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ORIGINAL PAPER

Stories of impact: the role of narrative in understanding the value and impact of digital collections

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Abstract Cultural heritage institutions leverage digitization to fulfill their mission to preserve, represent, and provide access to collections under their care. Despite their common interest in documenting the progress of digitization and online access, the library, archives, and museums (LAM) sector lacks a conceptual framework for assessing and demonstrating the impact of digitized ethnographic collections. Reporting the findings of a yearlong interdisciplinary study, this article underscores the importance of storytelling in articulating the value and impact of digitized ethnographic collections held in cultural heritage institutions. We begin with an overview of the literature on the assessment and describe the methods we employed in our study. Next, we identify and discuss the different ways that stories and storytelling are strategically mobilized in conversations about the impact of digitization. We conclude with a discussion of the implications of our findings for cultural heritage practice and collection development.

Keywords Digitization · Ethnographic collections · Impact · Narrative · Storytelling

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Introduction

Over the last two decades, the libraries, archives, and museums (LAM) sector has made large portions of its anthropological holdings available in digitized formats (Deegan and Tanner 2002; Sutton 2004; also see Hughes 2004, pp. 1–30; Terras 2008, pp. 30–57). However, the development of tools and models for assessing the impact and usability of these digital assets has not kept pace. General models and tools created for the heritage sector in general (Fraser et al. 2002; Hughes 2012; JISC 2013; Kelly 2012; Shen et al. 2013; Tanner 2012; Tsakonas and Papatheodorou 2011; Voorbij 2010; Xie 2008; Yakel and Tibbo 2010) are not necessarily appropriate for ethnographic collections, whose assessment demands special consideration. As a consequence, LAM institutions risk misunderstanding the significance of online access to ethnographic collections currently accessible and may be missing opportunities to strategically develop additional digital collections. Equally important, LAM institutions that fail to appreciate the distinctive nature of ethnographic collections may mishandle culturally sensitive materials and inadvertently foster cultural misunderstanding or the misuse of their collections.

Current modes of assessing the impact of digitization in general are limited to metrics or analytics—numeric totals of downloads, clicks, hits, and "likes". Lacking more qualitative data, institutions often rely on these proxy measures and anecdotal feedback to evaluate the impact of digitization projects.

Ethnographic collections pose numerous challenges to assessment. First, ethnographic collections encompass a wide range of formats and media. These include analog, digitized or born digital field notes, photographs, drawings, film, video, sound recordings, and objects of material culture that have been collected, assembled, or created for the purpose of documenting social life and cultural traditions. The wide range of materials, modes of storage, and contexts for use (in their LAM or originating contexts) make them difficult to characterize or assess systematically.

Second, ethnographic collections may be difficult to distinguish from other cultural heritage collections. Ethnographic collections are often defined by their origin in, or connection to, Indigenous source communities "from which museum objects originate" (Peers and Brown 2003, p. 1). Importantly, as articulated by Peers and Brown, "the term 'source communities' (sometimes referred to as 'originating communities') refers both to these groups in the past when artefacts were collected, as well as to their descendants today" (Peers and Brown 2003, p. 2). Thus, assessing *ethnographic* digitization projects is difficult because, although they often pose very particular challenges, they are at the same time difficult to identify or isolate. For the purpose of this study, our research team did not specifically define *ethnographic*; instead, we allowed the interviewees to self-identify relevant collections at their own institutions. As we anticipated, institutions did indeed invariably focus on collections traceable to Indigenous communities. In this article, we use the word *Indigenous* in place of terms such as *Aboriginal, First Nations*, and *Native* that have specific local contexts of use.

Third, assessing the impact of ethnographic collections requires sensitivity to their original contexts of use, to the conditions under which they were produced or collected, and occasionally, to their unique colonial histories. The complexity of uses and users for these collections, the ethical impetus for many projects, and the long-term goal of decolonizing LAM institutions through these collections makes "measuring" their "impacts" problematic. "Measuring" the significance and cultural uses for these collections runs the risk of essentializing or trivializing these projects and the relationships they are beginning to engender.

Fourth, public access to ethnographic collections is often restricted because their content is "sensitive." Here, the Smithsonian Institution's *Digital Asset Access and Use* policy provides a succinct definition: "*Sensitive Content* is defined in different ways by members of individual communities, nations, tribes, ethnic groups, and religious denominations, but usually includes materials that relate to traditional knowledge and practices. Such materials may (a) be considered the private domain of specific individuals, clans, cults or societies; (b) require an appropriate level of knowledge to view and understand; (c) threaten the privacy and well-being of a community when exposed or disclosed to outsiders; and/or (d) give offense if inappropriately used or displayed, or when appropriated or exploited for commercial purposes" (Smithsonian Institution 2011, p. 18). In other words, ethnographic collections have politicized and culturally specific meanings and boundaries. Indigenous objects of material culture present particularly complex cases for thinking about the impact of digitization because of their complex nature and the wide variety of cultural traditions that may govern their proper use. Often, the broadest public is not intended to have access to them. Instead, their intended users may be individuals with culturally sanctioned rights to them (see Jaarsma 2002; Leopold 2013; Pepper 2004).

The limited scale of an ethnographic collection's potential audiences or user communities complicates comparative assessment. Online ethnographic collections may be widely used and may have considerable impact within a community that is, nonetheless, relatively small in number compared to the online audience for more mainstream LAM collections. LAM institutions may engage in large-scale or otherwise costly ethnographic digitization projects designed for relatively small user communities specifically to transform museum–Indigenous relations and promote social justice (Gibson and Turner 2012; Hennessey et al. 2013; Hollinger et al. 2013; Leopold 2008).

Lastly, the critique of objective measurement and metric evaluations so prevalent among anthropologists makes many practitioners who work with ethnographic collections reluctant to use numeric assessments at all. Colonial practices of objectification and numeric measurement have engendered a deep concern about the use of the very term "metrics" or "measurement" (Skotnes 1996; Stocking 1968, pp. 56–57). We see this in contemporary anthropological critiques of "audit cultures," models of quantified accountability (Strathern 2000), including the institutionalization of "rational," "utilitarian" thinking (Sahlins 1976, pp. 166–167). These critiques have understandably and justifiably furthered this skepticism of numeric measurement.

Our research confirmed the salience of these challenges to the assessment of ethnographic collections in a wide range of cultural heritage institutions. At the same time, our research indicates that it is both crucial and possible for institutions to evaluate the impact of digitized ethnographic collections. This paper argues that storytelling is a central concept for understanding, managing, and developing efforts to assess the impact of digitized ethnographic collections. In particular, it illustrates how cultural heritage professionals and administrators strategically mobilize stories to describe their digitization efforts. Importantly, our data highlight a tension between the actual use of stories to describe the goals and impacts of digitization and the absence of systematic mechanisms for collecting them. We begin with an overview of the literature on assessment and describe the methods we employed in our study. Next, we identify and discuss the different ways that stories and storytelling are strategically mobilized in conversations about the impact of digitization. Finally, we examine the wider implications of our findings in research and practice.

Theoretical background

Defining impact

This project is informed by distinct, yet complementary definitions of impact proposed by Tanner (2012) and Brophy (2005). According to Tanner, impact is defined as, "the measurable outcomes arising from the existence of a digital resource that demonstrate a change in the life or life opportunities of the community for which the resource is intended" (9). With digital ethnographic resources, however, it is important to be mindful of the possibility that they may have unintended results and may even affect unintended users. Brophy's definition considers a range of outcomes, effects, and timeframes. Thus, he defines impact as "any *effect* of a service, product or other 'event' on an individual or group. It may be positive or negative; may be what was intended or not; may result in changed attitudes, behaviours, outputs (i.e. what an individual or group produces during or after interaction with the service, action or institution); may be short or long term; may be critical or trivial" (44). Duff et al. have integrated Brophy's definition with that of Williams et al. (2005) to include "the overall change in state, attitude or behavior of an individual or group after engagement with the service output." Based on Pastakia and Jenson (1998), this is in turn dependent on, "the location of the impact, the magnitude of the impact, whether any change is permanent or whether it may be reversed, whether the impact is singular or synergistic, and whether there is any likelihood of a cumulative impact over time" (cited in Duff et al. 2013, p. 331).

These sources are helpful in identifying the important layers and elements for understanding the impacts that matter for various stakeholders, to balance multiple and sometimes competing values of stakeholder groups, as well as the levels of reception of a given digital project over time. Together, they present an understanding of impact focused on *changes* or *effects* that would have not occurred in the absence of a given digital resource and service.

Several models for measuring the impact of digital cultural heritage projects, services, and collections have recently been developed. Notable among them are Tanner's (2012) balanced value impact model; TIDSR: Toolkit for the Impact of Digitised Scholarly Resources (JISC 2013); Archival Metrics (Duff et al. 2010; Yakel and Tibbo 2010; Yakel et al. 2012); E-metrics (Fraser et al. 2002); and UKOLN's framework for metrics for JISC programs (Kelly 2012). There are also current efforts to develop a model for understanding how archives contribute to the advancement of social justice (Duff et al. 2013).

Yet, despite these efforts, studies have noted the lack of measurement among institutions beyond simple usage statistics and frequency of visits to evaluate the value of their work, and the importance of filling this gap (Carter 2012; Chapman and Yakel 2012; Duff et al. 2008, 2013; Franklin and Plum 2010; Fraser et al. 2002; Hughes 2012; Lakos and Phipps 2004; Oliver 2011; Plum et al. 2010). While data collection strategies that count visits, frequency of requests, or borrowing may provide useful information, these data do not offer reliable measures of institutional impact or nuanced portraits of audience engagement (Saracevic 2000, 2004). Moreover, while LAM institutions routinely compile data on the use of their collections, programs, and services, these institutions seldom analyze the data they have collected to drive decision making or institutional reforms (Davies 2002).

Our research builds upon several recent studies to argue that these observed gaps between the hoped for outcomes of data gathering efforts and the result of actual practice reflect a failure to account for the centrality of stories and storytelling in impact assessment. Recent work has noted the different roles that narratives and storytelling play in impact assessment. Brophy (2008) has underscored the role of narratives and storytelling in evaluating library performance. Similarly, Tanner (2012) has emphasized the critical role of qualitative approaches in assessing and communicating the value of digital resources. Duff et al. (2010, 2013) also point to the value of narratives and qualitative methods to better appreciate outcomes and effects. Moreover, the fields of management and organizational studies have explored the role of foundational stories and mythmaking in institutions. In anthropology—the discipline in which ethnographic collections are most often studied—there is a much longer history of studying mythmaking, storytelling, and narrative in human cultures. Taken together, this previous work provides a rich perspective on the use of stories and storytelling not just in communication of impact assessment results, but in the more fundamental activities of shaping, using, and managing the collections and institutions themselves. More importantly, they serve as frameworks for analyzing the perspectives of our research findings.

Perspectives on mythmaking, storytelling, and narratives

While recent work in library and archival impact assessment (Brophy 2008; Duff et al. 2010, 2013; Tanner 2012) recognizes that narratives and stories are involved in communicating the results of impact assessments, less attention is given to the central roles of mythmaking, storytelling, and narratives in the formation, maintenance, and day-to-day operations of archival institutions. These roles are particularly critical for understanding ethnographic collections that exist at the

intersection of institutions and communities. As a result, scholars and professionals undertaking impact assessment efforts, especially those for new practices such as digitization, and socially complex materials such as those found in ethnographic collections, must necessarily understand how their efforts effect the mythmaking, storytelling, and narratives that exist within and around their collections, programs, and institutions.

The study of myth, both as a concept and as a framing device, has a long history in the discipline of anthropology. In the early twentieth century, myth was viewed as an elaborate explanation for the status quo of a society (Cohen 1969, p. 339; Frazer 1918; Tylor 1958). Later, myths were conceived in functionalist terms as a means for maintaining social solidarity (Cohen 1969, p. 344; Durkheim 1961; Malinowski 1948) or as expressions of the unconscious mind (Cohen 1969, p. 340; Freud 1952; Jung 1961). Mid-century, anthropologists began to consider the symbolic elements of myth and related ritual and their implications for societal balance (Cohen 1969, p. 345; Graves 1955; Leach 1954; Raglan 1955). More useful for the present study is the manner in which Lévi-Strauss (1955, 1966; Cohen 1969, p. 349) considered myths as part of a wider set of structural relations for "mediating contradictions" or "oppositions." For our study, Lévi-Strauss's approach to analyzing variants of myths as a kind of language (Lévi-Strauss 1955, p. 436), and his understanding of a myth's value for "providing a logical model capable of overcoming a contradiction" (Lévi-Strauss 1955, p. 443) is particularly useful. Yet Lévi-Strauss's approach to the understanding of myths downplays their narrative elements.

A myth, for Cohen, is a narrative of events that communicates deep cultural values and is believed to be true (Cohen 1969, p. 337) and that communicates deep cultural values. Myths help people categorize the world and make their institutions and practices understandable and meaningful (Cohen 1969, p. 344). For interpretivists like Geertz (1973), myths were both about communicating a cultural ethos and world view. For Geertz, an ethos is "a people's tone, character, and quality of their life, its moral and aesthetic style and mood… the underlying attitude toward themselves and their world that life reflects" (p. 127). A worldview, on the other hand, is "their picture of the way things in sheer actuality are, their concept of nature, of self, of society… their most comprehensive ideas of order" that were "stored" in symbols related in myths (1973, p. 127). Later, we discuss the importance of these characterizations of myth for our understanding of institutional storytelling.

In organizational studies, mythmaking and storytelling are also central topics for understanding institutional cultures and the adoption of technologies. Amidst the growing scholarship on sociotechnical systems (e.g., Pasmore and King 1973; Trist et al. 1963), scholars have noted that narratives both generate and are generated by the adoption of technology. As with other information technology (IT) "environments," museums adopting new technologies are complex networks of practices, equipment, infrastructures, applications, and people all enmeshed in specific contexts—such as the histories, institutional cultures and infrastructures, social relations, and practices of use (Kling and Scacchi 1982).

The literature on the adoption of technology in organizations, for instance, draws on the idea that organizational life is structured by new myths that emerge as technologies become integrated and normalized. In their article on innovation and information technologies, Swanson and Ramiller (2004) show how innovation is slowly "assimilated into the routines of organizational work" (p. 711) while the process of these developments is translated into an "organizing vision." Here "the vision, as a conceptual framework for an innovation, helps to facilitate the innovation's diffusion by interpreting and legitimating it, and by mobilizing associated material activity," while "knowledge about benefits, costs, and implementation" is "collectively constructed" (p. 713). At our participating institutions, where digitization had been assimilated into routine work, it became important to pay attention to how these interpretations or "visions" were articulated.

In the last few decades, numerous researchers have likewise investigated the role of storytelling within organizations. The first works published in the 1970s focused on the way in which managers used stories to describe their ideal organizations (Clark 1972; Mitroff and Kilman 1976). Through the 1990s, the study of narratives allowed researchers to investigate emotional and symbolic lives within institutions and organizations (Gabriel 1998; Van Buskirk and McGrath 1992). In recent years, case studies have illustrated how stories told about employees and companies represent a form of institutional knowledge (Rhodes and Brown 2005). Stories, for example, can be an effective tool to promote an organization's long-term vision and the staff's investment in it (Harris and Barnes 2006). In fact, storytelling has the ability to permeate an institution with exceptional speed and depth of understanding (Brown et al. 2005). By constructing specific narratives, members of the organization can collectively share tacit knowledge acquired in distinct occasions and projects (Nielsen and Madsen 2005). Communities of workers can construct stories to make sense of their everyday routines and solve conflicts that occur in the work place (Patriotta 2003).

Narratives also have the power to build the symbolic ground for cultivating and sustaining organizational culture (Bormann 1994; Brown 1986; Myrsiades 1987). Stories can be used to claim organizational distinctiveness and uniqueness (Boyce 1996; Clark 1970; Martin et al. 1983). At the same time, they are powerful tools for convincing employees that an organizational change is in line with its values and history (Rhodes 1997). Furthermore, multiple narratives can coexist simultaneously within the same organization. In this sense, an organization can be understood as a "multidiscursive and precarious effect or product" (Law 1994, p. 250). Because the same episode can be narrated in multiple ways, the organization may assume a central role in controlling which form of the story becomes the "official" one (Gergen and Gergen 2000). Researchers have also investigated how competing stories interact and how some of them become dominant and others marginalized (Aaltio-Mariosola 1994; Boje 1995). In particular, it has been observed that the more a story is coherent and the earlier it is made public, the more likely it will become the prevailing narrative (Cobb 1993). By studying the role of storytelling within organizations, researchers have been also able to underscore how temporal issues are crucial for a better understanding of the history of an institution.

Organizations are not static entities. Rather they are fluid and complex organisms kept together by shared stories (Boje 2001).

The goal of our study was to take stock of current understandings of impact for digitization among LAM institutions and professionals. We wanted to find out not only why institutions were digitizing ethnographic collections, but also what they thought mattered about these endeavors—what happened to digital surrogates once they were online? Among whom? To what ends?—as well how to understand the answers to these questions—the impact of digitizing ethnographic collections—systematically. In the following section, we detail the methods for our study, including our interviews and site visits to a number of LAM institutions, a two-day workshop we held with professionals in the field, and the methods of our analysis.

Methodology

Our findings derive from a yearlong interdisciplinary research project conducted by a team of anthropologists from the Smithsonian Institution and faculty in the College of Information Studies at the University of Maryland, College Park. Our study brought together perspectives from two communities engaged in cultural heritage digitization projects: those who create and manage digital assets and those who research and study their digital products. The first phase of our project consisted of a series of semi-structured interviews, focus group discussions (FGDs), and site visits. The second phase included a two-day workshop that gathered various communities involved in the spectrum of ethnographic digitization.

Research participants

Eight large cultural heritage institutions located in the US east coast with extensive ethnographic collections participated in the study. Four of these institutions are connected with the Smithsonian Institution: the National Museum of Natural History, the National Anthropological Archives, the Center for Folklife and Cultural Heritage, and the National Museum of the American Indian. The other four participating institutions were the American Museum of Natural History, the Harvard University's Peabody Museum of Archaeology and Ethnology, the University of Pennsylvania Museum of Archaeology and Anthropology, and the American Philosophical Society.

We recruited a total of 56 individuals who are actively involved in various aspects and phases of digitization. We strove to include representatives from a range of departments within libraries, archives, and museums in order to consider the broadest possible range of professional roles, expertise, values, and practices. This included a wide array of heritage professionals and administrators responsible for digitization initiatives. Table 1 lists the institutions visited and the number of staff interviewed. Table 2 groups participants by their expertise and shows the representativeness of our sample.

Of the seven administrators interviewed, two manage curatorial departments, one oversees a collections management unit, one directed a library, one is responsible in

Table 1 Institutional participants

No.	Institution	Total ($n = 56$)
1	American Museum of Natural History	13
2	American Philosophical Society	5
3	Anthropology Department, NMNH, Smithsonian Institution	5
4	Peabody Museum of Archaeology and Ethnology	7
5	National Museum of the American Indian, Smithsonian Institution	2
6	National Anthropological Archives, NMNH Smithsonian Institution	3
7	Smithsonian Center for Folklife and Cultural Heritage	6
8	University of Pennsylvania Museum of Archaeology and Anthropology	15

Table 2 Respondents by role/expertise

Roles/expertise	No. ($n = 56$)	Alpha code
Administrators	7	A
Archivists	10	B
Curators	7	C
Collections managers	5	D
Curatorial associates/project managers	5	E
Digital asset specialists/IT staff	9	F
Librarians	4	G
Marketing specialists	1	H
Program directors	6	I
Repatriation specialists/staff	3	J

overseeing an information management department, one directed both collections management and outreach efforts, and one serves as the institution's head. Those we have categorized as program directors were similarly diverse. This group included two directors of object collections and archival materials, three of curatorial or research programs, and one of a wholly object collections-based program. Those categorized as "digital assets specialists and IT staff" represent a variety of staff positions, including web developer, systems analyst, digital project manager, database administrator, imaging services coordinator, and media resources specialist. Curatorial staff expertise included a wide range of geographic specializations in both anthropology and archaeology. Librarians had a likewise diverse set of skills and collections they oversaw—although most were charged with the care of textual collections (including books, manuscripts, photographs, and archival materials) within a larger museum institution. While many professionals' roles overlapped according to these categories, we grouped them by their capacity in which they were primarily speaking during our interviews. Table 2 also provides the alphabetical codes by which we have categorized experts in this paper.

Data collection

From December 2013 to March 2014, we conducted semi-structured interviews, FGDs, and site visits at all eight participating repositories. All interviews and FGDs were audio recorded, transcribed, and later analyzed following a grounded theory approach. Our interview and FGD protocols sought to understand the wide range of digital projects, programs, initiatives at these institutions—from online exhibitions, to online catalogs, to repatriation projects. Our questions were designed to encourage participants to articulate their motivations for initiating digitization efforts, workflows and processes, professional roles involved in digitization, project goals, anticipated audiences, expected and obtained outcomes, methods for evaluating impact, policies around cultural sensitivity, and future goals for impact and evaluation.

To further explore the salient findings of the interviews, FGDs, and site visits, we organized a two-day workshop in April 2014. For this phase of the study, the research team facilitated discussions and activities aimed at encouraging an open conversation to identify areas of meaningful impact and the ways to assess them. Workshop participants invited included LAM professionals and administrators, archival metrics specialists, members of First Nations communities, archeologists, and ethnographers, digitization specialists, grant program administrators, and educators representing a range of experience and expertise including the study of impact and metrics.

Data analysis

We analyzed the resulting interview and FGD transcripts. Following the grounded theory approach to qualitative data analysis (Glaser and Strauss 1967), we coded the transcripts using the open-source data analysis software, TAMSAnalyzer. We carefully noted and compared emergent patterns, paying attention to areas of agreements and divergence among respondents.

We have endeavored to anonymize the source of the narratives that appear below. To do so, we have assigned each respondent a unique alphanumeric code that correlates individuals by expertise, but does not reveal the identities of institutions or individuals. As mentioned above, we chose to categorize experts by the primary capacity in which they were speaking during our interviews. Each expertise has been assigned a letter (A, B, C, and so on) and individuals within each expertise, numbers (1, 2, 3…). Thus, the code A1 stands for Administrator A, respondent 1. All quotes in the paper use these codes to reference speakers.

The problem of metrics

During our interviews and FGD's, we asked respondents to reflect on the impacts of digitized ethnographic materials. Our respondents expressed skepticism about their ability to collect metrics, the value of the metrics that are collected, as well as the stories that are frequently used in lieu of metrics to assess and describe the impact of

online collections. Respondents often brushed off their stories as "anecdotal" and unreliable. Yet despite their skepticism, heritage professionals strategically mobilized stories to describe the impacts of their digitization efforts. After the following brief discussion of the limitations of quantitative measures, we present a typology of those narratives that emerged from our interviews.

Institutional barriers to metrics use

Respondents often felt incapable of collecting meaningful data due to constraints on their staff and time. As a repatriation specialist described of a small study they undertook of researcher requests and use of digitized materials:

> So we didn't record people's comments as much as we did the basic data about how much time they spent [on our website]. We did record specifically how much time we spent preparing for them, and then separately on their visit, but we didn't collect feedback such as "Did that website totally work for you?" except in the form, the more anecdotal form […] in all of our conversations with people. So that was a data-collecting step that was, seemed to be dependent on our resources at the time. I think we tried to do that, but it was less rigorous (J3).

Furthermore, what quantitative data institutions *were* capturing about usage was not being utilized, communicated, or shared in many of their institutions. In some cases, this was because staff felt that their time and staffing constraints were too great to actually do anything with an analysis of metric data:

> The data that we gather, unfortunately, is very limited and it's mostly number of hits and duration of visit. So what we can tell from that, we don't even spend a tremendous time looking at it or analyzing it just because it would only be navel-gazing. We don't even have time to change it, so we're not going look at it (C4).

In other cases, it was clear that at the institution's leadership communicated a high use value for digitized materials. However, staff members were skeptical about these higher-level assessments of use. According to one collections manager:

> At the basic level, we've been requested from the Institution to digitize as much as we can, as fast as we can, because there's a lot of demand for it. It's less clear to me who the demand is coming from, and what their purposes are (D1).

Moreover, metric data or analyses were not communicated across specialized departments, especially between those that collect and quantitatively analyze metrics and those, like the anthropology department or the library, that might use this information. As a consequence, relevant staff members often do not have data that might prove useful. As one collections manager admitted: "I think I rely on our IT people to get me that data, but I've never seen it (D2)."

Perhaps even more problematic, staff at some institutions were skeptical that anyone was analyzing the data collected by their institution. When asked about

metric data, one curator responded, "I haven't looked at it in a long time. It's generated by our web office […]. So they look at it because the Institution collects random kinds of statistics without ever analyzing them (C4)." Or as another collections manager illustrated their institution's limited understanding of metrics in the following way:

> As far as I can see, our institution's goals in digitization have to do with numbers. We want, we have X number of digital images available to the public. I don't think they care what it is. Where they do care is we have X number of users of our online material (D1).

Institutional barriers to the use of metrics rendered them inadequate for practitioners to make evidence-driven decisions about digitization. When data were collected, it was often the data that were technically simplest to collect, instead of data that would have been useful for communicating the value of their online collections. As a result, curatorial staff and institutional leadership often saw little reason to track, analyze, or even refer to metric data.

Metric skepticism: consequences of data/narrative mismatch

Numerous respondents also stated that their institution's emphasis on numbers was either wholly misplaced or regularly misinterpreted. "I don't know how you can put numbers on these things; what do the clicks mean (B1)?" Statements such as "the webmaster would see it, but really, we're not driven by clicks (A3)" show that staff in this line of work or technical and scholarly work often do not find numbers to be compelling evidence for impacts. Or, as another curator said, "it's all baloney anyway (C4)." Moreover, the majority of our respondents shared the assumption that there was a disconnect, either epistemologically, institutionally, or pragmatically, between qualitative and quantitative methods of assessing impact. Their skepticism may be rooted in their knowledge of the history of colonial exploitation of numeric and objective data. More practically, their skepticism stems from the consensus that many highly engaging ethnographic projects that have few users or source community stakeholders may nonetheless have high impact. According to one archivist, "One thing about Native American, especially language material, is that it's unusual in that it appeals to a very small user group, people interested in their language or so forth. So a very small potential user [base, but a] very high level of interest" (B3). The anthropologists among our respondents frequently noted that metrics fail to capture what is most meaningful about Indigenous people's interactions with digital surrogates: the messy process of meaning-making, healing, or cultural revitalization:

> So the mission of this museum is to convey the appreciation of and contributions of Native peoples in such a way that it deepens our understanding and appreciation of all that they have done for the hemisphere. That's the mission and so digitizing the objects and putting them all online, having 50,000 items on the web may not be the most direct way to achieving that mission … It's about Americans of all colors, and it's about our

> interactions, and it's about this whole concept of Redskins, and it's about our understanding of treaties, and what the United States has promised to its Native people. It's a very different way of measuring impact from 50,000 good records on the Web (A3).

Other respondents expressed frustration with the kinds of questions many surveys or other metric tools were asking. As one collections manager reveals:

> IT staff, the web team, they would have access to sort of basic statistics like what the numbers of visitors are and maybe where they're from. But they don't do a study of asking people, "What are you here to find? Did you find it? Why are you looking for this? What kind of information are we leaving out?" … They get numbers, but they don't ask those sort of qualitative questions (D1).

A curator shares a similar frustration:

> So for instance, I finished an exhibit about a year ago. The questions [in our survey] were mostly, "Did you enjoy yourself?" where my question would have been, "Did you learn anything?" […] "Did it make you realize something about the deep history of Indigenous peoples in the hemisphere?" They wouldn't ask anything like that (C4).

These are just a sample of the statements we heard that expressed skepticism of measurement in anthropology, frustration with the inadequacy of metrics to capture complex meanings or to accommodate complex contexts, or disdain for the kinds of questions that surveys asked. While it is expressed in many different ways, this metric skepticism can be seen as a recognition that the data collection instruments associated with existing efforts to assess the impact of ethnographic collections often privilege particular narratives about those collections. Whether intentional or not, the surveys, web metrics, and other form of data collected for the assessment support some narratives and undercut, or even ignore others, leaving advocates for those forgotten narratives with little but frustration and skepticism.

The affordances of meaningful metrics

Despite their skepticism, a few respondents expressed the desire to use metrics when they enabled examination of current practices or strengthened an existing narrative associated with a collection. As one curator illustrates:

> We would like to think that teachers want to use things that we have online for creating curricula or class exercises or something like that, but we're just not sure that they're doing it. I think we'd like to know that they might be. So, having a broader sense of the percentages of the types of users we have might be better because that unto itself might help us prioritize what we put up next. Because if we know that this audience is looking for this, and this other portion of our audience is looking for something entirely different, then we might prioritize those things (C4).

Likewise, others noted that certain kinds of useful data could be generated metrically. When asked what they would like to know about their users, a program director simply answered: the "why, what, where, when, why (I1)." Others wanted to know the demographic of the people who were hitting their sites. Many said that they would love "to capture more information from the users, more like Facebook is gathering (H1)."

Some respondents noted that, in fact, there might be ways to analyze metric data in a way that is consistent with impact within small focus groups as would be expected for ethnographic collections. As one program director explains,

> It's not just simply enough to evaluate it within the archival setting. There's another whole metrics when you get into Indian country. And you realize it doesn't have to be a big number, but when you think about a fifth-grade teacher, how many classes is she going to teach in the course of her career? And you start measuring it like that, then you get into geometric progressions. And I think that's what we haven't thought enough about as scholars (I2).

From misplaced metrics to stories of success

While the implications of organizational narratives in impact assessment were sometimes implicit, there were times when interviewees explicitly referred to stories. Terms like story and anecdote were sometimes used interchangeably, at other times with subtle distinctions. Respondents tended to use the term "anecdote" or "anecdotal" to connote skepticism about a narrative's validity as evidence of impact, and used the term "story" when the narrative had a positive connotation. So for example, beyond the colloquial uses like "to make a long story short," the "short story is," the "inside story," but that's a "different story", we heard overall that stories were important or valuable things to be told. Our respondents described stories as a form of voice and agency, particularly in their discussions of their Native constituents. "And over and over again they told their story […] of what digital repatriation meant to them […] but also what this ancestry meant to them back to their community (E1)."

We also heard stories described as a tactic for articulating the value or importance of something, e.g., "to help them tell the story of the repatriation, why repatriation was important (J2)" or something with substance: "I know there's a story with the X manuscript…. There's something there (I5)" or "there's a cultural story there (A6)." We also heard respondents say "the poignant part of this story is" or that a group or object had an "incredible story (J2)." Respondents also spoke to us about their institution's communication of "stories," e.g., "the museum is telling its story as a research institution (J3)."

A number of our interviewees also acknowledged that objects themselves, as is often said in anthropological circles, tell stories: "We tried to pick things that had a story to tell in terms of how people were living their lives (E1)" or:

> I always think about the hands that made it, the hands that used it, the politics surrounding the trade and how it came into the collection, those are the stories

> that I'm interested in reflecting. And that's one of the reasons why I'm particularly interested in getting further context on these digital collections online because for me that actually is a research avenue (C1).

The term "narrative" was rarely used, and only in the context of describing specific exhibits or a cultural worldview.

For our purposes, we use "stories" as an umbrella term to describe the whole range of things people told us happened, changed, or were affected in the wake of or as a result of digitization. In general, smaller-scale stories were often couched as "anecdotes" and it is tempting to denote "narratives" as larger scale. However, it was clear during our analysis and coding process that there were much more distinctive characteristics of narrative, and of stories and storytelling techniques. We have therefore distinguished story types by the overall structure of the stories (their form) and narrative content to describe what these stories were about and what they communicated about impact (their explicit and underlying messages).

Types of stories

In the sections that follow, we describe our analysis of the types of impact stories we heard during our interviews, from specific, one-off anecdotes to broad narratives about institutional change. As we discovered in our analysis, the content of these stories tended to describe two main kinds of impacts—among audiences and institutions. Perhaps unsurprisingly given the nature of our study, within these two categories, *source communities* were a particularly notable and prominent group. Table 3 illustrates the types of stories we heard, and examples of narrative content used to describe the two main impact areas. In the first type, *metrics stories*, we interpret stories our participants told to make sense of metrics or other more quantitative data they had, e.g., "during Thanksgiving week or November, Native American month, our clicks go up because that's the school kit project (A3)." In the second type, *singular stories*, we observed the use of very specific instances, moments or one-off case studies our participants articulated to communicate impact, e.g., a grandmother from the X Nation was reconnected to her heirloom. The third category, which we are calling *abstract stories*, encompasses stories told about broad, abstract impacts and even institutional change. This category is reserved for

Table 3 Story types and narrative content

	Audience	Institutional
Metrics	Metrics story about audience impacts, e.g., at Thanksgiving our number of hits goes up	Metrics story about institutional impacts, e.g., our educational reach is increasing because permissions for textbooks have gone up
Singular	Singular story about audience impacts, e.g., digitization has facilitated a specific tribe's language revitalization	Singular story about institutional impacts, e.g., we've changed our protocols to better suit Indigenous needs
Abstract	Abstract story about audience impacts, e.g., researchers have better and more efficient visits	Abstract story about institutional impacts, e.g., we've forged closer relationships with communities

stories told about broad user groups like researchers and source communities, e.g., "it makes a researcher's life so much easier to be able to look through the world's material" (G1), and broad stories of institutional change driven by digitization's various affordances, including the process of digitization itself, the move to put collections online, and the new relationships or institutional cultures this has generated, e.g., digitization has strengthened our institution's relationships with Native communities.

Metrics stories

The following two sections present our analysis of stories our participants told about impacts using metrics, or the ways participants tried to make sense of quantitative data they had about the use of their digitized collections, focused on *audience* and *institutional* impacts. As we have noted above, on the whole our participants were fairly skeptical of metric data, in part because the mismatch between the data and the narratives they had about the use and impact of the ethnographic collection. Because of this we found it particularly interesting to note where and how they used or tried to make sense of the quantitative metrics in our interviews.

Metrics stories about audience impacts

First, the geographic breadth of "hits" was meaningful to respondents. To use a program director's words, "Because there were addresses coming from maybe, 50 countries, many outside Western Europe, U.S., Canada, Western Europe, of course were big, but it may be the three downloads from Ghana that speak more eloquently to your reach in making materials accessible (I4)." This last statement is particularly interesting because it shows that instead of being ontologically different, clicks and hits can actually being used to construct narratives about the importance of digitization for broadly conceived audiences or users.

Similarly, the length of time users spent on different institutional sites was made meaningful by some respondents. As one archivist said:

> It does help to know how long some [people stay]. You have the number of clicks on a website and then you see the longest that they've looked at it is a minute and a half. And you go, "Oh! Well, that's not very exciting." The average time for the blog that we published for our archived projects that I described earlier—we had a big hit, a big spike because it got picked up somewhere. So, I started looking at the stats and they just went haywire for like a day. And that was very gratifying (B1).

In fact, the story related previously about the Museum Studies class, who shared information via a popular blog, was actually discovered by this archivist because of this spike in metrics. Of course, he/she said, "then of course they went back down to normal. But, basically people spent a minute and a half on the site and moved on (B1)." Metrics thus help to link staff to impact stories, as well as sometimes telling their own.

Moreover, another administrator told us that impact could in fact be evidenced by the popularity of the institution's social media platforms: "Well," he/she said "there was a survey of social media done recently, a year or so ago, that looked at social media in [the city's] museums and how they use it, and the museums that were in the top ten video clicks or the top ten Facebook clicks and the top ten of all that. And so there are studies that you can go find. We show up in the studies. We're excellent in Facebook (A3)."

Moreover, he/she articulated, "We can basically, from our own studies right now, explain the times of the year when we have high click-through rates" (A3). One example he/she gave was, "during Thanksgiving week or November, Native American month, our clicks go up because that's the school kit project (A3)." This same administrator was also able to use metrics to talk about how increased engagement from the public is reflected in higher numbers of requests for information. He/she said:

> But people write to us and say, "What do you have about this?" Or, "What do you have about that?" and we respond to those letters. We respond to those emails. We send out information to individuals. Last year we responded to about 777 individual requests for collections information, object collections information (A3).

Of course, this respondent noted that on the grand scale, these were not high numbers, indicating that "there's not high demand for this" (A3).

Metrics stories about institutional impacts

One of the more common metrics-driven stories we heard concerned permissions. Increases in permission requests were discussed as not only a direct way that institutions were receiving revenue from their digitization projects, but as an indicator that they were better fulfilling their mission. A number of participants noted that permissions requests for images were an important, or at least somewhat lucrative, indicator of impact. One administrator noted, for instance, that permissions requests for ethnographic photographs had increased to "400 requests a year," indicating that linking this increase to the overall shift in portrayals of Native peoples in textbooks might be an important impact to inspire "deep change (A3)." "Looking at our mission and achieving our mission," he/she said, "linking into those textbooks and changing the presentation of Native Americans in textbooks so that it isn't just a chapter but part of the fabric of American history in an ongoing way (A3)" was an important way to understand the broader potential impacts of digitized imagery. As another curator stated, "certainly the [Name of a collection] are among the most popular images, and every time they get published […]. I think we get more requests for them (C5)." These quick stories about numbers of requests help these staff to tell a broader story about the institution's ability to spread important cultural messages through digital materials.

Participants also discussed internal impacts. A librarian described the overall success of the digitization program in terms of increased potential search terms and browseable subjects:

> Our program has come so far that at that time I think we had maybe 15 or 20 browseable subject terms and now we have like 350. So because we are unable to make any enhancements to the database, the static database, the way that it is, we have migrated all of those images into Omeka to become part of the larger umbrella for the graphic images and we are enhancing them now (G1).

A few staff we interviewed also noted that they used metrics in combination with more qualitative feedback to help guide their internal decisions. As one marketing specialist explains:

> Every certain number of users, it pops up at random. And the questions are the same questions across all [Institution] websites, but it generally asks, "How would you rate this website? Are you finding the things you're looking for?" And then at the end, there are free form responses. So we've looked at that actually. It's been up for about a year, and every three or four months, we pull all the responses and we skip all the stuff that says how great we're doing. We look at how well our website factors on a scale of 1–10 versus other [Institution] websites. But it's hard to tell how we make it better without getting to the last two questions which are, "Tell me what you really like about our website and what you don't." So that's another feedback mechanism that I guess is anecdotal but it's systematic because it's a random sample of people and we're asking them questions (H1).

It was clear, overall, that staff had an interest in making more sense of metrics, or in having them collected or communicated in more coherent ways. When asked which kinds of metrics the institution should collect, a librarian answered in the following way:

> So I guess, initially I would have said, "Well, how many people are actually citing this material or using this material in their dissertations or in their work?" And I would say that it'd be pretty small. At this point, I'd actually be more interested now to say, how much is this getting propagated within tribes and within those cultures where the tribes exist? Are they using this as part of language instruction? Are they using it as part of local history courses? Are they employing that in anyway? I'd be interested to know that and see how… What kind of volume of that we could expect (G4)?

What it is important to emphasize here is the fact that participants do attempt to make sense of metrics by telling stories about them and that once metrics are combined with stories that illustrate the emotional impact of digitized materials, it becomes clear how quantitative and qualitative methods can provide a very rich portrait of the effects that digitization efforts can have on institutions and communities.

Some respondents acknowledge that their IT personnel might be collecting such information, but they simply were not interested in looking at the data or felt that they had no time to devote to such endeavors. Other barriers were institutional and professional; many felt that *other* departments or staff were meant to deal with this kind of data, and so felt that it was not their role to collect or analyze it. Thus,

information about impact became siloed in designated departments not involved with digitization choices or community work, because departmentalized staff did not communicate.

Singular stories

These compelling stories described specific instances, moments, or one-off case studies that were used to communicate impact, often about individuals or identified groups. These stories were most often articulated in answer to our questions about feedback—namely our prompt, "Tell me about the public's reaction to your work" or "Tell us what you know about how people are using your collections online." As noted above, barring a few cases, our participants often dismissed these stories as merely "anecdotal." Yet there were a number of important impact claims our participants were making when responding to these prompts. We have grouped these claims into two categories: audience impacts, characterized largely by unforeseen connections—impacts based on the affordance of the digital to link information and people and institutional impacts—and institutional impacts—change based on the process of digitization itself among institutions and often, their relationships with source communities.

Singular stories about audience impacts

Participants used individual stories to describe how digitization helped users make unforeseen connections between the material world and participant's institutions. According to a curator:

> For instance, I had one just yesterday, where a person bought a piece of Mexican Indian art at a flea market and he could read the signature on it. And then he Googled that signature and he found a piece by the same artist in our collection. So he emailed to get more information from us because if we didn't have it online, he never would have known that we had a piece by that person and that we might actually have more information about something he had (C4).

Likewise, our participants noted having material online meant that people happened across it in unexpected ways via search engines. These participants are often untrained museum researchers. Unexpected users also turn out to include enthusiastic members of the lay public with very specific interests.

In another case, an institution began discovering unknown interest in their collections when they appeared, unbeknownst to staff, on Wikipedia. A collections manager told us:

> "We do have a few artifacts that have their own Wikipedia page, and never, nobody from here has ever sort of instigated that or reviewed them or anything, which I personally think is awesome that somebody out there was interested enough to do this […] That's kind of interesting and some of them have taken pictures from our database and copied them over to Wikipedia (D1)."

While this participant acknowledged that these usages might be considered problematic to curators or others worried about the context or provenance for images, they also noted that these uses show untapped audiences for and public interest in digitized collections.

In other cases, we heard stories about users who contacted institutions because they discovered kinship ties to materials in their repositories, relationships that ultimately fed back and enriched their collections information. As one librarian told us: "My favorite I think has been…. There was a gentleman who wrote to me saying that a man in one of the images was misidentified, who was actually his dad, who worked here in the 1940s … He showed the website to his father who's in his 90 s and lives in LA. He said, 'Hey, that's me!' So they wrote a letter to us, and we made the changes to the data for him, and then gave him a copy and sent it out to California (G1)." A program director told us about digitized audio in his collection dating from the 1940s that a member of his project team, a Native American teacher, later identified as a recording of her grandfather, a tribal leader. The fifth-grade teacher subsequently used those recordings in her class (I2).

Moreover, unexpected links to repositories and digital images also were important to users' understandings of their own stories and histories. As an administrator recalls, "One guy was here, I think he was a Hopi and he looked at the image, and he said, 'Oh, look, my grandfather's pasture hadn't collapsed yet' (A1)." We even heard stories of this kind that linked ethnographic digitization to the impacts of digital repositories globally or more broadly. As one librarian revealed:

> My intern, she just told me, her son who's in college just discovered the database in Yad Vashem, which is the Holocaust Museum in Israel, and her grandparents perished in the Holocaust, but they had no idea until this week that they had actually also been deported. And they wouldn't have known that if he hadn't gotten curious and just played around in their database at all (G1).

Of course, many unexpected connections also take place among the academic community. Connecting users to institutional repositories also exposes unexpected user groups for them. Another program director provided an example of [a nation's] linguistic material that were digitized and placed online. "And a professor in, I believe, Rio de Janeiro picked it up and is using it, because it links to Afro-Brazilian language. And so, you get a flash of, "Oh this is really exciting. Can we have access to this? (I6)." In other cases, as this participant noted, access or unforeseen connections to this body of material might become utterly "transformative," leading to new community empowerment and engagements: "'So I know there's a story with the [Name of a manuscript] in Brazil," he/she said, "There's something there (I6).'" At another institution, a digital assets specialist told us of his surprise upon learning that their collections were being used by experimental archeologists: "So they have been using images online to try to recreate an object that we have so that they can then use it and figure out the mechanics of it that way. So that was kind of interesting (F4)." At another institution we visited, we heard how having material online allowed information to circulate to the lay public in new ways. As one archivist observed:

> [The digitized collection] was picked up on IO9, which I have never heard of—it's another blog site that's very popular […] I think it was somebody in one of the Museum Studies classes that I gave a tour to. I sent the link to their professor, and the professor sent the link out to students, and the students looked at it and sent it out to IO9, because it was about a whale in the [location], which is just kind of interesting. So, it went beyond their classroom… It's definitely in the realm of isn't that interesting? End of story (B1).

We heard a number of generalized community impact stories surrounding specific digitization projects institutions had initiated. One of the most common stories in this vein was about the evidence of the use of digital materials. As one librarian told us:

> Yeah, really, one of the primary collections that we've digitized is our [Name of the project] archives. So just anybody who is working in that field, Siberia, or Alaska, or Columbia, and looking at that material, they are getting back to me with various questions about how much we've actually digitized, whether everything is there, whether there are departments in the museum that might have material that they'd like to see. So I get a lot of question about the [project] archives that we've digitized, so I know it's actively used. (B2)

We also heard more elaborate stories about the impact of these projects. As one program director noted, one of the impacts that could be identified when tracing the long-term effects of a digital project was whether digitized oral recordings became re-established as oral traditions in their home communities. As I2 relates:

> And what fascinated me as an anthropologist was, I never would have thought of this, was maybe one way we can measure the effect in this, and the impact is whether it becomes the oral tradition again. So you think about it was made on a wire recorder, it was converted to DAT, that was converted to digital form, and then it turned back into the oral tradition. That to me is awesome. And the fact that our materials being used in [the community] for kindergarteners … If you're trying to save a language, I don't think anybody gives those guys enough credit (I2).

Another example was through a blog at one institution, where community interest was driven by the formation of an institutional blog and communication it has facilitated. As another librarian said:

> We've had quite a number of relatives of people that have sons and granddaughters of people that we posted about either as a blog post and/or a finding aid to our website–this is where we're putting them right now, on our WordPress website–and they respond to the blog. Sometimes they have more material for us or they're just absolutely delighted, and that's very gratifying that people are finding something that means something to them on a personal level (B1).

Another impact described via a community story, as with the more one-off storytelling we heard, had to do with new relationships built through the process of digitization. As a repatriation specialist articulated:

> The first one was that example of the pipe that we gave to them; we thought it would be potentially a one-off item of curiosity for them to receive, to be able to talk about. And they surprised us by turning around and saying, "Now this original you repatriated to us an hour ago, we want to loan it back to you for you do more" (J2).

Rather than these projects being "one-offs," they initiate broader community interest in participating in them. This, in turn, encourages longer-term relationships between museums and communities.

As J2 further elaborated:

> And that was a real surprise […] another example is because the [community is] aware of what we've been able to do […] they asked us, given the technology and what we've demonstrated so far, whether we could scan that broken hat and then have another hat milled from wood intact and essentially remake it. And we said, yeah, that's possible, that can be done. And they said that they wanted to do that. And if we did it […] essentially they would make it the full clan hat. It would replace the other one in all forms and in ceremony. And to our knowledge, it's never been done before anywhere in the world where a museum object was then… A reproduction was made that replaced the original, and especially using the digital technology (J2).

Interestingly, we heard these stories told both about reactions communities have had *and*, in some cases, a lack of community reaction. For instance, one librarian told us:

> But when we did the [project], that was specifically for an audience, although it was also for everybody, but for [the tribe] themselves. And, since it's been up… I got a couple of "thank you's," a couple of requests for some images, and then really… Actually, I've been left alone, and I think that means they're finding the stuff there and they're enjoying it, and they don't need to bother me (B7).

These stories told about specific communities that were used to describe a number of important impacts about how not only are new relationships forged, but the ways that specific projects facilitate new kinds of cultural reproduction back among their community.

Thus, a number of respondents used singular stories about audiences or users to articulate how digitization helped users make unforeseen connections between institutions and their holdings.

Singular stories about institutional impacts

Some of the most powerful stories we heard about digitization had to do with specific events during source community visits to repositories. Often in these cases,

the process of digitization and the relationships it forged were described as having the greatest impact. As one curatorial associate told us about an emotional encounter that occurred when a Native community visited the museum to conduct a digital repatriation:

> They came here and did a week of photography and some videography … a gloves off, physical encounter, [with] people crying [as they did a ceremony with a sacred object. This was followed by] a week of educational performances for a variety of education groups that was supporting the education groups here. And over and over again they told their story, they told [the sacred object]'s story, and they told the story of what digital repatriation meant to them, but they were bringing the essence of what this physical object, but also this ancestry meant to them back to their community (E1).

Indeed, these digitization initiatives in the form of "returns" are allowing museum professionals to re-envision the work of the museum (Bell et al. 2013). As this participant continued, "these experiences for me have been the gold standard for how I think interactions between communities of origin and communities of encounter and museums should be […]. The idea of the museum is a culture house and as a meeting house (E1)."

A story told by one program director expresses her surprise upon learning how a Native community was using an online collection just recently placed online:

> Well, I'll give you an example I was thinking of this morning. I believe that some of the very first images that we worked to get online [were Plains Indian drawings]. And it happened that the next week I was in Western Oklahoma, invited to do a lecture at this historic site. And I flew into Oklahoma City, I rented a car, I drove west for two hours to a small town, did a talk … A nice audience came…. It was wheat-harvest time, but they all took a break from bringing in the harvest, to come to a lecture about history, *and they'd all seen the stuff online already*! (I4)

This experience helped this participant to re-envision the audience for museum work:

> I always saw [digitization] as serving academics or something, and here were these guys who didn't have a library of any size accessible within a two-hour drive for them. And yet, *they were all over it*. They were all, they'd *seen* them all, they'd *discussed* them. This was the unexpected audience. It was totally unexpected to me (I4).

Institutions are likewise now able to tell stories about how these changing relationships are being facilitated by 3D digitization. As one repatriation specialist told us of a 3D digitization project:

> It didn't stop with the reproduction. The clan leaders came here, they bought the original hat back, and they danced the hat for the board, and they danced for the public, here and at [Institution]. And they even went into the hall there in full regalia with the original hat and stood on the mezzanine there and

> addressed 40-odd docents about the importance of the hat and what they should be telling the public about the hat, with the full dance group behind them. So the story's continuing and so you can see where the digital is, for us, is just the start of it. Creating the digital file and managing it or, and how, where it goes, that's a tiny piece of it. All these other relationships and the role of the physical is really, is what's next for all this (J2).

In another case, we heard, "One of our curators does research in southwest with Native American tribes; she's taking images with her so that they can discuss the collections here, where they are, instead of bringing them [the tribes] here. So it has that role too (D1)." Digitization in this case shifts the research process and relationship between the researcher and the object of research.

One of the major tangible impacts for institutions of these connections is that they forge new and sometimes lucrative relationships. As an administrator and librarian noted:

> A1: We published this book of essays about our rare book collection. I found scientists across the museum to write about these 40 different books, 40 different authors. And one of them was about this obscure Italian nobleman, a military guy who was also a scientist […] and the family saw the book, which is because it was part of digitization […] contacted me. I put them in touch with the author of the essay who's a big fan of their ancestor. They invited him to Italy, they created a […] whole symposium around this guy which our author led and they had a military parade […]
>
> G1: To welcome him and all kinds of festivities and events in Molfetta and in Naples […] it's on the Adriatic. That's where the family lives now. He got to visit their palace, which includes this grand room that basically has a shrine to their ancestor.
>
> A1: So if you don't get stuff out there, then people are less likely to know about it. And the poignant part of this story is the Count. The current Count is in his 80 s. So he's not going to be around forever (A1).

In another example, one respondent recalled a specific conversation with a member of a tribe about an oral history that had been digitized:

> What was so moving was, we were sitting there, I said to her, "can you tell me what was it like to hear your grandfather's voice?" And she's a tough woman, and she came to the brink of tears. And what she said [was] "I'm so thankful to [your institution] because now I can tell those stories again" (I2).

The voice of the woman's grandfather bringing her to tears has such a powerful symbolic value for the organization that we heard the same story repeated over and over during other interviews recorded at the same institution. For example, one staff member at the same institution recalled the same story: "And what I can say everybody's grateful. It's very moving. It could be very moving. I've heard a grandfather or great grandfather; I've never heard his voice but I can hear him talking. It's amazing (G2)." What we think it is important to notice here is not only

the value that the story has in assessing the impact of digitization, but also how the story is mobilized within the institution.

For communities too, we were told, the wider public forum made possible through digital technologies for sharing cultural knowledge has tangible community impacts, both financially and in terms of cultural pride. As on administrator told us:

> Yeah, I mean a lot of it is about self-reporting from communities and the people that we know in those communities and work with. And people are generally very generous with us about sharing their evaluation of the impact if we ask them. So we have some very powerful testimonials from people whose music we featured. The head of the band, his name is [Name], which is an album of plains music from eastern Columbia. It broke them out as a group in Columbia and globally, and it's really changed the way people in Columbia view and value that music and it's made an important difference in the life of the people in this particular extended community (A2).

Thus, relatively small-scale and specific stories actually communicated big impacts—linkages to new knowledge and the forging of new relationships and best practices.

Abstract stories

Abstract stories about audience impacts

Whereas the above category of stories usually was articulated about the impacts of specific projects or community groups, this section analyzes stories told about broad user groups like "researchers" and "source communities." As we heard articulated, it was hard for institutions to identify the primary audiences for digitized materials, but through these responses, we could see that internal staff, researchers, communities, and the lay public were the main audiences identified. Funding agencies and other peer institutions were also identified.

Where institutions had a vetting process for access to collections, this acted as a basic way that staff knew about their users. As a librarian explained:

> They actually contact us. And so, X is getting a little bit of a very base reference interview with folks. And then I'm seeing them, when I go through and approve the registration and then send the software. And I go through and look and I can see, "Okay, this person is affiliated with this University. Okay, this person is affiliated with this particular tribe." And it's just anecdotally, I don't have statistics on it. But it seems to be primarily more tribal than University based (G4).

These two groups, "tribal" or source community users, and "university" or as we often heard it phrased "serious researchers," were the two main external audiences staff articulated for digital surrogates. So in the first case, for instance, we would hear very generalized stories about the ways that source community members are reacting to digital materials, often in searching for information about their kin. According to one curator:

> And occasionally somebody will email in and say, "She's my great-grandmother and this is when she lived and her husband's name was this and she had a much bigger basket collection and the rest of it is at the [Name of an institution]." So there again, I think people, they're not Googling themselves, but they're Googling their own subjects of research and they're happening across our stuff. And those are people like that who probably weren't looking for Indian stuff, they were looking for their kin-folk (C4).

As another program director articulated generally, "they're looking at language materials we have in the archives. Photographic materials that are evocative of places, people, and activities that are heritage things. And they're also interested in objects that speak to the stories that inform their people-hood, if you will (I5)."

Stories were also articulated about the ways that "serious researchers" accessed digital materials, namely that the diversity of researchers was evidenced by requests for their use. When asked about feedback on digital materials broadly, one librarian said, "A lot of times that is a museum's target audience is an 11 year old […]. That's not the library's audience. The library's audience is a very serious researcher, globally coming from all over the place for a variety of reasons" (G1). She continued, relating that they know about the diversity of researchers accessing their digital materials through requests, "I think our requests and researchers are just really…. They're everything from set designers on Broadway to someone who's writing an article on Taiwan. I mean, it's all over the place (G1)."

We also heard the "lay public" or the very broadest notion of audience articulated in some cases. Indeed, wider audience interest was, as with researchers, evidenced by diverse information requests generated by having materials online:

> We've seen public information requests coming in that are telling us, anecdotally, really, who is accessing the collections online and what their interests are. It's definitely shown us that there is a wider audience […] the data that we put online in our own [department] website has been copied onto the [institution] collection search, which definitely has a much wider audience, a much more sort of general audience than just a scholarly. And so we've gotten a lot of follow-up questions, I shouldn't say a lot of them, but we've had enough of them to know that there are people who are accessing the collections that way. Who are not necessarily a scholarly audience (D1).

One administrator also admitted that granting agencies ask institutions to pay attention to and therefore relate impact about these broad user categories: "He's a very important person for us in the NEH applications—the interested lay person (A4)."

Despite this attention to the lay public, respondents seemed surprised at the breadth of public attention to their collections. The collections manager continued: "Probably the main audience still is those researchers, and to some extent, our own staff, really, but it is a lot wider than we were anticipating (D1)."

We also heard very general feedback stories suggesting that the generalized public were using digitized collections. As one administrator said, "You definitely

have the anecdotal feedback in a wider world. We also get emails into our generic email accounts asking for feedback about things (A5)," or as another program director said, "We get anecdotal information. People send us e-mails talking about how important it is (I4)."

In fact, respondents were sometimes surprised that people, at the most general level, found their information or got in touch with them: "So, people somehow find us. They are looking… They are finding the site 'cause it's not published anywhere, and they're finding pictures that they like, and they want to use them. So, it's coming back to us in sort of a roundabout way (G1)." As a program director of another group said, "I've seen certain letters; People being very, very excited that we have their stuff, but because we're in the infancy of putting it out. I've not seen any stories about 'thank you' yet. I anticipate that it will happen (I6)."

Yet, many respondents noted that while researchers were the main audience for their efforts, internal staff were also important audiences. Indeed one additional primary audience that became clear was internal, staff users. Digitization's impacts, on a very simple level, have streamlined staff processes at holding institutions. As one administrator related:

> So X will often bring down Native groups who are visiting […] and they'll see pictures of their family. And in the past, in order to repatriate those images to them, we'd have to re-print the negatives. More recently, we've been able to digitize those and give them back to them. And we have been looking for a way we could provide the images and then also in return try to get some feedback from them. We might have a 10-word caption but they might be able to write a whole paragraph about what's going on in the picture (A1).

These more effective affordances of digital technologies make it easier for staff to carry out important community work more efficiently, while also building information into their internal databases and growing the knowledge embedded in collections. Even having material digitized internally for reports to be sent out by request has significant impacts because it teaches the institution about their own collections: "So, that means that other tribes are discovering things about items in our collection that we don't know…. Because they have their own basis of information and types of traditional knowledge that are not part of our database (C4)."

We also noted, in a few cases, stories about granting agencies, other institutions, or the professional community as audiences. Granting agencies, in their "shepherding" of digitization projects, provide a constant form of feedback through both peer review and project oversight, while also insuring institutions think about impacts. As one administrator said:

> My one quick response would be that in a grant application process there is a peer review that provides a pretty effective form of feedback. You could say that's anecdotal also, but it can also be highly instrumental. And with organizations like the Mellon Foundation where they're shepherding you, that's a pretty constant sort of feedback about what you are doing, not necessarily about the right thing, but about the thing that they want to fund (A4).

Another interesting generalized audience impact story we heard was in fact from other institutions or the professional LAM community. One form of impact we heard articulated was emulation—the notion that seeing digitization strategies or projects adopted by other like institutions was evidence of their success. According to an administrator, "But one of the feedbacks that I find that's quite gratifying […] it's a little bit different from anecdotal. There's the people who start to think of us as the models they want to emulate (A5)."

Thus, analyzing these generalized audience stories begins to both identify relevant categories of audiences and provide evidence for their activities or responses as users.

Abstract stories about institutional impacts

This final section analyzes broad stories of institutional change driven by digitization's various affordances, including the process of digitization itself, the move to put collections online, and the new relationships or institutional cultures this has generated. In one sense, it is not surprising that we heard these kinds of stories given that some of our participants were leaders and administrators, who, especially at cultural institutions, are active storytelling practitioners. An administrator said:

> And so much of my internal and external communication is about being really explicit about the strategies that we're using, like connecting to distribution networks and telling the stories of specific activities that we're doing to make that shift happen … So, a significant part of what I'm doing, internally and externally, is narrating this change in a differently granular way, depending on who I'm talking to (A2).

Or as he/she said toward the start of our interview, "How they impact communities? I was going to say something really flippant. We're social scientists; we rely on anecdotes (A2)."

First, we heard broad institutional stories about the ways that digitization was, as suggested above, important for sustaining relationships between communities and collections beyond the museum visit. As a collections manager told us:

> Especially the repatriation office, when they have consultations, they hear from the people they work with. They really do appreciate having access, especially because they'll come here and look at a thing, but then when they go home and they want to see it and talk to their neighbor or their friend or their teachers or whatever about it, it's useful to have that available. So yeah, that's totally anecdotal (D1).

In the above case, impact of digital materials was not only that they facilitated institutional–community relationships, but that community members could continue to access and share digital surrogates at home, thus expanding their impact.

Others articulated even broader scholarly impacts. For researchers and research institutions, digitization has created entirely new networks of information.

> So the whole idea of… I mentioned earlier about new scholarship I think is, is important for people to know what we have in order to know where to begin with the research. So if it's something that they can only see if they come here, it wouldn't happen. So now they don't have to come here, unless they really need to see something else that's not digitized. So I think it makes a researcher's life so much easier to be able to look through the world's material. It changes scholarship completely (G1).

Indeed, as is articulated in the literature, we heard stories about the ways that digitization linked new kinds of information or knowledge, but often these were internal to institutions:

> And it's a pretty amazing system where we've taken, integrated the archival documents so that they've been scanned and you can find the deeds of gift and you can find when an object was bought, and you can find information and the we link back to original documents which provide a lot more context for how these objects came to the museum (A3).

At the same time, these technologies also allow both communities and institutions to tell better public stories. As with the case of 3D digitization, we heard that the community valued these technologies for telling public and internal stories:

> They felt like photographs of the repatriation were going to be too sensitive to show, but a 3D print of a pipe, they could display in their tribal offices to help them tell the story of the repatriation, why repatriation was important. As well as being able to teach people about [their tribe's] material culture in the late 1600's, which is what the pipe dated to (J2).

Likewise, a librarian reveals:

> I think when you have these kinds of photographs from such a long time ago about topics that people… People who there aren't very many of left, for someone in another country who's 11 years old may not even know they existed. And to be able to see what they wore and the way they maybe cared for animals or how they lived, I think it's just exponentially important. It opens up a whole new way of thinking, I think, for young people, and allows Native peoples to continue [their traditions] (G1).

At the institutional level, this repatriation specialist also showed how important these objects were for telling better public stories from the perspective of the institution:

> If you just Google [the project], it comes up. They scanned 20 objects across the [institution] that were considered iconic objects of various collections, and the [Name of a sacred object] was chosen as one of them. And so there's some up on that website that also tells the story […]. So those are, I guess, the two major things that are out there publicly about it. And they show some of this (J2).

Digital media were also described as an important institutional communications tool more broadly: "For me, it's a communications tool. I'm of the mind that all boats rise together. So if we're telling a great story over here about somebody who's not a [profession] but there's an opportunity to link back, people are going to end up finding the [collection](A2)."

Communication for institutions, of course, is not merely an outreach stunt; the communication of compelling institutional stories is also important for getting grants or donors to support their work. We heard respondents describe the use of stories to elicit interest and funding:

> So, right now, we're at the beginning stages […] and we're trying to figure out: Well, where do we find the money to do that? The digitization program office is ready to do it.
>
> […] But they're trying to find some press coverage to be able to follow the [administration] office. Our Public Affairs was thinking about having The New York Times follow the story, but… And that's all great, that's what [our institution] normally does, line up some media to follow it and line up some donors or some funders, corporate sponsors to help support the project (J2).

At the same time, this kind of storytelling risks being at odds with community needs or concerns. As this staff person continued:

> If we can re-produce that [Name of a community] hat and have it brought out and have money killed on it, man what a story that would be. It would be something to witness. But we've got to be careful to make sure… It may never happen, but we don't want to push things either; They're very patient the [name of a community], they take a long time for these things and they deliberate and they plan everything out. They don't usually, when they have a potlatch, they usually negotiate for months or years about who's going say what, when, and in what sequence. And it's all carefully planned out to be done as best that they can and so we want to be careful not to shoot from the hip (J2).

For some institutions, we heard digitization very clearly articulated as part of a wider institutional story or directly linked with its mission:

> In the Smithsonian, it's the increase in diffusion of knowledge. And it's definitely on the diffusion end of that […] It's also on the increase side. We'd seen some of our own staff, like the curators and research staff, using digitization projects to help them with their outreach (D1).

Likewise, institutions whose constituencies were clearly articulated saw digitization as integral to their work:

> And the other part of what drives [our institution] is its constituency of Native people, who have a new vision for how museums should be. So, what they are doing is envisioning and there is a series of founding documents … that are these visions, and literally there are series of consultation meetings through which the visions of the museum are dreamt, literally dreamt in conversation. And the visions are about access, participation, a way of being of the museum (A3).

In terms of impact, staff thus articulated how the process of digitization was functioning at the institutional level. An administrator articulated:

> You're thinking about content as educational content and you're thinking about different kinds of relationships and how we might be providing that and how we match with the core curriculum and what are the essential understandings and sort of this foundation for core content development and content delivery […] If you are looking at indicators of change, that is actually one of our priority projects, which is digitization program goals (A3).

Indeed, the process of developing digital projects and protocols has actually created new ways of working and opened up new kinds of knowledge. According to one curatorial associate, "So I contacted them and just the whole…. Like that wouldn't have happened if we hadn't done this process. Because I wouldn't have been up in the stacks searching through all those photos […]. So just the process itself has led to discoveries (E1)." Likewise, a program director described how the process of curating digital exhibits led to new understandings of cultural sensitivity and respectful protocols:

> And those digital exhibits then, and at the conference, especially, that was when we realized, Wow, we could open up the second [grant], bring in these Native American fellows, have them here for a sustained amount of time, and the agreement would be they would teach us about our own collections, and they would teach us what was culturally sensitive (I2).

More plainly, one administrator said, "I mean, the basic business of this museum has been transformed through having digital access to the object images (A3)." Digitization, in other words, both drives and is transformed by broader transformations. Going further, an administrator commented, "To my mind, I would be elated if we were being so productive and communicating through digital media so consistently that that became the driver of how we chose what to digitize from our archives (A2)."

Thus broad stories at the institutional level were important for our respondents to communicate some of the most meaningful impacts about digitization and how they were connected to their organization's mission. Yet, as we also found, most institutions didn't seem to have a way to integrate stories or feedback into formalized modes of evaluation or planning.

Stories and impact—our workshop and future work

At a workshop our team held in April 2014, participants from a wide range of fields—museum studies, anthropology, archival sciences, digital anthropology, funding agencies, museum administration—concurred with our initial assumption that impact for digitization was difficult to assess. Echoing some of Brophy's fundamental conceptions and recent analysis by Duff et al. (2013), the group defined impact for digitizing collections variously as *the difference something makes,* defined by the question "What is meaningful and to whom?" and something *that*

brings change, *happens at multiple levels/dimensions* and *magnitudes/scales*, *matters to someone*, *travels*, and *happens over time.* Short-term effects are much easier to study than long-term impact, for unlike "outputs," "deliverables," "results-oriented frameworks," or granting agency "outcomes," the group suggested, impact should be distinguished as longer-term value over time. Moreover, impact can be tangible or intangible, positive or negative, conceived in degrees. It can also involve negative impacts, changes, or "failures," which are important forms of institutional and professional learning. Thus impact does not necessarily mean "change" in this context–it can also involve "dynamic non-events"–valuable things that need to continue happening. Impact in this context, the group agreed, is by its very nature, difficult to assess.

Where in other contexts more formal and replicable "toolkits" might be appropriate, for ethnographic collections, tools need to be flexible enough to incorporate the incredibly varied and contextual nature of meaning and use. As a result, the group suggested that impact might be characterized as a form of cross-cultural, cross-institutional, and cross-audience storytelling. Institutions and practitioners, by this model, need better ways to aggregate, collect, and communicate stories, and to "give legitimacy" to storytelling, "the world of a lot of soft," at the institutional level.

As we also found during our interviews, institutional storytelling to internal and external audiences is often inhibited by institutional barriers and distinct cultural contexts for understanding impacts. These include: the disparate needs of public vs. private organizations, the needs of research vs. outreach oriented Museums, the needs of different audiences (i.e., "serious researchers" vs. the general public), siloed departments with different priorities, knowledge, culture, professional ethos ("competing stakeholders"), lack of alignment of responsibilities, skills, authorities, reward structures, projects undertaken for economic reasons and/or become "pet projects," or fall into "ugly baby syndrome," problems deputizing players to report back, and the broader fact that heritage professionals, disciplines, and institutions are conservative by definition and therefore resist cultural change. These contexts suggest that developing and aggregating coherent stories about impact are an important area for growth in many heritage organizations.

Stories might better convey a number of relevant areas and what the group called "indicators" of impact. These were:

1. Knowledge—the educational aspect; learning; broader knowledge of communities/topics.
   Indicators: What programs are in place?—where are materials being used in education (formal or informal) settings?… health?
2. Discourse—broader literature, professional cultures.
   Indicators: how terms/language/objects/images being used in literatures, conferences, sites, blogs, across platforms.
3. Attitudes—feelings, emotions, positions toward objects or communities.
   Indicators (community): how objects being used, where objects are circulating or being repurposed; how many times community return to the institution for help/resources, evidence of increasingly reciprocal relationships and increased trust.

Indicators (non-community): how objects being used/circulating in non-community contexts, can also be traced through discourse (could also be internal institutional correspondences/policies).

4. Capacity—institutional/community resources and agency to carryout uses, promote discourses or knowledge.
   Indicators: institutional or resource growth around digital resources/collections, assets.
5. Policy—shifts in governmental or institutional appropriations, regulations, laws regarding digital community assets.
   Indicators: documents, increased pools of funding/institutional support.

Better storytelling that communicated these elements would create field-wide impacts, inspiring a culture of assessment and evidence-based practice, integrating the data and anecdotal evidence institutions have, helping institutions bolster support for successful projects by elucidating connections between digitization and broader institutional missions, encourage institutions to change their practices when they receive feedback, and helping funding organizations to better understand the needs, constraints, and contexts for the programs they fund.

Bolstered by better storytelling and communication, digitization might thus better facilitate broad goals for heritage organizations, especially in better outreach and integration: more collaborations between conservators and scholars, creating projects that consider use, impact, and usability from the beginning, reaching audiences who don't already know about LAM sites or resources, establishing relationships between institutions and source communities, and fostering more community-based projects and digital assets.

Implications and discussion

Through the types of stories that emerged from our data, our respondents painted a rich picture of ethnographic digitization impacts. As we have noted, many institutions do not systematically compile and analyze their digitization stories. One respondent, for instance, expressed a desire for deeper conversations around decisions for digitizing collections where an overarching narrative about digitization seemed to be absent in the institution: "Up until very recently, a lot of the discussion was just, 'We must get everything digitized because it's the wave of the future,' but not any more nuanced than that. So I wonder if there are going to be more discussions about that" (D1). Or as another said, noting that they wished they had a more "systematic" or data-driven way to collect anecdotal or qualitative data, "Well, I think, I mentioned sort of the anecdotal nature of our…. I think it would be great to be able to become more systematic about that (J3)." While many respondents felt that clicks and hits could not capture is the richness of users' engagement with the digitized materials, stories did. We observed that the ability to mobilize stories about digitization helped staff articulate the context in which digitization projects were implemented and assessed. Stories were useful for emphasizing the local or specific importance of digitization to institutions; they

illustrated transformative changes and the realignment of priorities. More than just expressing skepticism toward metric data, respondents specifically identified the anecdotal as a valid mode of communicating impact. One archivist said, "I think for a community history being online and how that's used by the community, it seems to me it has to be anecdotal. I don't know how you can measure it (B1)." Or as another program director articulated, "It wasn't how many hits we got (I2)."

Indeed, it is through storytelling that one institution has very specifically overcome the inadequacy of metric data for understanding source community impacts. As a program director told us:

> So we became aware that the assessment wasn't simply a number. It wasn't how many hits we got…. It's not like how many … YouTube hits you get. Yeah, we have YouTube accounts, they're big numbers. But … what it means to the people is very different than any quantitative data you get. And so, if you go into my office, … I have these things on the wall that are "Thank Yous" basically. And they come from a fifth grade class [in the community]. […] The kids wrote "Thank You [to our institution]" and then they colored them in (I2).

There were also certain stories, like that of the grandmother crying at the sound of a digitized audio recording, that seemed to circulate within an institution. The ability to use a story to show that a specific digitization effort exemplified the aspiration of an institution thus became a kind of foundational narrative for a new phase of the institution. By recalling specific conversations with member of the source communities, the organization was able to celebrate a radical change in the way it understood its relationship with Native peoples. As a respondent out it: "it was the first time we ever thought of Native Americans as constituents (I2)." In this sense, collecting and sharing stories became important mechanisms for illustrating the impact that digitization has not only on source communities, but also internally on the institution hosting the collections. Thus for some participants, digitization was a defining moment that inspired a new institutional approach to research and community relationships. In the process of building trustworthy relationships with Native communities, the attention shifted from the inside of the institution to the outside. In a number of the above examples, the stories told about the institution's engagement with source communities prompted staff members to also rethink the audience of their collections.

If we go back to the "preservation and access" shorthand that many institutions use to describe their digitization programs, it is clear how the strategic mobilization of stories can deepen those concepts and help institutions better articulate the goals and objectives of this important activity. Without developing narratives that contextualize the data, "clicks" and "hits" cannot orient institutions' decisions. The data we collected demonstrate the beneficial effects of the strategic use of stories in clarifying the goals of digitization efforts. Furthermore, narratives on users' experiences can be mobilized to assess and describe the impact that digitization has on both Native communities and institutions. In this context, available or potential metrics or feedback can help institutions construct more coherent and powerful narratives about the impact of digitization that can circulate between

interdisciplinary departments and permeate the institution's social field. Furthermore, the same stories can be shared with staff members of other organizations with the intent to foster a deeper change among other institutions. As a respondent told us, "I think the secondary effect will be that other repositories will start saying, "you know, I don't know how they did it exactly, but [the organization] has managed to connect with the Indians in a way that seems to be working (G3)." For example, a staff member from another institution told us that members of the community "write these incredible impassioned letters about weeping when they hear their language spoken for the first time (I4)." Considered merely "anecdotal information (I4)" staff "hear from the people they work with" (D1), these stories lose their symbolic power. However, as we heard at one institution beginning to experiment with storytelling methods, there are potentially systematic processes an organization could use to collect stories. A one program director said, "What we started to do is we would write back [to users] and say, 'Could you tell us a little bit about what you're using the material for?' and then people were great. They loved that, […]So then we started getting this incredibly rich ethnographic picture of what this material meant once it went back home" (I2). We argue that this offers a powerful way forward in pursuing relevant assessment methods for understanding impact.

Digitization impact stories as institutional myths

Storytelling is a powerful human communication tool. First, like traditional myths that provide a charter for a society, the institutional myths we have described help professional staff make sense of their work and its effects on the world. Despite occasional variations in their telling, these stories always communicated a deeper meaning about the institutions' work, like the story of a grandmother who cried when she heard a digitized audio recording. As scholars have noted in other organizational contexts, the construction and circulation of specific narratives allow members of the organization to collectively share tacit knowledge (Nielsen and Madsen 2005), while making sense of their everyday routines or navigating conflicts (Patriotta 2003). The repeated narration of a story strongly suggests that dominant organizational cultures or leadership play a role in controlling what stories or iterations of stories become "official" (Gergen and Gergen 2000), as some become dominant and others are marginalized (Aaltio-Mariosola 1994; Boje 1995).

Second, we heard technology origin stories in our interviews and FGDs, some of them uncannily cosmological:

> For digitization is having the Sun go around the Earth. It is digitization for accountability and collection item accessibility […] But what we have here is a moment of knowledge rather than information, and the knowledge is the Earth, the digitization effort goes around the Sun of knowledge where you're looking at things in context again. And you're not just the planet of the collections, objects, archives, libraries and photography; you are a whole knowledge system. It is just a radically different concept (A3).

As Cohen has argued of myths as a form of narrative, here we were given an "ordering of specific events" that included "the establishment or creation of a moment of origin, or a moment of transformation" (1969, 349). In this regard, Abner Cohen has observed:

> […] the fact that myth has a narrative form is not accidental: for a narrative has a beginning, a moment of time in which a series of events is anchored. Thus, I would argue, one of the important functions of myth *is that it anchors the present in the past* (Cohen 1969, p. 349).

As we read in the literature on the adoption of technology in organizations, institutional life is structured by new myths that emerge as technologies become integrated and normalized in "organizing visions" (Swanson and Ramiller 2004). Because institutions are always in flux and technologies constantly being introduced, paying close attention to these stories is crucial for understanding institutional histories and worldviews (Boje 2001).

Third, our respondents also mobilized stories to illustrate how their digitization efforts fit a broader institutional logic. Here, we saw how, as elsewhere in human society, myths represented deeply embedded cultural values. They legitimized institutions and practices and provided a means for categorizing or understanding the world (Cohen 1969, p. 344). Stories about institutional mission thereby claim organizational distinctiveness (Boyce 1996; Clark 1970; Martin et al. 1983), build the symbolic ground for creating and sustaining organizational culture (Brown 1986; Bormann 1994; Myrsiades 1987), and adapt organizational change to institutional values and history (Rhodes 1997). This ability of stories to frame, distill, and illustrate both institutional ethos and worldview, and to anchor the present in the past has importance consequences for our understanding of how staff in cultural heritage institutions make sense of their digitization practices and the adoption of technology.

Digitization impact stories and time

Although we saw the adoption of digitization and storytelling institutionalized across our interviews, we also noted that respondents were not often able to coherently sequence events around digitization and changing practices. This was not a longitudinal study, and so we were relying only on participants' memory recall and the few documents that were shared with us to construct the adoption of digitization for ethnographic projects and initiatives. Thus, while we were able to explore the construction of narrative, we were not able to account for the multiple temporal factors at play in these stories.

On the other hand, some areas for future research include exploring a few key areas: First, it is clear from our interviews that many of the topics we were discussing involved events, changes, policies, or project launches that happened in different timeframes. This is consistent with other studies that show technology being adopted along many timeframes in different facets of organizations and their staffs at different times and at different speeds (for example, digitization could be explored by examining the overall development of digitization efforts, overall

innovation trajectory in an organization, single projects participants talk about, development and understanding across stakeholder groups, shifts in institutional policy, and so on). This was beyond scope of our project to untangle, but it is a ripe area for the expansion of this research, and might allow future research to explore multiple layers in this kind of narrative building.

A second related topic to explore in this vein would be that of causality. It was clear that the process of story construction was being mutually constituted by institutional and individual agencies. Stories are both based on causality observed by individuals but also create shared understandings about how things work as a kind of mythos, which in turn structures how people behave. In our interviews, participants sometimes spoke about what was "happening," what "happened," or what they were "hoping to happen." This complexity should not surprise us, and future research might consider how institutions and individuals take causality into account when accounting for or assessing impacts.

A final topic for further research is the inverse relationship between the qualities of technologies and the value-driven ordering of projects. Indeed, it was quite interesting to note at a number of institutions that the materials that were digitized first (and were considered most important to digitize, often due to preservation concerns) were digitized using now nearly obsolete technology. Thus, the most institutionally "important" collections often have very low resolution surrogate images, while the least "important" have very high resolution digital imagery.

Barriers to collecting stories

Staff at some institutions described their inability to create institutional mechanisms or forums for collecting more open-ended user feedback. According to a collections manager:

> When we developed [our digital archive], we had some very specific hopes that we thought it would be really cool in the early phases if people could actually comment on things, and if they could have a comment, and type it to us and then, we could have a conversation with them, or at least see where their interest is in that material online, have them respond to [particular] records, that kind of thing. In the end, that never happened. So, there's not a way to sign in, or log on, or to comment, or anything (D2).

Another respondent admitted that, "on the digital aspect there is no feedback mechanism, because we are actually so new to actually getting the content up (E1)."

One institution's staff established a Facebook page but subsequently dropped it (F1). Members of the same organization told us how they had decided to not activate the public comments feature of their Omeka site. While they explained that they "thought it would be more beneficial to everyone if we would just get feedback directed to an individual on the staff," they also added that "the nature of public comments all over the web can sometimes be a little unsettling about what people post. Just because people have the ability to do it, it doesn't mean necessarily means they have something that someone wants to hear (A1)."

While additional research is required to identify the factors responsible for the different ways in which organizations mobilize their stories, our data suggest that the bigger the institution is the less the stories are able to circulate among units and departments. In numerous occasions, respondents pointed to people working in different units or departments in order to acquire specific information about single projects. Another factor seems to refer to the mechanism used to collect stories—without a systematic mechanism, these stories are considered merely "anecdotal" or are not shared across an institution.

Lack of institutional storytelling

We heard many times that institutions were, in fact, not telling coherent stories. For example, we heard that the broader story that digitization was an important part of research was not being communicated:

> Well, the consideration of research of museum collections, maybe just isn't as well informed that the museum is telling of its story as a research institution is either underdeveloped or not in the right setting or something because it appears that the message is not being delivered or received (J3).

This repatriation specialist continued, "I don't know if it's a communication question, or a domain of research question, or what it is, but something that brings those things together and interrogates, telling that story in an improved way (J3)."

At the same time, as we mentioned in our discussion of metric skepticism, a number of staff articulated that institutional siloing prevented either all general communication between departments or relevant information necessary to understand the impacts of digital projects. According to one administrator,

> "All the different departments that are working on digitization, which are several, we're all working separately. Unofficially, we all communicate with each other but we're doing different things. We have different budget constraints and different staffing levels (A1)."

Or as a collections manager said,

> "I don't know if that gets communicated up through things like digitization plans […] Our IT office is the one who put those kinds of plans together and I'm not sure that they really know how we're using them, other than posting them online so that people can look at them, which is great, but kind of superficial (D1)."

He/she continued on relationships to other departments that might use digital surrogates, "we don't really interact with them unless they're requesting […]. We have not had any conversations with them at all, as far as I know, about what they would need or how we would interact with them or public programs for that matter" (D1). We thus found that despite the clear power of stories to communicate impacts, there are many current barriers to coherent storytelling and the collection of impact stories at LAM institutions. Going forward, we hope that promoting a systematized

methodology for impact stories will both collate relevant impacts and allow LAM organizations to better communicate impacts through their own institutional stories.

Addressing users

This research was able to identify some preliminary and emergent user "types" that staff deemed important for their digitization work. While it was often hard for institutions to identify the primary audiences for digitized materials, these responses showed that *internal staff*, *researchers*, *communities*, and the *lay public* were the main audiences identified; granting agencies and other peer institutions were also noted. However, we did not do any research with or about users specifically. Indeed, our research confirmed that much of what is known about the complexity of reception in the museum world, especially in informal or free-choice learning, visitor studies, and museum education fields are not yet incorporated into digital evaluation practice (Falk et al. 2009; Hooper-Greenhill 2002; Roussou 2008; Serrell and Adams 1998; Simon 2010). While anthropologists elsewhere are engaging in sustained ethnographic work in the digital realm (Boellstorff et al. 2012), none have investigated digital spaces to specifically glean how digital surrogates are encountered, used, understood or otherwise made meaningful by different users. Future qualitative research is necessary to explore the impacts of digitized ethnographic objects among various types of users.

Acknowledging negative impacts

Cultural heritage professionals' enthusiasm for collection digitization and the success of their individual projects could impart the impression that the digitization of ethnographic collections invariably leads to positive outcomes. Indeed, discussions of impacts and impact assessment often focus exclusively on surfacing the unambiguously desirable consequences of digitization efforts. However, digitization may also have negative impacts, particularly for Indigenous peoples whose cultural heritage receives increased exposure and attention in an online environment. Indigenous individuals browsing archives and special collections online may inadvertently encounter culturally sensitive materials or access specialized knowledge that their communities ordinarily manage through culturally specific protocols. As Kimberly Lawson (Heiltsuk), a First Nations librarian from British Columbia, explains, "Indigenous people create, organize, use, and manage knowledge and information resources differently from Western libraries and archives. Privileged access to information based on gender, initiate status, age, clan, society, and role can be a form of protection for a community, in contrast to the American democratic traditions of open access to information resources and intellectual freedom" (Underhill 2006:138, summarizing Lawson 2004, pp. v–ix, 1).

Moreover, ethnographic digitization projects may include collections governed by special cultural protocols, such as Meskwaki stories that may only be told during a particular season (Goddard et al. 2011), heritage materials which off-the-shelf Collections Information Systems cannot readily accommodate (Christen 2011). Not surprisingly, Indigenous peoples may also have conflicting interests in heritage

materials and varying perspectives concerning their suitability for online public access and display (Leopold 2013). Finally, if impact is characterized as a form of cross-cultural, cross-institutional, and cross-audience storytelling, and if impact is defined as longer-term value over time (as our workshop participants concluded), then the importance of developing and maintaining long-term collaborative relationships between heritage institutions and their Indigenous constituents is clear. For these and other reasons, LAM professionals are increasingly adopting culturally respectful practices developed by, or in collaboration with, Indigenous peoples to help guide their decision making in ethnographic digitization projects toward mutually beneficial, positive outcomes (see, for instance, First Archivists Circle 2007, and for a discussion of these issues, see Nakata 2008; Skrydstrup 2006).

In addition, there can also be negative impacts for institutions, as we learned from LAM staff and the participants at our April 2014 workshop, there can also be negative impacts for institutions. These include: first, the quick start up of projects that turn out to be unsustainable; second, increasingly unattainable pressures to universally digitize, especially at smaller institutions, which inevitably are put to overworked staff to grapple with; and third, the shifting assumption by the public that *all* materials ought to be digitized, which has caused the emergent users to either be unaware of non-digital holdings or in a few rare cases, to consider the lack of digitization a form of censorship.

Changes, new challenges, and "failures" are important forms of institutional and professional learning. Unfortunately, and largely due to pressures from institutional or external funding bodies, institutions are afraid to admit they fail. Unlike in the business world, discussions cannot be limited to creating value, and indeed, some archival groups have been organizing "witness seminars" to share more openly the pitfalls of projects they take on. Our April workshop was one way our project shared some of our preliminary findings in this vein and was contextualized by others' work. Moreover, we argue that it is possibly better to engage in storytelling and narrative construction in order to be open about and contextualize negative impacts. In fact, this might be a way of managing these risks, rather than ignoring them, whether relating to cultural sensitivity or specificity issues, or broader institutional constraints. Indeed, we argue that acknowledging negative impacts of collecting stories is one important way they can be addressed and mitigated.

Our research lays the groundwork and frames the need for documenting, explaining, or deriving different kinds of causality and impacts that account for the broad kinds of changes digitization generates. Our future work (see http://vos.umd.edu) aims to develop an institutional toolkit for collecting stories to deal more directly with these issues, as additional work is needed to develop effective practices and toolkits.

Conclusion

Current literature, interviews with our participants, and a workshop with experts in a range of digitization issues confirmed the complexity of evaluating ethnographic digitization initiatives. Ethnographic collections are unique because of the range of

formats and media they encompass, the difficulty in distinguishing them other cultural heritage collections, the complex nature of their original contexts of use and colonial histories, restrictions to use or access due to cultural sensitivity concerns, the limited scale of audiences or user communities, and the overall critique and complex history of objectifying measurements in anthropology. Moreover, the ethical impetus driving many of these projects coupled with the long-term goal of decolonizing LAM institutions through these collections makes "measuring" their "impacts" by current metric standards problematic. Understanding the significance and cultural uses for these collections requires a new approach that will not essentialize or trivialize them or the relationships they are beginning to generate.

In this paper, we have shown that storytelling is a key way that staff at LAM institutions understand and articulate the impact of digitizing ethnographic materials. We heard a number of storytelling techniques for conveying impacts. These techniques range from specific, one-off anecdotes to broad narratives about institutional change illustrating various audience and institutional impacts. We showed how the first category, "singular stories," was characterized by the communication of very specific instances, moments or one-off case studies our participants articulated to communicate impact. The second category, "metrics stories," was characterized by stories we heard that made sense of metrics or other more quantitative data. The third category, "abstract stories," was characterized by the communication of general impacts about broad or unidentified user groups or institutional changes.

We argue that storytelling is therefore a key component of impact assessment more broadly at heritage institutions. Stories, as has been argued elsewhere, can be an effective tool to promote a long-term vision and staff's investment in it (Harris and Barnes 2006). Storytelling also has the ability to permeate an institution with exceptional speed and depth of understanding (Brown et al. 2005). Our workshop with a range of experts in the digitization and issues around ethnographic repositories concurred that storytelling and the collection of stories were a valid way to approach understanding impact in a more significant way.

While stories are currently used to understand and make sense of ongoing impacts, we argue that the systematic collection and collation of stories might offer institutions a method for conducting and understanding impact assessment. This conclusion is fitting for the unique, small-scale, and culturally sensitive nature of ethnographic digitization projects. It is also in line with the broader work of anthropology; indeed, we found it ironic that institutions tasked with collecting ethnographic records and often staffed with anthropologists were so quick to relegate impact stories to mere anecdotes.

While many institutions have resource-based barriers to the assessment, we argue that the collection of stories offers a cost-effective and meaningful way for institutions to begin to understand the impacts of their digitization work. We hope to promote such methods and to foster a relevant evidence- and assessment-based culture within the growing community of practitioners engaged in ethnographic digitization projects.

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