery through piles of narrative-heavy inventories.

Berner went ever further, rebuffing what he called "*de facto* segregation" between "card catalogs and other finding aids" in many repositories, he argued for a single integrated descriptive system.[51] With M. Gary Bettis, he tackled the discovery problem of finding aids by developing a "cumulative index" of names from the file level, along with subjects and geography from the record group

level. Guided by the suggestions of Schellenberg on subject description, they spurned the specialized nationally authoritative subject analysis of library-style cataloging in favor of "a few broad subject headings corresponding to the main lines of human activity."[52] Thinking outside the box, Berner discovered that using a standard format on loose-leaf paper in binders was substantially cheaper and easier to maintain than a card catalog. Berner and Bettis also argued that having effective indexes for discovery lessened the need for long narrative description.[53] Here, increasing volumes of records could be managed in their original order, but abstracted away and presented to users in more usable ways.

Many of the localized descriptive practices developed by archivists were certainly problematic. Some repositories took unsustainable shortcuts to meet user demands, maintained idiosyncratic descriptive systems to service a love of so-called important or notable people and documents, and employed practices grounded in celebratory understandings of power and dominant cultures. However, archivists also based many of these localized descriptive practices on their direct interaction with users and the limitations of narrative inventories. Berner himself called for a better understanding of how "scholars" used descriptive systems.[54] The Society of American Archivists' (SAA) first published manual on arrangement and description favored this organic uniqueness of local description, arguing that "The kaleidoscopic variety of systems . . . represents the application of the basic rules of archival enterprise to the situation of time and place." The manual pronounced descriptive discourse as "fuel[ing] heated discussion."[55] Prior to standardization, finding aids were a suite of different, yet often dynamic, paper tools that enabled the management of records at scale while allowing archivists the flexibility to adapt a local variety of systems for better discovery and presentation. They were creatively trying to meet user needs and expectations.

The Society of American Archivists attempted to meet calls for standardization, but the vision of the finding aid as a narrative document undermined its attempt to develop a professional consensus on descriptive practices. The original SAA Committee on Techniques for the Control and Description of Archives and Manuscripts simply became the Committee on Finding Aids. This group set out to standardize the finding aid, from a suite of locally derived descriptive documents into a narrative-form single document mashup that still permitted the lower-level flexibility of the National Archives' preliminary inventories with some elements that could be mapped to NUCMC records. Published as an SAA report in 1976, *Inventories and Registers: A Handbook of Techniques and Examples* did not present itself as a standard, but SAA hoped "that from this version a standard can be compiled."[56] Envisioned as a narrative document that a user would read through like a book, the first two of the seven elements were a preface *and* an introduction. The model also featured what we now know as

Historical and Scope and Content notes, and allowed for series description, accession-like container lists, item-level listings, or indexing at the lower levels.[57] The *Handbook* did not distinguish between what we would now call data content standards and data structure standards, again outlining both a set of elements and narration on what each should hold, but structure was a clear priority. The authors featured examples throughout and expected archivists to use the *Handbook* as a model to divide the features of their finding aids into a standard set of elements and define where they "might appropriately be put."[58] For most elements, the authors did include a "Content and Format" section, but they made only general prescriptions about what topic each narrative should focus on. The *Handbook* failed to provide even general guidelines for dates or titles other than series titles, which it merely suggested "should be brief and accurate" and "self-determining."[59] The examples featured dates throughout—wherever an archivist thought they were applicable. This first attempt at standardizing finding aids not only completely failed to structure archival description for easier and more sustainable management, it settled on presenting description in a singular, esoteric, and unfamiliar way. The *Handbook* contained none of the good, and all of the bad of finding aids. While its publication generated a controversial—if not outright hostile—response, it was unfortunately influential as a model, and, more than any other single publication, it defined the form of the finding aid we still know today.

For about two decades, archivists would complain in the literature about "kaleidoscopic," "idiosyncratic," "esoteric," and "eccentric" local descriptive systems.[60] They saw redundancy and the tremendous costs of structuring this important information so computers could read and act upon it as data. With the benefit of today's vantage point, we can see that localized finding aid practices were unsustainable, hindered reuse, and utterly failed at interoperability. Description was not modularized or consistent and was tied to the physical paper medium. Still, this "descriptive chaos" had allowed archivists to stretch their resources by maintaining incongruent arrangement systems while still empowering them to adopt creative ways to make collections more accessible and familiar to users.[61] The professional discourse of the time that centered on standardizing finding aids hindered archivists from solving these problems. Promoters of standardization underestimated the labor costs of structuring description, failed to see how description and presentation must not be tied to any specific medium, and tried to fix description onto a singular document form that was unfamiliar to many users. Resisters of standardization failed to see how compartmentalizing description and defining it as data would enable reuse and even greater flexibility in the future.

## The Bibliographic Network Era

After about a decade of arguing about standardization, the archival literature described a major "sea change for the archival world."[62] This change was the emergence of professional bodies to develop consensus standards to guide archival practices. Originally convened to sort through what many archivists saw as competing systems of the NUCMC and the NHPRC *Guide*, SAA established the National Information Systems Task Force (NISTF) in 1977, which became the first model professional standards group.[63] By this time, there had been major advancements in the use of computers to facilitate information sharing along with a broader understanding and acceptance of the computer and of the idea of data. MARC had been around for about a decade, and the bibliographic network started by OCLC was expanding nationwide. This time around witnessed a haste to change, and some feared that resisting progress "is to relegate archivists to an intellectual and professional backwater."[64]

Once convened, the NISTF decided that the path forward was not a "monolithic database in the sky," but a standardized "information retrieval system to make archival collections widely available to researchers."[65] A widely cited unpublished 1980 report by Elaine Engst found that both manuscripts and archives had many common descriptive elements across local systems, giving credence to treating description as standardized points of data for both.[66] With funding provided by the National Endowment for the Humanities, the group set to work establishing a standard "data dictionary" for all archival description. This would be "a format for archival information exchange that could be used with all types of hardware and software and could even be adapted for manual applications."[67] Setting aside the standardization of finding aids themselves, as well as the intransigence of the profession, the group focused instead on defining the underlying content of archival description and quickly made major advancements.

By establishing a new professional discourse not centered on finding aids, the NISTF stimulated important conversations on arrangement and description theory. A dynamic discussion ensued within the NISTF about how archivists should structure description. The coordinator for the NHPRC *Guide* program and task force member Nancy Sahli advocated for a singular meta-hierarchy of states, cities, repositories, record groups, and collections.[68] Engst's report may have been the first to suggest that archivists could incorporate hierarchy by linking together different levels of discrete records, as "the unit being described could be identified as collections, record groups, subgroups or series, but some descriptive elements applied to all and links provided between levels."[69] David Bearman and task force chair Richard Lytle in particular were skeptical of the intrinsic hierarchy of archives. Lytle recounted in an NISTF summary how "the

doubts I had long held about archival theory or dogma were sustained."[70] They argued that hierarchical arrangement of records does not effectively document the use of information in modern organizations. Instead, Bearman and Lytle showed the advantages of documenting records' functions and their forms, the "commonalities in their structure."[71] They suggested creating authorities for these functions and forms, and making both their ties to archival units and the relationship between them explicit in archival description. This intellectual context of records would serve as more effective access points to archival description than mere hierarchical arrangement.[72]

Despite the important progress the NISTF made toward more data-centric and content-focused thinking, wider technical and political expectations led them toward developing a data structure standard based on MARC.[73] MARC was the coolest tech of the time, and the task force thought that the development of MARC for Archives and Manuscript Control (MARC-AMC) would be easier than incrementally advancing existing finding aids toward interoperability, while also rapidly enabling national discovery by allowing description to "be integrated into existing MARC-based bibliographic networks."[74] The benefits and limitations of MARC as a format informed the standard from the start. Envisioning national access through bibliographic cataloging networks, MARC-AMC mandated more "painful precision" than archivists were used to.[75] Most of this effort had little immediate local benefit. The use of authorities in itself may not have been an insurmountable barrier, but enforcing such a high level of control for lower levels prevented any implementation of hierarchy. Archivists could not incorporate all of their description in any practical way. While AMC did "provide a framework for multilevel description," these records "were totally out of proportion" and became an "irritating presence" in catalog systems.[76] *Archives, Personal Papers, and Manuscripts* (APPM) assumed that it was best practice "to give all cataloging records, regardless of level, a consistent format" and that the "appropriate focus" was the collection level.[77]

Multiple proponents were confident that MARC-AMC was driven by archivists rather than manuscript curators or librarians, unlike past efforts that "only had a remote relation to archival needs and practices."[78] However, as with the NUCMC and earlier Library of Congress efforts, the major barrier for MARC-AMC was that, in practice, it enforces what Marcia Lei Zeng and Jian Qin call the "one-to-one principle" for metadata, where each item has a single corresponding record.[79] Archival description instead contains groups of records, with different levels of control, which are linked together in meaningful ways. As Steven Hensen would later describe APPM, "it synthesizes basic archival principles into the broader framework of bibliographic description."[80] While AMC was created by archivists, for archivists, at the end of the day, it still fixed archival description into a catalog of single records.

Multiple archivists have described the bibliographic network era as a period of rapid innovation, but many of these advancements would prove fleeting.[81] Bearman and Lytle had underestimated the importance of hierarchy for resource management, as archivists most efficiently managed their resources by flexibly managing different levels of control according to their relative value and demand. MARC-AMC and APPM ensured a flat system, inevitably divorced from a repository's existing description system. APPM conceded that "archival catalogs are usually only part of an institution's total array of descriptive and finding aids."[82] This ensured that MARC-AMC would remain as "superficial" as earlier efforts. Instead of incrementally modularizing their existing description, archivists of the era developed a completely new descriptive system that deprioritized hierarchy. They avoided the intellectual challenges and the labor requirements of making existing archival description interoperable and devoted resources into making new catalog records. The shortcut of MARC-AMC and bibliographic networks did provide archivists with a better platform to facilitate discovery than ever before. More than any other effort, they provided description in ways familiar and intuitive to the users of the era. Still, with the advantage of looking almost forty years into the past, we can see how tangential MARC-AMC became for archival description.[83]

As productive as the NISTF was, there was uncertainty about how MARC-AMC records related to finding aids or how the standardization of archival description would aid collection management.[84] As with SPINDEX, developing archival workflows around the standard faced both practical and technical challenges.[85] The Description Section pushed SAA to support a new effort to develop a unifying conceptual framework for further standardization. While SAA had entered into the standards world with its joint administration of MARC-AMC alongside the American Library Association and the Library of Congress, it did not have the organizational framework to support standards bodies and "would be unable to respond promptly." Thus, in 1988, a group of archivists independently obtained funding from the NHPRC and Harvard University to establish a Working Group on Standards for Archival Description (WGSAD).[86] The group made use of an entire issue of *American Archivist* to disseminate its report. While the NISTF had operated outside of how most archives managed their local description, the WGSAD aimed at resolving this divergence, and "focus[ed] on expanding the limits of traditional finding aids."[87] Influenced by the existing relationships of library standards and a talk given to the group by David Bearman, the group outlined a three-dimensional matrix for understanding standards. One dimension provided tiers of strictness, and another separated standards developed by professional archivists and external bodies. The part of the matrix that would have the biggest impact on archival discourse was the "Levels of Description," which defined four types of standards, Information Systems, Data Structures,

Data Contents, and Data Values, defining anything from the relationships between archives organizations down to what individual words are used. The group's recommendations focused on developing the organizational means within SAA to develop, manage, and maintain standards.[88] The WGSAD sought to outline a process where archivists could develop a MARC-AMC for all aspects of archival description. They created road maps to establish standards and a theoretical model for applying them to local finding aids.

The "Checklist of Standards for Archival Description" in the WGSAD's report fixed the standards matrix onto a three-page set of tables. Some notable cells were obviously empty. Archivists themselves had only developed a few standards at that time, only MARC-AMC, APPM, and a few standards for special formats. The table itself implied that archivists had work to do. Kathleen D. Roe made a further case for a new standard by condemning the unnecessary variability in archives' data structures, arguing that it prevented interoperability. She proposed a standardized "archival information system" and tried to outline a set of fields that would underlie this "common conceptual framework."[89] Clearly, a case existed for data structure and content standards for all the uncontrolled data held in local finding aids.

## Markup and the Web

In the early 1990s, a group of researchers led by Daniel Pitti discovered that Standard Generalized Markup Language (SGML), an XML precursor, could be used to encode the "assortment of inventories, registers, indexes, and guides, generally referred to as finding aids."[90] The group, which later became known as the Berkeley Finding Aid Project, looked at MARC and found it inadequate because of character limits and a "limited accommodation of hierarchically structured information."[91] The growth and potential of the World Wide Web was another impetus for using SGML and XML. While SGML was not quite Web-ready, it seemed at least Web-adjacent, and its hierarchical structure must have been intuitive for archivists. Pitti also mentioned that XML could supersede HTML as the language of the Web, a common view at the time.[92] While browsers could not read encoded finding aids directly, archivists could quickly transform marked-up finding aids to HTML. Leveraging the Web for "universal intellectual access" was an explicit goal of the project, which aimed to "overcome the challenge presented by the physical geographic distribution of collections."[93] Interestingly, in this era of early-Web utopianism, Pitti also saw delivery of content as the eventual goal, if only "selectively."[94] Effective management of archival data was also an important motivation for the project, as Pitti warned that for metadata held in unstructured proprietary formats, archivists would have to "reformat them each time you update the authoring software." He also

described how the use of markup could enable the adoption or repurposing of tools developed from outside the profession, unlike the limited "marketplace" for software based on MARC.[95] The Berkeley Finding Aid Project received a US Department of Education grant from 1993 to 1995 to develop a draft Document Type Definition (DTD) to propose as a professional standard that would be named Encoded Archival Description (EAD).[96] The key literature of the previous decade had generally ignored the finding aid as a format. Now, finding aids not only regained their centrality to archives, they became an avenue for innovation—a way to leverage the emerging World Wide Web to support use of archival materials. Finding aids were cool again.

The work of the WGSAD was clearly present in EAD, and Pitti made sure to cite MARC-AMC and APPM as models. EAD fit into the standards matrix as a data structure standard for finding aids. However, WGSAD developed the matrix with the assumption that the fields of a data structure standard would be stored and managed by computer systems. In practice, EAD was inevitably tied to the medium of XML, as archivists would store data as encoded text. The standard became both the conceptual structure and the actionable system for managing archival description. EAD actually fit both WGSAD's Data Structure standards and Information Systems standards. Not only did EAD "define what elements of information are contained in the components of an information system," but it also "specifi[ed] all the component parts of a descriptive system," "to communicate and interchange data more readily."[97] EAD consisted of both a standard set of elements, as well as the format where computers would reify those elements. For better or worse, this was not what the Working Group had assumed.

EAD was the Frankenstein's monster of finding aids. To keep the barrier to EAD as low as possible, archivists developed the standard to be broadly inclusive, as it was "intentionally designed to allow for a great deal of flexibility in descriptive practice."[98] This meant it had to incorporate essentially the entire messy history of finding aids. Elements like <chronlist>, <list>, and <odd> could encode uncontrolled description from creating offices; <index> could make use of SPINDEX-like indexes; and the controversial Provenance field from the NUCMC can be seen in the <origination> tag. <frontmatter> could incorporate the Preface and Introduction sections of the 1976 guidelines from the Finding Aid Committee, while <titleproper> and authoritative subject classification were carried over from MARC-AMC. A number of archivists also noted how EAD also maintained the finding aid's long history of incorporating internal collection management functionality.[99] We can see evidence of this hidden in restriction tags, <physloc>, or <accruals> elements, like fossils embedded within bedrock. Archivists' understanding of archival description through the lens of finding aids prevented them from critically reexamining their data and instead led

them to expect direct mappings to all kinds of fields, from title pages to loca-
tion notes.[100]

This wholesale inclusion of the long and messy history of finding aids
in EAD fostered widespread and lasting misunderstandings. On the face of it,
EAD (and XML in general) seemed like a perfect fit for archives. Not only was it
hierarchical, but it maintained the same document paradigm of finding aids.
Elizabeth J. Shaw noted the influence of the earlier Text Encoding Initiative
(TEI) DTD, describing how the very different goal of structuring existing docu-
ments had a lasting and integral negative effect when employed by EAD for the
very different problem of encoding metadata.[101] Some archivists even tended to
treat encoded notes like pieces of literature, continuing this practice from the
days of creating finding aids with typewriters. This ability to encode narrative
description with precision in document form may have contributed to EAD's
acceptance and growth as much as the DTD's permissiveness. Ciaran B. Trace
and Andrew Dillon describe how, "With EAD, American archivists initiated
an almost straight transfer of the existing analog form of the finding aid to
the digital realm."[102] Archivists' understanding of access through the lens of
finding aids led to EAD's document-centric—rather than data-centric—encoding
that prioritized prose over discrete data storage by allowing mixed content and
avoided a critical reexamination of dates, extents, or language descriptions.
Forbidding mixed content in these fields would have generated protests from
practitioners, which the creators of EAD would have seen as a costly implemen-
tation barrier.[103] This only kicked the can down the road.

One of the most obvious negative impacts of finding aids on EAD was
the continued conflation of the encoding of metadata with presentation and
display. Archivists often encoded description based on to how they expected it
to display in a web browser, not how it could be best managed, a process Shaw
called "encoding to the stylesheets."[104] The clearest evidence of this problem
was Dennis Meissner's article in *American Archivist*'s 1997 issue on the release of
EAD, which was among the most widely cited pieces on the standard. Archivists
applauded Meissner's conclusion that finding aids need to be "reengineered"
as they were encoded, yet the article focuses primarily on how elements are
ordered during encoding, which should generally be irrelevant in how they are
displayed.[105]

The finding aid's document-centric paradigm also created some funda-
mental technical limitations in the EAD standard, which became barriers for
software development. Shaw outlines how EAD's permissiveness "hamper[ed]
the very data exchange for which EAD was created."[106] The oxymoronic vari-
ability of the standard made it difficult to develop software to support archival
practices.[107] The lack of tools to create EAD forced well-intentioned archivists to
rely on manual encoding and other inconsistent "authoring" methods, which

both demanded unfamiliar technical skills and caused long-term inconsistencies. This process fostered costly "migration issues" when future archivists would need to move archival description from EAD to more constrained archival management systems. Shaw noted that the lack of tools available to create EAD by 2001 hid the implications of a sleeping interoperability problem. She recommended that a new, more constrained data model would lower implementation barriers for small archives and reduce the need for "redundant investment in local guidelines and systems development" to establish consistency.[108] This was surely possible, as a common theme of the underlying consistency of archival data stems back to Elaine Engst's 1980 study, through Kathleen Roe's 1990 article, and continues with a 2013 study of EAD tag usage.[109] Archivists' understanding of archival data through finding aids prevented them from seeing that data standardization was never their largest implementation barrier.

The permissiveness of EAD also hindered the development of management software. The two early successes in archival management systems—Archivists' Toolkit and Archon—in many ways rejected the finding aid model and instead employed more commonly used desktop and web applications backed by traditional databases. By employing applications, rather than a singular finding aid or metadata standard, these tools could contain both description and management functionally, but store them separately with connections in between. These tools avoided working with EAD directly, only importing and exporting XML, and only displayed management information publicly when it applied to users. Both projects were also large, grant-funded consortial efforts that had underlying sustainability challenges. The Archivists' Toolkit and Archon projects combined into ArchivesSpace, which revamped how the software was governed and resourced, and employed modern web application frameworks with a REST API. Yet it took archivists many years to adapt. ArchivesSpace 1.0 was released over fifteen years after EAD 1.0, and, while "ASpace" has been an effective solution for many repositories, it took years for some archives to implement the software. Other repositories are still daunted by the challenge.[110]

Implementing EAD was a tremendous barrier for archivists, who had never before been required to write in code to perform their core job functions. To meet this challenge, archivists had to rely upon their peers, embrace open-source ideals, and develop an open community around EAD that encouraged sharing.[111] Writings on encoding and similar processes were highly publishable, broadly read, and widely consulted. James M. Roth described the "steep learning curve for the entire EAD process," where archivists made creative use of manual and computer-assisted templates, Perl scripts, add-ons to text editors, mail merge, and a variety of proprietary software—some of which came and went disconcertingly quickly.[112] "Putting finding aids online" was certainly a powerful carrot, yet EAD was certainly not the easiest method of doing so. The tool that

had the greatest impact was Michael J. Fox's *EAD Cookbook*, released in 2000 with features to assist the "authoring" of EAD in programs like WordPerfect and XMetaL, and the conversion of EAD to HTML with a set of XSLT stylesheets.[113] Christopher J. Prom offered it as "the simplest way to encode finding aids and post them on a website," and Sonia Yaco stated that the *Cookbook* "[made] it much easier to learn and implement EAD."[114] Here, finding aids did not exactly encode themselves, but the *Cookbook* provided simple steps and the technical context in language more comfortable for archivists. While not envisioned as such, the *Cookbook* became a *de facto* standard, as it was widely used and broadly copied. Even today, many actively used XSLT stylesheets have their origins there. By 2008, Sonia Yaco's survey findings suggested that archivists had mostly crossed the technical barrier of encoding described by Roth, while the challenge of serving marked-up finding aids remained.[115] The added technological challenge of XML hindered creativity in design during the implementation. As J. Gordon Daines III and Cory L. Nimer described, "there has been little experimentation with display formats."[116] Archivists simply carried over the narrative document format of finding aids uncritically. As all of these displays look alike, the design of the *EAD Cookbook* stylesheets became intimately tied to the identity of the "online finding aid" itself. By learning and copying from each other, archivists not only standardized encoding, but also continued the finding aid's marginalization of usability by simply maintaining its existing form.

Beginning only a few months after the Berkeley Finding Aid Project and two years before the formal release of EAD, the Online Archive of California (OAC) provided an influential consortial model for EAD implementation.[117] Together, California repositories were able to solicit funding and share expertise and resources. The group used a mix of on-site, central, and outsourced methods to encode 2,420 finding aids by September of 1998. The project was one of the first to discover the substantial investment required and the dreaded "legacy" finding aids, which were problematic to encode.[118] In the mid-2000s, the California Digital Library, which took over management of OAC, developed eXtensible Text Framework (XTF), an early open-source web application based on XSLT that provided indexing and display for EAD and other XML formats.[119] It became the most popular tool implemented by individual and consortial archives nationwide and is still widely used even today. The default XSLT stylesheets used by XTF to display EAD were taken directly from the 2002 version of the *EAD Cookbook*.[120]

Understanding online access through the lens of the finding aid, archivists worked to take metadata from unstructured paper documents, encoded the metadata in a document-based format, and employed late 1990s web practices to present long, single-scrolled "online finding aids" with a left side menu that is still ubiquitous today. Previously, finding aids had been a creative amalgamation

of local paper and electronic formats that compromised user demands with the scale of archives. These finding aids also relied on a number of archival customs and implicit context to guide users to and through collections. Archivists creatively used the structure of a book or pamphlet, a numbering system, or even the storage location of the finding aid itself to provide useful contextual information to researchers. When archivists devoted substantial labor to encoding description, they flattened these pragmatic, if localized and imperfect, information systems into long, single-scroll web pages.

## Usability and Online Finding Aids

Archivists soon discovered that online finding aids were very problematic for users. The profession has a history of calling for more user-centered practices that goes back to the 1980s. Elsie T. Freeman's powerful 1984 article took the profession to task for focusing on scholarly historians, who only made up a small minority of users. She demanded archivists study users "systematically, not impressionistically" to confront these assumptions. Freeman's description of finding aids as "at best intramural communications written by one archivist to be read by another" still applied on the Web.[121] Paul Conway would be the first to publish a study on users, while also offering a model that he hoped would supply "a comprehensive profession-wide program of user studies."[122] Richard J. Cox was the first to cite influential design writer Donald Norman and called finding aids "products of design."[123]

Building on this tradition, a number of archivists quickly became concerned that the ubiquitous long, scroll-heavy online finding aid was yet another instance of archivists failing to meet their users' needs.[124] Gilliland-Swetland wrote that "the finding aid as currently conceived does a pretty poor job of addressing the practices, behaviors, and information needs of the non-scholarly user."[125] Elizabeth Yakel found that "Users not only had trouble with the specific tasks, but the general level of success was low for three of the four tasks." Wendy Scheir and Elizabeth Yakel separately found both finding aid structure and archival terminology to be major barriers.[126] Prom concluded defeatedly that "it is unlikely that on-line finding aids will ever make the chaotic nature of archival systems wholly understandable to archives users."[127] Ironically, "putting finding aids online" brought them to users in their underpants, but actually distanced them from the archival materials they described, and the implicit connections that were obvious in the reading room became confounding on a screen.

User-focused archives literature in the 2000s drew upon formal social science methodologies in attempts to identify actionable problems in online finding aids, often with sobering results. However, these methods were not ideal for this purpose, and the findings may not have been repeatable in other

contexts, as even the particularly rigorous study by Luanne Freund and Elaine G. Toms would later admit.[128] In many cases, archivists have since updated the finding aid systems analyzed in the 2000s to new interfaces; even if their structure remained static, the evolution of visual styles combined with the ever-changing abilities and expectations of web users might produce different results. Scheir's findings demonstrated that a finding aid system's location and navigation within its host website might be a bigger barrier than the document itself.[129] Formal studies may not be ideal for web usability, and archivists have more recently moved away from proposing universal usability findings, focusing on providing general guidelines and using less rigorous methods such as "discount" or "guerilla" user testing iteratively, which quickly gathers useful information about one particular context.[130]

Archivists must be careful with two themes that are common in this body of literature. One is the supposition that users come in two types: experienced researchers and novices. While this may be somewhat descriptive, it must not be prescriptive. Here, "inexperienced users" essentially describes users who are unfamiliar with the traditions of finding aids. Archivists must not use "supporting experienced researchers" as an excuse to continue esoteric and exclusionary practices. If archivists present archival description in generally usable ways and make the implicit information in finding aids explicit and intuitive, all users will benefit.

A second theme from these studies of which archivists must be wary is the idea that the limited information literacy skills of users causes confusion. Elizabeth Yakel wrote or cowrote a series of articles and user studies, offering finding aids as a "common ground" between archivists and users "where shared understandings are not just created, but negotiated between archivists and researchers."[131] Yakel grounds this idea in a very effective framing of finding aids and other descriptive tools as constructed "Archival Representations" that can maintain, distort, or destroy context and meaning. While these ideas are extremely valuable and influential, Yakel's vision of representations as negotiated "boundary objects" can be read to suggest that users have an equal responsibility for confusion or misrepresentation.[132] It is not helpful to see users as "bear[ing] some of the responsibility," and archivists should not primarily focus on "teaching the vocabulary of archives and the meaning embedded in that vocabulary."[133] It would be more helpful for archivists to take the view that if "common reference points are often lacking," the obligation is on the archivist, who creates and manages these systems of representation, to adapt discovery and display practices to user needs.[134] To be fair, Yakel's overall goal is defining and addressing representational structures instead of blindly perpetuating them, and she encourages further study on the usability of finding aids. Still, archivists must be careful to consider that they, not users, have agency in this

"negotiation." If a user's reaction is "What Does Scope and Content MEAN???!," the most effective solution is not user education, but eliminating that barrier by displaying information in a way that is intuitive and inclusive to a broader audience.[135] Archivists cannot educate the entire world to look for scope and content notes to guide them through collections, but they can work to present this information in ways explicit and familiar to uninitiated users.

The fundamental problem with online finding aids is that, as Trace and Dillon stated, "simply copying the paper form and replicating it digitally will not work."[136] In merely porting over the finding aid to the Web, archivists retained its core capabilities and limitations in a new environment, which had entirely different user expectations. As Yakel's examination of representational artifacts showed, "When taken out of their original milieu, however, context is lost." This has proven true not just with online finding aids, but with online library catalogs as well.[137] Most websites enable users to get content directly or at least empower them to take action to obtain their goals—whether by making a reservation or a purchase that a shipping company will later deliver. Typically, websites accomplish this by hiding and/or ignoring any predigital content or product they cannot easily digitize, creating a well-documented "digital divide." Of course, archivists could not limit access to only digital materials, but finding aids assume that merely listing content is sufficient and do not easily lend themselves to workflows where users can make actionable requests or clearly understand the process of viewing materials in person. Even when archivists did put digital content into finding aids, they did not prove to be very usable, as the narrative format requires arduous scrolling and often buries content multiple layers deep in the archival hierarchy.[138] Web design did allow archivists to mitigate this divide to meet the expectations of online users, yet archivists failed to reenvision how to present content using archival description more effectively, or even empower users to take online actions that would eventually enable them to view materials. Instead, online finding aids make users feel much farther away from the archival materials they seek.

## Description Standards and Finding Aids Today

While American archivists focused on putting finding aids online, the International Council on Archives (ICA) Ad Hoc Commission on Descriptive Standards took a different route in publishing *ISAD(G): General International Standard Archival Description* in 1994.[139] ISAD(G) took up the mantle from the NISTF and further defined archival description as a set of common interlinked elements of data. Yet, most American archivists seemed to take years to notice, as ISAD(G) was described as having a "minimal impact" that "many archivists in the United States have only a passing acquaintance with."[140] Many archivists

insisted that EAD was developed to coincide with ISAD(G), but while—after "several modifications" before publication—EAD could be crosswalked to ISAD(G), the elements did not match one-to-one in a way that makes data exchange easy and unambiguous.[141] If EAD had attempted to encode the ISAD(G) elements, it would have been much smaller, simpler, easier, and more useful. Instead, EAD also focused on encoding elements from finding aids past, such as the elements from the 1976 Committee of Finding Aids guidelines—none of which ISAD(G) required. This contrasts heavily with the British experience, where description was first standardized around ISAD(G), and "a very light version of EAD" was used simply for data exchange between systems, "rather than as a protocontent standard in its own right."[142]

While belatedly, many archivists did realize that the lack of a true content standard, as archivist Michael J. Fox warned, "would seriously cripple, of course, any hopes for interoperability."[143] Conversations with Canadian archivists in the late 1990s evolved into the CUSTARD Project, which attempted to use the revision cycle of APPM to develop a "rigorous" content standard that would supersede both APPM and the Canadian *Rules for Archival Description* (RAD) in accommodation with ISAD(G) and EAD.[144] While the Canadian effort split off into RAD2, the CUSTARD Project published DACS in 2004, and the rules gained acceptance as the American content standard for archival description a year later. DACS has enjoyed widespread, but not universal, adoption that well exceeds EAD in the United States.[145] Still, signs remain that some archivists may still be reluctant to relinquish a finding aid–centric view of archival description. The DACS single-level required elements do not include historical notes, which have a tradition in narrative finding aids, but over 87 percent of EAD finding aids still use <bioghist>, which is similar to some required elements.[146] Archivists have devoted much more ink in the archival literature to EAD than to DACS.[147] While archivists have made substantial progress, the profession should still benefit from moving beyond a descriptive discourse centered on finding aids.

Elizabeth H. Dow's description of EAD as a "Halfway Technology" for archives may prove to be apt, but this certainly does not mean that EAD is a failure.[148] While the data model behind EAD clearly should have been more constrained, encoding archival description in EAD was certainly better than any alternative until relatively recently. Office documents or unstructured HTML finding aids create even more costly migration problems than does EAD. Surveys in 2008 and 2017–2018 found EAD implementation rates of over 50 percent and 80 percent respectively, and today American archivists likely manage a majority of archival collections in EAD or an archival management system.[149] This means that most archival description is probably available in at least some sort of structured or machine-readable form, however imperfect. That alone is a tremendously important achievement, most of which EAD in some way facilitated.

Furthermore, XML has been the medium though which many archivists have learned and embraced technology, and it was an important technological stepping stone for a profession adapting to disk imaging, born-digital records, and web archives.[150] The standard's wide implementation still makes it a minimally effective, if problematic, tool to transfer and exchange archival description. Its independence from any sort of system or software makes it reasonably future-proof. Simply put, EAD can be useful and—for better or worse—it is not going away anytime soon.

The underlying problem of EAD is that it took the development of a new system for maintaining standards within the Society of American Archivists and almost thirty years of implementation efforts to get to this point. While archivists were rushing to encode finding aids in EAD, technology continued to evolve. XML was never widely used over relational databases for permanent and authoritative information stores governed by schemas and namespaces as most of library and information science literature envisions. While XML found general use for configuration files and derivative formats for data read by web pages, the rise of Web Application Frameworks, REST APIs, JavaScript everywhere, and JSON has further marginalized XML. As the architecture of the Web became more complicated, XML proved to be complex, verbose, and variable, and many technologists relied on web applications, backed by data models and accessed by REST APIs, as more effective and maintainable solutions for storing and transferring data.

Archivists cannot reasonably expect their professional standards bodies, particularly those driven by systems of volunteer or largely unpaid labor, to keep up with the pace of technological change to provide effective technical standards for storing and transferring archival description.[151] Archivists should consider moving away from professional standards for data structure and instead rely on what is now a wealth of widely used open tools for serializing and transferring data. WGSAD envisioned data structure and information systems standards before the maturation of open web technologies. If archivists instead focus on standardizing the content and the underlying data models for archival description and manage this data effectively in open systems, description should still be interoperable, even in the absence of structure standards.

The standards infrastructure that archivists developed within SAA during the 1990s has proven to have tremendous professional momentum. While EAD3 includes significant technical improvements to the standard, archivists are spending substantial resources moving to the new version for minimal benefits.[152] Archivists still present EAD as a core professional standard, and those who devoted substantial resources to encoding finding aids may be surprised to see leading institutions eliminating EAD from their workflows and that compliance with the standard by itself no longer meets current best practices.[153] The

valuable effort spent managing and maintaining EAD could be more effective if directed at further standardizing the content and data model of archival description while creatively exploring new methods of presentation that meet user needs and expectations.[154] Yet, many in the profession still see the creation of encoded finding aids as a goal in itself and a core part of their identity as archivists. Archivists should consider moving away from focusing on specific technologies and toward skills like data modeling and user-centered design, viewing them as core parts of an archivist's professional responsibilities.

In many ways, this is effectively already happening, as archives technology has also been changing for some time, with a new focus on data modeling, systems design, and interfaces developed with user testing and user-centered design more generally. A number of major projects, such as ArchivesSpace, the ArchivesSpace Public User Interface (PUI) Project, ArcLight, and the Rockefeller Archive Center's Project Electron, represent this trend.[155] Daines and Nimer explored the utility of single-level presentation back in 2011.[156] Display systems at Princeton University, the Smithsonian Institution Archives, the New York Public Library Manuscripts and Archives Division, and the North Carolina State Special Collections Research Center are all examples of major advancements in interface design for archival description. Yet, all of this is happening at a few wealthy institutions working on major projects directed primarily by technologists and a few leading archivists. By understanding access through finding aids, many archivists have not been able to join in on the conversation, as these discussions are often absent from the bulk of the peer-reviewed literature, and the skills necessary for participation are not typically included in the core curricula of graduate training programs. Archivists often speak of the inequality in technology and resources at different repositories, but a gap in how archivists see access also needs to be addressed. To be included in the conversations advancing their profession, archivists should question whether a discourse centered on finding aids effectively addresses the challenges they face.

## Conclusion

What can we learn from the history of finding aids in the archival profession? First, we can see that user-friendly access was never the sole priority of finding aids. Finding aids were originally conceived in the 1930s as an innovative compromise between the needs and expectations of users and the incredible scale of the National Archives. Resource demands and the technology of the time forged finding aids into a single omnibus tool with a number of conflicting roles and dual internal and external uses. Because of these limitations, archivists creatively adopted a number of solutions to meet user needs. They indexed narrative inventories on catalog cards or loose-leaf paper like Richard C. Berner.

They published summaries, listings, and guides to enable discovery across repositories and to partially meet the needs of remote researchers.

Second, we can see how the limiting characteristics of the finding aid as a tool influenced access in archival theory and practice, sometimes with negative consequences. The creative variability of finding aids became a major barrier as archivists attempted to use computers to provide better access and reduce the labor requirements of their work. By using finding aids to frame this challenge, archivists were swimming upstream. The features of finding aids as tools hindered them from seeing description as data. This caused early efforts at automation to underestimate and underprioritize the human labor first required to structure description. Efforts at standardization consistently valued making the form of finding aids more consistent over defining and promoting more effective content in description. The single-document finding aid that became the consensus was often the worst of both worlds. These finding aids prevented archivists from creatively using the flexibility in form to make description more familiar and usable, but also failed to structure description sufficiently so computers could manipulate it.

Finally, we can see how EAD inherited the imperfections and contradictions of finding aids as archivists uncritically maintained many finding aid traditions in a completely different environment. Online finding aids are single documents that combine a challenging environment to create description with inadequate collections management functionality and a form unfamiliar to and often puzzling for many users. While archivists have made advancements, particularly in description, notably, the groups that made progress, such as the NISTF, ICA, or CUSTARD, did not frame their discussions primarily around finding aids.

With a full contextual understanding of how the finding aid as an idea has historically influenced archival understandings of access, we can identify some ways that finding aids still frame how archivists address access. During the EAD3 revision, the SAA Technical Subcommittee on EAD made strong efforts to introduce more structure in the standard, but still permitted some unstructured legacy elements that based encoding on display.[157] During the ArchivesSpace Public User Interface Project, archivists resisted eliminating the scroll-heavy single document view that has been the common form of online finding aids.[158] ArchivesSpace itself is perhaps the best example of the continuing effects of problematic finding aid traditions. Like finding aids, ArchivesSpace has dual internal and external functions. While this has the advantage of only requiring repositories to support one system, technically it means that ArchivesSpace is essentially two completely different applications packaged into one, which has substantial limitations.[159]

All of these instances are challenging problems with no simple answers. However, a critical reassessment of the historical antecedents of these cases will better inform archivists as they work toward productive solutions. With an understanding of how the peculiarities of finding aids as tools have historically colored access to archival materials, archivists must now question their utility as a framework to address the challenges they face today. Perhaps a world without finding aids will include more data-centric thinking, a renewed focus on content standards, and a higher value on the labor necessary to create and structure description. Perhaps archivists could experiment in new forms to present description, discuss the broader barriers to access, and ask whether new levels of access are possible. Individual archivists certainly have the creativity, values, and drive to make archival collections open, accessible, usable, and familiar to everyone, if only finding aids were not holding them back.

## Notes

1 Anne J. Gilliland-Swetland, "Popularizing the Finding Aid: Exploiting EAD to Enhance Online Discovery and Retrieval in Archival Information Systems by Diverse User Groups," *Journal of Internet Cataloging* 4, nos. 3–4 (2001): 199–225, https://doi.org/10.1300/J141v04n03_12; Elizabeth Yakel, "Listening to Users," *Archival Issues* 26, no. 2 (2002): 111–27; Christopher J. Prom, "User Interactions with Electronic Finding Aids in a Controlled Setting," *American Archivist* 67, no. 2 (2004): 234–68, https://doi.org/10.17723/aarc.67.2.7317671548328620; Elizabeth Yakel, "Encoded Archival Description: Are Finding Aids Boundary Spanners or Barriers for Users?," *Journal of Archival Organization* 2, nos. 1–2 (2004): 63–77, https://doi.org/10.1300/J201v02n01_06; Wendy Scheir, "First Entry: Report on a Qualitative Exploratory Study of Notice User Experience with Online Finding Aids," *Journal of Archival Organization* 3, no. 4 (2005): 49–85, https://doi.org/10.1300/J201v03n04_04; Joyce Celeste Chapman, "Observing Users: An Empirical Analysis of User Interaction with Online Finding Aids," *Journal of Archival Organization* 8 (2010): 4–30, https://doi.org/10.1080/15332748.2010.484361.

2 The Society of American Archivist Fundamentals Series II manual on arrangement and description states that "Traditionally, archivists tend to equate the definition of description with providing access to holdings through the development of finding aids." Kathleen D. Roe, *Arranging & Describing Archives & Manuscripts*, Archival Fundamentals Series II (Chicago: Society of American Archivists, 2005), 14.

3 The definition of finding aid in *A Glossary of Archival and Records Terminology* is instructive regarding how finding aids served multiple countervailing roles and their past history of pluralism that evolved into a singular form, and also exemplifies the conflation of that form with the practice of aggregate description and arrangement by provenance. Readers can identify description, management, and access in the second definition: "A description of records that gives the repository physical and intellectual control over the materials and that assists users to gain access to and understand the materials." The definition also describes finding aids as both "a wide range of formats, including card indexes, calendars, guides, inventories, shelf and container lists, and registers," but also notes their singular form and irrevocably ties them to descriptive practice: "Finding aid is a single document that places the materials in context by consolidating information about the collection, such as acquisition and processing; provenance, including administrative history or biographical note; scope of the collection, including size, subjects, media; organization and arrangement; and an inventory of the series and the folders." Richard Pearce-Moses, *A Glossary of*

*Archival and Records Terminology* (Chicago: The Society of American Archivists, 2005), 168, http://files. archivists.org/pubs/free/SAA-Glossary-2005.pdf.

4 Both DeRidder, Presnell, and Walker and Jackson show the limited usability of linking content from finding aids. Jody DeRidder, Amanda Presnell, and Kevin Walker, "Leveraging Encoded Archival Description for Access to Digital Content: A Cost and Usability Analysis," *American Archivist* 75, no. 1 (2012): 143–70, https://doi.org/10.17723/aarc.75.1.5641v61p422u0u90; Tracy M. Jackson, "I Want To See It: A Usability Study of Digital Content Integrated into Finding Aids," *Journal for the Society of North Carolina Archivists* 9, no. 2 (2012): 20–77. Additionally, by presenting description in a single document or a series of documents, finding aids generally ignore both the potential of different technologies for delivering content and the wider barriers users face: having to travel to an archives, deciding when on-site research is necessary, and the mechanics of using archival materials generally.

5 John R. Russell, "Cataloguing at the National Archives," *American Archivist* 2, no. 3 (1939): 169, https://doi.org/10.17723/aarc.2.3.32vgp216l566w54k.

6 William J. Van Schreeven, "Information Please: Finding Aids in State and Local Archival Depositories," *American Archivist* 5, no. 3 (1942): 169–78, https://doi.org/10.17723/aarc.5.3.7pq3431075371182.

7 T. R. Schellenberg, *The Management of Archives* (New York: Columbia University Press, 1965), 107, https://catalog.hathitrust.org/Record/001835901.

8 Herman R. Friis, "Graphic Presentation Offers a New Approach to the Archivist's Finding Aids Program," *American Archivist* 15, no. 2 (1952): 157–58, https://doi.org/10.17723/aarc.15.2.jj16g66436256pt8.

9 Howard H. Peckham, "Arranging and Cataloguing Manuscripts in the William L. Clements Library," *American Archivist* 1, no. 4 (1938): 215–29, https://doi.org/10.17723/aarc.1.4.14l5102465r27084.

10 Howard H. Peckham, "Aiding the Scholar in Using Manuscript Collections," *American Archivist* 19, no. 3 (1956): 222, https://doi.org/10.17723/aarc.19.3.h403p43q887t7510. This article is perhaps the strongest example of the exclusionary practices of the manuscript tradition. Peckham details in great depth the many responsibilities of researchers and argues how libraries should restrict visitors to "competent scholars" only, and also "[have] the right to exclude those whose researches he believes will be superficial or of no real significance."

11 The National Archives, *Guide to the Material in The National Archives* (Washington, DC: United States Government Printing Office, 1940), ix.

12 Philip M. Hamer, "Finding Mediums in the National Archives: An Appraisal of Six Years' Experience," *American Archivist* 5 no. 2 (1942): 84, https://doi.org/10.17723/aarc.5.2.u0u37v964757831w.

13 Russell, "Cataloguing at the National Archives," 170.

14 T. R. Schellenberg, *Modern Archives: Principles & Techniques* (1954; repr., Chicago: The Society of American Archivists, 2003): 212. http://files.archivists.org/pubs/free/ModernArchives-Schellenberg. pdf.

15 Hamer, "Finding Mediums in the National Archives," 86–87.

16 Hamer, "Finding Mediums in the National Archives," 90.

17 Hamer, "Finding Mediums in the National Archives," 88–89; The National Archives, *Guide*, vii.

18 Schellenberg, *Modern Archives*, 210.

19 Schellenberg, *Modern Archives*, 208.

20 Hamer, "Finding Mediums in the National Archives," 90–91. Also discussed in Ciaran B. Trace and Andrew Dillon, "The Evolution of the Finding Aid in the United States: From Physical to Digital Document Genre," *Archival Science* 12, no. 4 (2012): 506, https://doi.org/10.1007/s10502-012-9190-5.

21 Schellenberg, *Modern Archives*, 129.

22 The National Archives, *Guide*, viii.

23 Christopher B. Coleman, Margaret C. Norton, and Charles M. Gates collectively describe the facilities at their state archives and others. Efforts were made to place the reference or reading rooms in the same building or even part of the building as the vaults where archival records were stored. Even when Norton describes records that would "occasionally be taken back to the departments of origin for temporary use," it seems very probable that any finding aids traveled with them. Christopher B. Coleman, "Indiana Archives," *American Archivist* 1, no. 4 (1938): 214, https://

doi.org/10.17723/aarc.1.4.g163457n140n2673; Margaret C. Norton, "The Illinois State Archives Building," *American Archivist* 1, no. 2 (1938): 89, https://doi.org/10.17723/aarc.1.2.g035k658642h366v; Charles M. Gates, "The Administration of State Archives," *American Archivist* 1, no. 3 (1938): 134–35, https://doi.org/10.17723/aarc.1.3.l6532812q45pnv00.

24  Jennifer Douglas and Heather MacNeil, "The Generic Evolution of Calendars and Inventories at the Public Archives of Canada, 1882–ca. 1975," *American Archivist* 77, no. 1 (2014): 161, https://doi.org/10.17723/aarc.77.1.c467712137217u76.

25  Hamer, "Finding Mediums in the National Archives," 87.

26  The National Archives, *Guide*, vii.

27  Library of Congress, *Rules for Descriptive Cataloging in the Library of Congress: Manuscripts* (Washington, DC: Library of Congress, 1954), Introduction, https://catalog.hathitrust.org/Record/101848656; Robert H. Land, "The National Union Catalog of Manuscript Collections," *American Archivist* 17, no. 3 (1954): 201, https://doi.org/10.17723/aarc.17.3.pu66335813vm5l04.

28  Terry Abraham, "*NUCMC* and the Local Repository," *American Archivist* 40, no. 1 (1977): 33, https://doi.org/10.17723/aarc.40.1.7516vq0252558178; Richard C. Berner, "Archivists, Librarians, and the National Union Catalog of Manuscript Collections," *American Archivist* 27 no. 3 (1964): 401, https://doi.org/10.17723/aarc.27.3.x61w65ur4p866428.

29  Richard C. Berner, "Observations on Archivists, Librarians, and the National Union Catalog of Manuscript Collections," *College and Research Libraries* 29 (1968): 277, https://doi.org/10.5860/crl_29_04_276; Richard C. Berner, "Manuscript Catalogs and Other Finding Aids: What Are Their Relationships?," *American Archivist* 34, no. 4 (1971): 370, https://doi.org/10.17723/aarc.34.4.7t80704q2057251l. However, Abraham contended that the NUCMC might have actually led manuscript repositories away from item-based description. Abraham, "*NUCMC* and the Local Repository," 41–42.

30  Abraham, "*NUCMC* and the Local Repository," 41.

31  Berner, "Archivists, Librarians, and the National Union Catalog of Manuscript Collections," 402.

32  Abraham, "*NUCMC* and the Local Repository," 36.

33  Abraham, "*NUCMC* and the Local Repository," 35–36.

34  The Society of American Archivists' first manual on arrangement and description stated that "The catalog operation has fallen in to distinct disfavor because of the harm it did to the integrity of Collections." The manual summarily described cataloging as the treatment of "both single documents and extensive collections as if they were individual, or a series of books." David B. Gracy II, *Archives & Manuscripts: Arrangement and Description* (Chicago: Society of American Archivists, 1977), 30–31.

35  Richard M. Kesner, "The Computer's Future in Archival Management: An Evaluation," *The Midwestern Archivist* 3, no. 2 (1978): 30.

36  Russell M. Smith, "Item Indexing by Automated Processes," *American Archivist* 30, no. 2 (1967): 295–302, https://doi.org/10.17723/aarc.30.2.4w7wq1234x651337. In the mid-1960s, the Library of Congress was building an "automated" management system for manuscripts called MRMC, a MARC predecessor, and originally developed SPINDEX I using business computing techniques like KWIC and WADEX. H. Thomas Hickerson, Joan Winters, and Venetia Beale, *SPINDEX II at Cornell University and a Review of Archival Automation in the United States* (Ithaca, NY: Department of Manuscripts and University Archives, Cornell University Libraries, 1976), 24.

37  Hickerson, Winters, and Beale, *SPINDEX II at Cornell University*, 2.

38  Hickerson, Winters, and Beale, *SPINDEX II at Cornell University*, 45.

39  Douglas A. Bakken, "Reviewed Work: *SPINDEX II at Cornell University and A Review of Archival Automation in the United States* by H. Thomas Hickerson, Joan Winters and Venetia Beale," *The Midwestern Archivist* 2, no. 2 (1977): 65–66.

40  Hickerson, Winters, and Beale, *SPINDEX II at Cornell University*, 67.

41  Alan Calmes, "Practical Realities of Computer-Based Finding Aids: The NARS A-1 Experience," *American Archivist* 42, no. 2 (1979): 167, https://doi.org/10.17723/aarc.42.2.y3v58051mu34v57h.

42  Calmes, "Practical Realities of Computer-Based Finding Aids," 173.

43  Calmes, "Practical Realities of Computer-Based Finding Aids," 172–75.

44 Larry J. Hackman, Nancy Sahli, and Dennis A. Burton, "The NHPRC and a Guide to Manuscript and Archival Materials in the United States," *American Archivist* 40, no. 2 (1977): 204, https://doi.org/10.17723/aarc.40.2.w57r2n46q33h6775; Nancy Sahli, "Interpretation and Application of the AMC Format," *American Archivist* 49, no. 1 (1986): 11, https://doi.org/10.17723/aarc.49.1.y10g533247774463.

45 Hickerson, Winters, and Beale, *SPINDEX II at Cornell University*, 23–24, 52–54.

46 Calmes, "Practical Realities of Computer-Based Finding Aids," 168, 175, 177.

47 Maynard Brichford, Harriet Ostroff, John P. Butler, and Richard H. Lytle, "Intellectual Control of Historical Records," *American Archivist* 40, no. 3 (1977): 310, https://doi.org/10.17723/aarc.40.3.30436v4722504547.

48 Lydia Lucas discussed how archivists realized that "data formatting and key punching were noticeably more time-consuming and expensive than just typing file lists." Lydia Lucas, "Efficient Finding Aids: Developing a System for Control of Archives and Manuscripts," *American Archivist* 44, no. 1 (1981): 23, https://doi.org/10.17723/aarc.44.1.3u63r01w75m5p268.

49 Edward Papenfuse, "The Retreat from Standardization: A Comment on the Recent History of Finding Aids," *American Archivist* 36, no. 4 (1973): 537, 538, https://doi.org/10.17723/aarc.36.4.n0q739k608g7k022.

50 Lucas, "Efficient Finding Aids," 22. Also more generally discussed by Trace and Dillon, "The Evolution of the Finding Aid in the United States," 507.

51 Berner, "Manuscript Catalogs and Other Finding Aids," 367 (emphasis in original).

52 Berner discusses the influence of Schellenberg in more detail in "Observations," 279, citing T. R. Schellenberg, "A Nationwide System of Controlling Historical Manuscripts in the United States," *American Archivist* 28, no. 3 (1965): 410, https://doi.org/10.17723/aarc.28.3.p7151r16036404j2.

53 Richard C. Berner and M. Gart Bettis, "Description of Manuscript Collections: A Single Network System," *College and Research Libraries* 30, no. 5 (1969): 405–16, https://doi.org/10.5860/crl_30_05_405. The "Berner System" or the "Loose-leaf System" is also discussed by Gracy, *Archives & Manuscripts*, 32, and in its application at Western Carolina University in Michael B. Ballard, "Customizing a Finding Aid System," *American Archivist* 43 no. 3 (1980): 369–70, https://doi.org/10.17723/aarc.43.3.31934064q43nm727.

54 Berner, "Manuscript Catalogs and Other Finding Aids," 370.

55 Gracy, *Archives & Manuscripts*, 1, 30.

56 Society of American Archivists, Committee on Finding Aids, *Inventories and Registers: A Handbook of Techniques and Examples* (Chicago: Society of American Archivists, 1976), 5.

57 Trace and Dillon, "The Evolution of the Finding Aid in the United States," 507.

58 SAA Committee on Finding Aids, *Inventories and Registers*, 5.

59 SAA Committee on Finding Aids, *Inventories and Registers*, 25.

60 Papenfuse, "The Retreat from Standardization," 537; Sahli, "Interpretation," 10; Kathleen D. Roe, "From Archival Gothic to MARC Modern: Building Common Data Structures," *American Archivist* 53, no. 1 (1990): 56–66, https://doi.org/10.17723/aarc.53.1.70v18r435m327210; Steven L. Hensen, "The Use of Standards in the Application of the AMC Format," *American Archivist* 49, no. 1 (1986): 32, https://doi.org/10.17723/aarc.49.1.g45385u8303x4846; Steven L. Hensen, "'NISTF II' and EAD: The Evolution of Archival Description," *American Archivist* 60, no. 3 (1997): 290, https://doi.org/10.17723/aarc.60.3.y833n78003316620. Hensen seemed to think that unique practices were merely the lack of understanding cataloging rules, as "The resulting vacuum left the field wide open for individual practice to run amok—which it did." Hensen, "The Use of Standards," 34.

61 J. Gordon Daines III and Cory L. Nimer, "Re-Imagining Archival Display: Creating User-Friendly Finding Aids," *Journal of Archival Organization* 9, no. 1 (2011): 5, https://doi.org/10.1080/15332748.2011.574019.

62 Susan E. Davis, "How Twenty-Five People Shook the Archival World: The Case of Descriptive Standards," *Journal of Archival Organization* 4, nos. 3–4 (2006): 57, https://doi.org/10.1300/J201v04n03_04. Steven L. Hensen similarly described it as a "sea change in archival thinking." Hensen, "The Use of Standards," 33. Most authors, and Davis in particular, described MARC-AMC as the center of this revolution, yet the major change was the increased involvement and direction from SAA and the emergence of professional bodies to manage standards development. As Lytle described, "SAA members wanted a role for the profession in molding developing national

[62]  information systems such as the NHPRC database." Richard H. Lytle, "An Analysis of the Work of the National Information Systems Task Force," *American Archivist* 47, no. 4 (1984): 359, https://doi.org/10.17723/aarc.47.4.a3gr758201r155k5.

[63]  Nancy Sahli described how SAA was concerned by "duplication of effort" with NHPRC and NUCMC and the possibility that SPINDEX was obsolete. Sahli, "Interpretation," 11. This is also discussed in Hensen, "NISTF II," 291, and Trace and Dillon, "The Evolution of the Finding Aid in the United States," 508.

[64]  Sahli, "Interpretation," 10.

[65]  Lytle, "An Analysis," 358, 360. Early NISTF work is also described in Richard H. Lytle, "A National Information System for Archives and Manuscript Collections," *American Archivist* 43, no. 3 (1980): 423–26, https://doi.org/10.17723/aarc.43.3.c820427h4062357k.

[66]  Elaine D. Engst, "Standard Elements for the Description of Archives and Manuscript Collections: A Report on Archival Practices for the National Information Systems Task Force," 1980. Society of American Archivists Records, UWM Manuscript Collection 172, University of Wisconsin–Milwaukee Libraries, Archives Department. Bearman and Lytle described Engst's report as "A thorough empirical study of the descriptive practices of archival repositories." While the report was very effective, and Engst was certainly an authority on the subject, Bearman and Lytle may have overstated the finality of the argument. David A. Bearman and Richard H. Lytle, "The Power of the Principle of Provenance," *Archivaria* 21 (Winter 1985–1986): 20.

[67]  Sahli, "Interpretation," 12.

[68]  Nancy Sahli, "Finding Aids: A Multi-Media, Systems Perspective," *American Archivist* 44, no. 1 (1981): 16, 17, https://doi.org/10.17723/aarc.44.1.th1517912g73h802. Bearman and Lytle, both task force members, later described how the insistence on hierarchy was present "even within the NISTF." Bearman and Lytle, "The Power of the Principle of Provenance," 20.

[69]  Engst, "Standard Elements for the Description of Archives and Manuscript Collections," 6–7.

[70]  Lytle, "An Analysis," 365.

[71]  Bearman and Lytle, "The Power of the Principle of Provenance," 22. Berner, it may be important to note, had a visceral reaction to Bearman and Lytle's article, calling it, "Filled with bald assertions and generalizations that are not substantiated either by elaborations to clarify meanings, or by adequate examples, I find it a disturbing tirade." However, he did not seem to engage with their focus on function and form, which is probably the most effective part of the piece. Richard C. Berner, "The Power of Provenance: A Critique of David Bearman and Richard Lytle," Letters to the Editor, *Archivaria* 22 (Summer 1986): 4.

[72]  Another influential critique of archival hierarchy from this era was Max J. Evans, "Authority Control: An Alternative to the Record Group Concept," *American Archivist* 40, no. 2 (1986): 249–61, https://doi.org/10.17723/aarc.49.3.0862585240520721.

[73]  NISTF originally envisioned its work as independent from any technology or individual implementation. Sahli described how, by design, MARC-AMC was "not dependent on the technology that will be used for implementation," that "Those who prefer the challenge of a more individualistic approach may, of course, develop their own software and systems," and that the standard "could even be adapted for manual applications." Sahli, "Interpretation," 15, 13, 12. However, Lytle described how, "From its inception, NISTF always found itself dealing with technical and political issues" and "we determined to stay within ANSI Z-39 standards, which meant MARC, but we did not say 'MARC' initially. We knew that we simply had to produce a MARC format to bring the major research libraries into our data exchange provisions." Lytle, "An Analysis," 361.

[74]  Sahli, "Interpretation," 12.

[75]  Hensen, "The Use of Standards," 34.

[76]  Hensen, "NISTF II," 290, 294.

[77]  Steven L. Hensen, *Archives, Personal Papers, and Manuscripts: A Cataloging Manual for Archival Repositories, Historical Societies, and Manuscript Libraries* (Washington, DC: Library of Congress, 1983), 2; Hensen, "NISTF II," 289.

[78]  Sahli, "Interpretation," 10. David Weinberg also described MARC-AMC as "designed specifically for archives and the unique arrangements and descriptions of each archival collection." David

Weinberg, "Automation in the Archives: RLIN and the Archives and Manuscript Control Format," *Provenance, Journal of the Society of Georgia Archivists* 4, no. 2 (1986): 12.

79 Marcia Lei Zeng and Jian Qin, *Metadata*, 2nd ed. (Chicago: Neal-Schuman, 2016).

80 Hensen, "NISTF II," 289.

81 To Davis, MARC-AMC's development "mirrors Rogers' diffusion of innovation theory," and created "a markedly different occupation." Davis, "How Twenty-Five People Shook the Archival World," 44. Hensen wrote that MARC-AMC "has the potential to change the lives of archivists forever." Hensen, "The Use of Standards," 32.

82 Hensen, *Archives, Personal Papers, and Manuscripts*, 2.

83 Generally, the critique of ignoring incremental improvements and valuing disruptive innovation is one aspect of maintenance theory. Hillel Arnold in particular has worked to apply maintenance theory to conversations about labor in archives. Hillel Arnold, "Critical Work: Archivists as Maintainers" (talk given at the Society of American Archivists' 10th Annual Research Forum, Atlanta, August 2, 2016), https://hillelarnold.com/blog/2016/08/critical-work.

84 Lytle recalled that "we did not know how or why archivists and archival institutions would desire and be able to exchange information." Lytle, "An Analysis," 360, 361. As late as 1989, Bearman described the functions of archival information exchange as unknown. David Bearman, "Archives and Manuscript Control with Bibliographic Utilities: Challenges and Opportunities," *American Archivist* 52, no. 1 (1989): 29, https://doi.org/10.17723/aarc.52.1.3g5q3755300r755r. "In truth," Lawrence Dowler admitted, "most of us were not very sure we really knew what was meant by the term archival description." Lawrence Dowler, Introduction, "Report of the Working Group on Standards for Archival Description," *American Archivist* 52, no. 4 (1989): 432, https://doi.org/10.17723/aarc.52.4.qn515l3671v1517.

85 While MARC-AMC became popular during a computing revolution, availability of personal computers and software to manage description in MARC-AMC was still limited. One author discovered that the many empty fields undermined the use of MARC-AMC in the common commercial database programs of the day because they used too much memory. Ronald J. Zboray, "dBASE III Plus and the MARC AMC Format: Problems and Possibilities," *American Archivist* 50, no. 2 (1987): 212–13, https://doi.org/10.17723/aarc.50.2.3422w1p716372782. The first MARC-AMC software used directly in an archives was not available until around 1989. Frederick L. Honhart, "MicroMARC: amc: A Case Study in the Development of an Automated System," *American Archivist* 52, no. 1 (1989): 80–86, https://doi.org/10.17723/aarc.52.1.y7v4464253136340. Even after the software was available, it was only used by 12% of repositories using MARC by 1992. Lyn M. Martin, "Viewing the Field: A Literature Review and Survey of the Use of U.S. MARC AMC in U.S. Academic Archives," *American Archivist* 57, no. 3 (1994): 490, https://doi.org/10.17723/aarc.57.3.xu5345u722614jm8.

86 Dowler, Introduction, 432–33.

87 "Report of the Working Group on Standards for Archival Description," 451.

88 "Report of the Working Group on Standards for Archival Description," 452–55, 462–77. David Bearman's article in the same issue outlined a different matrix and was presented to the working group. David Bearman, "Description Standards: A Framework for Action," *American Archivist* 52, no. 4 (1989): 514–19, https://doi.org/10.17723/aarc.52.4.224g4336k5670067.

89 Roe, "From Archival Gothic to MARC Modern," 65.

90 Daniel Pitti, "Encoded Archival Description: The Development of an Encoding Standard for Archival Description," *American Archivist* 60, no. 3 (1997): 272, https://doi.org/10.17723/aarc.60.3.f5102tt644q123lx.

91 Daniel Pitti, "The Berkeley Finding Aid Project," http://archive1.village.virginia.edu/dvp4c/arlpap.htm. Also appeared in Ann Okerson, ed., *Filling the Pipeline and Paying the Piper* (Washington, DC: Association of Research Libraries, 1995). Revision of presentation made at the 1993 Society of American Archivists Annual Meeting in New Orleans, LA, and at the 1994 American Research Libraries/Association of American University Presses 4th Symposium on Electronic Publishing on the Network in Washington, DC.

92 Pitti, "Encoded Archival Description," 278–79.

93 Pitti, "Encoded Archival Description," 269–70; Pitti, "The Berkeley Finding Aid Project."

94 Pitti, "Encoded Archival Description," 283.

95  Pitti, "The Berkeley Finding Aid Project."

96  Pitti, "The Berkeley Finding Aid Project"; Jackie M. Dooley, "Introduction—Encoded Archival Description: Context and Theory," *American Archivist* 60, no. 3 (1997): 264, https://doi.org/10.17723/aarc.60.3.e30275364l232503.

97  "Report of the Working Group on Standards for Archival Description," 454.

98  Elizabeth J. Shaw, "Rethinking EAD: Balancing Flexibility and Interoperability," *New Review of Information Networking* 7, no. 1 (2001): 117, https://doi.org/10.1080/13614570109516972.

99  Anne J. Gilliland-Swetland described how, in historic practice, "both archivists and users utilize the same version of the finding aid." Gilliland-Swetland, "Popularizing the Finding Aid," 202, 206, 200. J. Gordon Daines III and Cory L. Nimer also described the finding aid's "dual inheritance as a management and access tool." Daines and Nimer, "Re-Imagining Archival Display," 6. This phenomenon was also described by Elizabeth Yakel, "Archival Representation," *Archival Science* 3 (2003): 18–19, 24, https://doi.org/10.1007/BF02438926.

100 Jill Tatem described how "Proponents emphasize the compatibility of EAD with traditional paper registers as well as being the evolutionary successor to MARC AMC." Jill Tatem, "EAD: Obstacles to Implementation, Opportunities for Understanding," *Archival Issues* 23, no. 2 (1998): 160, https://minds.wisconsin.edu/handle/1793/45878.

101 Shaw, "Rethinking EAD," 120–21.

102 Trace and Dillon, "The Evolution of the Finding Aid in the United States," 508.

103 These types of reactions are typically underdocumented in the literature, but Jill Tatem offered one example of apparently "frequent" complaints about EAD, by suggesting methods to combat "negative perceptions." Tatem, "EAD: Obstacles to Implementation, Opportunities for Understanding," 157, 158, 161, 165. Sonia Yaco described "a range of reaction" with both archives that "spread the gospel" and "reject EAD altogether." Sonia Yaco, "It's Complicated: Barriers to EAD Implementation," *American Archivist* 71, no. 2 (2008): 456, https://doi.org/10.17723/aarc.71.2.678t26623402p552.

104 Shaw, "Rethinking EAD," 124–25.

105 Dennis Meissner, "First Things First: Reengineering Finding Aids for Implementation of EAD," *American Archivist* 60, no. 4 (1997): 372–87, https://doi.org/10.17723/aarc.60.4.6405275227647220. Joyce Celeste Chapman later noted that "it is important to remember that the goals of descriptive standards should not and do not include display." Chapman, "Observing Users," 5.

106 Shaw, "Rethinking EAD," 117.

107 Two of the largest repository-level efforts to develop management systems for EAD were costly and eventually caused long-term maintenance problems. "The Beast" at the University of Maryland was abandoned for ArchivesSpace. Jennie A. Levine, Jennifer Evans, and Amit Kumar, "Taming the 'Beast': An Archival Management System Based on EAD," *Journal of Archival Organization* 4, nos. 3–4 (2006): 63–98, https://doi.org/10.1300/J201v04n03_05. The migration process was described by Cassie Schmitt, "The Beast," *Chaos—>Order* (blog) (February 20, 2014), https://icantiemyownshoes.wordpress.com/2014/02/20/the-beast; Cassie Schmitt, "Beast Tables and Relationships," *Chaos—>Order* (blog) (February 24, 2014), https://icantiemyownshoes.wordpress.com/2014/02/24/beast-tables-and-relationships. The Princeton University Finding Aids Site was a notable success in user-centered design practices, but its XML-database framework eventually proved challenging to maintain at scale, and the staff is exploring plans to migrate to another system. Daniel A. Santamaria, "Appendix B: Case Studies, Princeton University Archives," in *Designing Descriptive and Access Systems*, Trends in Archives Practice Series, ed. Christopher J. Prom and Thomas J. Frusciano (Chicago: Society of American Archivists, 2013), 52–54, https://www2.archivists.org/sites/all/files/Module_3_CaseStudy_DanielSantamaria.pdf; Alexis Antracoli, in discussion with the author, July 2017.

108 Shaw, "Rethinking EAD," 122, 127–28, 130.

109 Engst, "Standard Elements for the Description of Archives and Manuscript Collections," 172; Roe, "From Archival Gothic to MARC Modern," 64–65; Katherine M. Wisser and Jackie Dean, "EAD Tag Usage: Community Analysis of the Use of Encoded Archival Description Elements," *American Archivist* 76, no. 2 (2013): 542–66, https://doi.org/10.17723/aarc.76.2.x4h78gx76780q072.

[110] Sibyl Schaefer, "Challenges in Sustainable Open Source: A Case Study," *Code4Lib Journal*, issue 9 (March 22, 2010), https://journal.code4lib.org/articles/2493; Mark A. Matienzo and Katherine Kott, "ArchivesSpace: A Next-Generation Archives Management System," in *Museums and the Web 2013*, ed. Nancy Proctor and Rich Cherry (Silver Spring, MD: Museums and the Web, January 31, 2013), https://mw2013.museumsandtheweb.com/paper/archivesspace-a-next-generation-archives-management-system.

[111] In 1998, Jill Tatem wrote that "Archivists do not have broad or deep habits of collaboration." Tatem, "EAD: Obstacles to Implementation," 160, as discussed by Yaco, "It's Complicated," 458. Yet, if that was the case, archivists were forced to rapidly embrace open sharing and discovered that the ideals of open source software readily grafted onto their own. Today, archivists have a strong community that continually shares code, techniques, and best practices, and perhaps EAD is a main reason for that.

[112] James M. Roth, "Serving Up EAD: An Exploratory Study on the Deployment and Utilization of Encoded Archival Description Finding Aids," *American Archivist* 64, no. 2 (2001): 233, 215, https://doi.org/10.17723/aarc.64.2.e687471v304k0u66.

[113] Michael J. Fox, *The EAD Cookbook*, http://saa-ead-roundtable.github.io.

[114] Christopher J. Prom, "*The EAD Cookbook*: A Survey and Usability Study," *American Archivist* 65, no. 2 2002): 260, https://doi.org/10.17723/aarc.65.2.b3783jr052731588; Yaco, "It's Complicated," 457.

[115] Yaco, "It's Complicated," 466–67.

[116] Daines and Nimer, "Re-Imagining Archival Display," 5.

[117] Joining state or regional consortia was suggested as one of the top "low-impact ways to tackle EAD implementation." Michele Combs, Mark A. Matienzo, Merrilee Proffitt, and Lisa Spiro, *Over, Under, Around, and Through: Getting Around Barriers to EAD Implementation* (report produced by OCLC Research in support of the RLG Partnership, February 2010), 13, https://www.oclc.org/content/dam/research/publications/library/2010/2010-04.pdf. Following OAC's lead, consortial online finding aids sites later emerged in Texas, the Pacific Northwest, Philadelphia, Chicago, Arizona, Virginia, Rhode Island, and more. Texas Archival Resources Online, https://legacy.lib.utexas.edu/taro; Archives West, http://archiveswest.orbiscascade.org; PASCAL, http://dla.library.upenn.edu/dla/pacscl/index.html; Explore Chicago Collections, http://explore.chicagocollections.org; Arizona Archives Online, http://azarchivesonline.org/xtf/search; Virginia Heritage, http://vaheritage.org; Rhode Island Archival Manuscript Collections Online (RIAMCO), http://www.riamco.org.

[118] Charlotte B. Brown and Brian E. C. Schottlaender, "The Online Archive of California: A Consortial Approach of Encoded Archival Description," *Journal of Internet Cataloging* 4, nos. 3–4 (2001): 101–2, 110, 105–6, https://doi.org/10.1300/J141v04n03_06.

[119] eXtensible Text Framework (XTF), https://xtf.cdlib.org.

[120] This is clear not only from the XSLT filenames, but also from the comments within the code.

[121] Elsie T. Freeman, "In the Eye of the Beholder: Archives Administration from the User's Point of View," *American Archivist* 47, no. 2 (1984): 112, 118, https://doi.org/10.17723/aarc.47.2.a373340078502136.

[122] Paul Conway, "Research in Presidential Libraries: A User Survey," *The Midwestern Archivist* 11, no. 1 (1986): 35–56; Paul Conway, "Facts and Frameworks: An Approach to Studying the Users of Archives," *American Archivist* 49, no. 4 (1986): 394, https://doi.org/10.17723/aarc.49.4.p21825jp21403087.

[123] Richard J. Cox, "Archivists and Change," *American Archivist* 58, no. 3 (1995): 239, https://doi.org/10.17723/aarc.58.3.k1730682325h2647; Richard J. Cox, "Revisiting the Archival Finding Aid," *Journal of Archival Organization* 5, no. 4 (2007): 19, https://doi.org/10.1080/15332740802153245.

[124] Prom and Chapman both described how the literature regularly called for user studies, yet few were performed. Christopher J. Prom, "User Interactions," 235, Chapman, "Observing Users," 5–6.

[125] Gilliland-Swetland, "Popularizing the Finding Aid," 200.

[126] Yakel, "Encoded Archival Description," 67–68; Scheir, "First Entry," 72–73; Yakel, "Listening to Users," 115–17.

[127] Prom, "User Interactions," 265.

[128] Luanne Freund and Elaine G. Toms, "Interacting with Archival Finding Aids," *Journal of the Association for Information Science and Technology* 67, no. 4 (2016): 1007, https://doi.org/10.1002/asi.23436.

[129] Scheir, "First Entry," 71.

[130] Rachel Walton, "Looking for Answers: A Usability Study of Online Finding Aid Navigation," *American Archivist* 80, no. 1 (2017): 45–46, https://doi.org/10.17723/0360-9081.80.1.30; Shaun Ellis and Maureen Callahan, "Prototyping as a Process for Improved User Experience with Library and Archives Websites," *Code4Lib Journal*, issue 18 (October 3, 2012), https://journal.code4lib.org/articles/7394.

[131] Yakel, "Listening to Users," 111.

[132] Yakel, "Encoded Archival Description," 64; Yakel, "Listening to Users," 122.

[133] Yakel, "Listening to Users," 121; Elizabeth Yakel and Deborah A. Torres, "AI: Archival Intelligence and User Expertise," *American Archivist* 66, no. 1 (2003): 77–78, https://doi.org/10.17723/aarc.66.1.q022h85pn51n5800. The general concept of Archival Representation is also outlined in Yakel, "Archival Representation," 1–25.

[134] Yakel, "Listening to Users," 112.

[135] Scheir, "First Entry," 72.

[136] Trace and Dillon, "The Evolution of the Finding Aid in the United States," 516.

[137] Yakel, "Archival Representation," 24. Similarly, when archivists placed archival description in online library catalogs, Robert P. Spindler and Richard Pearce-Moses found users were confounded because the library records next to them played by an entirely different set of rules. Robert P. Spindler and Richard Pearce-Moses, "Does AMC Mean 'Archives Made Confusing'? Patron Misunderstanding of USMARC AMC Catalog Records," *American Archivist* 56, no. 2 (1993): 335, https://doi.org/10.17723/aarc.56.2.y258x6655x047415.

[138] DeRidder, Presnell, and Walker, "Leveraging Encoded Archival Description for Access to Digital Content," 143–70; Jackson, "I Want To See It," 20–77.

[139] *ISAD(G): General International Standard Archival Description: Adopted by the Ad Hoc Commission on Descriptive Standards, Stockholm, Sweden, 21–23 January 1993: Final ICA Approved Version* (Ottawa: Secretariat of the Ad Hoc Commission on Descriptive Standards, 1994), http://www.hi.u-tokyo.ac.jp:80/personal/yokoyama/jugyo99/isad(g)e.html.

[140] William E. Landis suggested that US archivists were instead focused on preserving the "hard-fought gains" of MARC-AMC as MARC formats were integrated, as well as interest in the Berkeley Finding Aid Project. William E. Landis, "Overcoming the Bibliographic Conundrum in Archival Description" (Session 706 at Society of American Archivists Annual Meeting, August 27, 2011), published as Steven L. Henson, William E. Landis, Kathleen D. Roe, Michael Rush, William Stocking, and Victoria Irons Walch, "Thirty Years On: SAA and Descriptive Standards," *American Archivist* 74, Issue Supplement 1 (2011): 14, https://doi.org/10.17723/aarc.74.suppl-1.15011hj3lg56t0t3; Michael J. Fox, "Stargazing: Locating EAD in the Descriptive Firmament," *Journal of Internet Cataloging* 4, nos. 3–4 (2001): 62, https://doi.org/10.1300/J141v04n03_04.

[141] Fox, "Stargazing," 69. Sharon Gibbs Thibodeau worked on both EAD and ISAD(G) and developed a direct comparison. Fox also stated that "Compatibility with ISAD(G) was a stated goal of EAD from the beginning." Fox, "Stargazing," 69. Landis described how "important work went on early in EAD's evolution to align the emerging data structure standard to the new international standard." Also discussed in Janice E. Ruth, "Encoded Archival Description: A Structural Overview," *American Archivist* 60, no. 3 (1997): 316, https://doi.org/10.17723/aarc.60.3.g121j46347828122. The DACS Tables C2 and C5 that crosswalk ISAD(G) to EAD through DACS do show the correlation, but it is a good example of a common problem with EAD that Michael Rush described as "require[ing] too many choices and offer[ing] too many paths that lead to the same result." *Describing Archives: A Content Standard* (Chicago: Society of American Archivists, 2004), 224–26, https://www2.archivists.org/sites/all/files/DACS%20Revision%20(July%202012).pdf. Michael Rush, "The Archival Network: You Don't Get to Describe Records without Making a Few Standards" (Session 706 at Society of American Archivists Annual Meeting, August 27, 2011), in "Thirty Years On," 23.

[142] William Stocking, "Commentary: A U.K. Perspective" (Session 706 at Society of American Archivists Annual Meeting August 27, 2011), in "Thirty Years On," 29.

[143] Fox, "Stargazing," 72.

[144] Jean Dryden, "The CUSTARD Project: An Update," *Journal of Archival Organization* 1, no. 3 (2002): 90, https://doi.org/10.1300/J201v01n03_06; *Describing Archives: A Content Standard*, v–vi.

[145] A survey published in 2014 found that 76% of American repositories identified as using DACS, while 52% stated they used EAD. Karen F. Gracy and Frank Lambert, "Who's Ready to Surf the Next Wave? A Study of Perceived Challenges to Implementing New and Revised Standards for Archival Description," *American Archivist* 77, no. 1 (2014): 108, 110–11, https://doi.org/10.17723/aarc.77.1.b241071w5r252612.

[146] Katherine M. Wisser and Jackie Dean found <bioghist> elements present in 87.3% of EAD finding aids, ranked between <origination> at 89.0% and <accessrestrict> at 86.2%, which are commonly used to encoded DACS-required elements. Wisser and Dean, "EAD Tag Usage," 551–53.

[147] While n-grams are a problematic methodology, basic counting of instances of EAD and DACS in *American Archivist* supports a general qualitative review of the literature. Since its publication (1998–2018), archivists have mentioned "EAD" in *American Archivist* about seventy-one times per year, while only mentioning "DACS" about twenty-six times per year since its publication (2004–2018). This omits 1997 issues, which heavily featured EAD and would bring its count up to about 104 mentions per year, as well as the substantial focus on EAD in other journals, such as the *Journal of Archival Organization*. Even looking at *American Archivist* issues published since 2004, EAD leads DACS 996 instances to 393, or 66 to 26 per year. Data gathered using Gregory Wiedeman, "aaText: Scripts for Scraping and Examining Text from the *American Archivist*," https://github.com/gwiedeman/aaText.

[148] Elizabeth H. Dow, "Encoded Archival Description as a Halfway Technology," *Journal of Archival Organization* 7, no. 3 (2009): 108–15, https://doi.org/10.1080/15332740903117701.

[149] Archivists' Toolkit User Group, "AT User Group Survey Results: Proposed New Features and Functionality," May 16–30, 2008, http://archiviststoolkit.org/sites/default/files/AT%20User%20Group%20SurveyResultsFD.pdf. Cited by Combs, Matienzo, Proffitt, and Spiro, *Over, Under, Around, and Through*, 5; Wim van Dongen and Katherine M. Wisser, "EAD3 Implementation Survey Results and Discussion" (March 20, 2019), http://www.loc.gov/ead/EAD3_Implementation_Survey_Results_and_Discussion_20190320.pdf.

[150] This point was made by Combs, Matienzo, Proffitt, and Spiro, *Over, Under, Around, and Through*, 10.

[151] The standards development system was critically discussed in Maureen Callahan and Adrien Hilton, "Report of DACS Principles Meeting 2017" (April 28, 2017), 1–3, https://docs.google.com/document/d/1aOV7IgH5WqVl-tXUswCJkZAML_A8SKjTZOB4_wGz35w.

[152] In particular, EAD3 provides substantial improvements in encoding, including changes that address many of the criticisms in this article. The new version significantly limits mixed content, disallows redundant and format-specific elements, and generally provides more actionable structure for description. However, as with earlier versions, concerns of implementation barriers led the group to allow unstructured elements as legacy description. <physdescstructured> for example, encodes extent and volume in more machine-actionable ways, yet the schema still permits mixed context in <physdesc>, which ensures continued inconsistencies. This, along with the development of more effective systems for data exchange, means that—despite the very real improvements—the same underlying problems still persist. *Encoded Archival Description Tag Library: Version EAD3* (Chicago: Society of American Archivists, 2015), https://www.loc.gov/ead/EAD3taglib/tl_ead3.pdf. Also discussed by Michael Rush, "Encoded Archival Description Roundtable" (Society of American Archivists Annual Meeting August 13, 2014), https://archives2014.sched.com/event/1qEoprg/saa-encoded-archival-description-roundtable.

[153] A 2017–2018 EAD3 implementation survey shows how some institutions are beginning to question the benefits of moving to EAD3. Van Dongen and Wisser, "EAD3 Implementation Survey Results and Discussion," 4–5.

[154] The Rockefeller Archive Center has done impressive work in this area at the repository level. See Patrick Galligan, "Modeling for Project Electron" (April 6, 2018), https://blog.rockarch.org/modeling-for-project-electron.

[155] ArchivesSpace, http://archivesspace.org; ArchivesSpace Public Interface Enhancement Project, https://archivesspace.atlassian.net/wiki/spaces/ADC/pages/22282254/Public+Interface+Enhancement+Project; ArcLight: A Rails Engine Supporting Discovery of Archival Material, https://wiki.duraspace.org/display/samvera/ArcLight; "Project Electron," http://projectelectron.rockarch.org.

[156] Daines and Nimer, "Re-Imagining Archival Display," 5, 12–20.

[157] In particular, they allowed the <unitdate> element to be included next to text within the <unit-title> element, so that archivists could still encode titles based on how they look visually. While making it easier for archivists to be in compliance with the standard, these decisions also ensured persistent inconsistencies in how description is encoded across repositories and hindered interoperability. *Encoded Archival Description Tag Library: Version EAD3*, 8–9.

[158] Mark Custer and Susan Pyzynski, "ArchivesSpace Public User Interface: Feature Highlights" (presentation at the ArchivesSpace User Forum, Portland State University, July 25, 2017), https://www.youtube.com/watch?v=FWkMC3KUy_Y.

[159] A current problem is that these two applications use the same index, so if an unpublished note is searched, the records will still show in public search results, yet the note will not be displayed, causing the appearance of an incorrect result. "There are a number of items showing up in the PUI that should not be there or should not affect searching," Ticket ANW-323 (submitted January 29, 2018), https://archivesspace.atlassian.net/browse/ANW-323.

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