

‘A Good Enough Fix’: Repair and Maintenance in Librarians’ Digitization Practice*

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This chapter examines how librarians deal with the unavoidable decay of archived and to-be-archived books in the context of a large-scale digitization project. The librarians’ professional repair and maintenance work is specified by the complex nature of the books and the ‘double bind’ of their routine treatment. At the same time, they are to be preserved as jewels of cultural heritage and national identity and to be made available to interested visitors. The text focuses on the digitization process disclosing a tension between preservation and availability in the multiple enactments of documentary heritage artifacts. Through ‘shadowing’ librarians at work, I explore librarians’ distinctive care and professional vision, as well as their local inquiries into book properties, material and digital.

Additional Key Words and Phrases: Repair and Maintenance Work, Ethnography, Workplace Studies, Digitization, Digital Cultural Heritage, Library Studies, Science and Technology Studies

1 INTRODUCTION

Standing on a ladder in the State Hall of the Austrian National Library in Vienna, a man dressed in a lab coat, gloves and a face mask, removes a book from the gigantic shelf with extreme care. He hands it down to a colleague, who gently places it onto a small cart, already laden with other volumes. Their actions suggest they are handling an unstable, contagious substance rather than mundane, everyday objects that are subjected to almost innate routines of usage (the ones that you, the reader, are employing right now). Yet, while this cautiously handled item may be two hundred or more years old, it could nevertheless be a book that a visitor might have taken to one of the desks in the adjacent reading room just a few weeks before, just like almost all the other volumes within the library’s inventory. This part of the building is a museum, a carefully protected site of cultural heritage and national identity. But it is still a library after all, actively encouraging its visitors to dive into the endless depths of its gathered knowledge.

Shadowing librarians in their daily work routines exposes such seemingly paradoxical qualities of their objects of care on a regular basis. Durability and stability, properties commonly attributed to objects within studies of material culture (see Ingold 2007), apparently do not suffice to characterize these material objects. At the same time, nothing seems to be more “immutable” (Latour 1986) than the grandiose inventory the librarians refer to in talk, wherein every work has its particular place in a dense network of stories forming this particular ‘historical collection.’ How can we account for the socio-material arrangement at play here? What are librarians’ objects?

To study such relations, it is perhaps less useful to start, as is the case within the dominant paradigm in library and information studies (LIS), with the question ‘what is information’/‘what is an information artifact’ abstracted from the situated socio-material orderings they are embedded in (Cornelius 2004; Watson and Carlin 2012). Rather, this chapter proposes an alternative approach

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to the study of information artifacts by investigating librarians' work practices. Among the various tasks involved in providing the logistics for intellectual work, the librarians' profession entails taking care of their repository, not only in terms of continuing a bibliographic arrangement, but also in physical care of the material 'things' it contains. Like buildings, traffic systems or the power grid, the infrastructural underpinnings of knowledge and cultural heritage are held together by a set of activities "by which the constant decay of the world is held off" (Graham and Thrift 2007: 1), namely the practices of maintenance and repair.

The central aspiration of all archival work, the "catechontic" (Ernst 2002: 127) effort to introduce and sustain order, and suspend chaos among information artifacts, finds its mundane and very lively parallel in the struggle against the material disintegration of fragile objects—of books that are moved, flipped, yanked, dropped, torn, and thrown. The paramount and distinguishing feature of the library, however, lies not simply within the collection and preservation of such objects, but that they are made available for access (Cubitt 2006). The librarian is an archivist and conservator; yet, her main concern is to enable others to use their inventory: to identify the relevant, find the unexpected, and connect the item at hand with other materials. The techniques directed toward such a task (cataloging, classifying, sorting, etc.) perpetuate an arrangement beyond a mere conglomeration of information artifacts. Within the library, the whole is indeed more than the sum of its parts, and this 'whole' is continuously in the making through maintenance activities.

In recent years, digitization has been a central (if not the central, see Coyle 2006b) aspect of such activities. The proliferation of digital technologies in the everyday life of contemporary societies has confronted librarians with many challenges. The *métier* increasingly finds itself entangled within the transformative dynamics of contemporary knowledge regimes and their socio-material reconfigurations. In a time of 'digitization,' that is to say, the sense of an ongoing process of social, political, economic, and cultural life increasingly adapting to a "digital paradigm" (Ceruzzi 2012: x) of dealing with information, the documentary heritage artifact (or 'document' in the parlance of the profession) becomes problematic.

What exactly constitutes such an artifact is thus not solely a possible question for social theory, but a very practical question of expanding importance, in light of the bulk increase of media introduced by technological and social developments over the past two hundred years (Buckland 1997; Nichols 2006; Westin 2013). Whatever one might understand by libraries, what they are is closely tied to what materials they hold. The question, 'what are our objects of concern?' identifies and demarcates an object range for institutions which have long gone beyond 'books' as the only materials within their holdings. Which kinds of information artifacts should be collected, how they should be described, organized, made accessible, and protected for future use, are all pressing concerns for librarianship in very practical terms. With vast amounts of information produced every day, digitization in this sense amplifies the lack of consensus on what exactly makes up an 'artifact' to collect, house, and preserve within a particular institutional arrangement.

Furthermore, the adoption of digital technologies has consequences for the materials already housed within libraries. While 'surrogates' of information artifacts have, at least since the introduction of optical and magnetic reproduction technologies, been an integral part of maintaining the library's objective, the conversion of objects to digital data has taken the task to levels of an "industrial" (Coyle 2006a) scale.¹

¹Microform imaging and other reproduction technologies were part of the world of libraries throughout the twentieth century, and remain so today, where such analog storage formats still have their place in the long-term preservation of artifacts considered to be cultural heritage. The fact that reproduction now predominantly includes transformation to digital data is, in this sense, a mere 'consequential' step, not a revolutionary 'new' endeavor. Additionally, many of the benefits and expectations generally ascribed to the transformation of documentary artifacts into digital data objects have been the pursuit of librarians and archivists (both in theory and practice) for decades, even centuries before the advent of

Investigating maintenance and repair practices illustrates how such issues are taken up and dealt with in the daily work of librarianship. It reveals how information artifacts are reified as historical documents, and how 'doing documentary heritage' is enacted in multiple ways of everyday talk and practice. This chapter seeks to elucidate repair and maintenance work through, in, and as digitization.

I will draw on an ethnography of librarians' work conducted at the Austrian National Library, currently in the process of digitizing its complete historical holdings from the sixteenth to the nineteenth century. Exemplifying a few of the manifold ways in which librarians relate to their objects, this text will propose an empirical account of the various associations through which activities, procedures, tools, buildings, and bodies are mobilized in a digitization endeavor. Drawing on conceptions developed in actor-network theory and post-ANT studies to probe 'ontological' matters in empirical terms, I will address the multiple 'enactments' of objects in the different sites of a library currently conducting a mass digitization project.

Investigating librarians' activities through the lens of repair and maintenance work challenges the divide between production and use of (digital) information found in the predominant discourse of innovation, design and transforming social potential in media and information research (Jackson 2014). Furthermore, it reconsiders socio-material relations beyond a dualistic 'analog-digital' conception of objects and their status in the making of the social.

2 ASSESSING DAMAGE

Like built heritage monuments or art works, written records of deemed cultural importance are subjected to conservation practices. Ensuring the continued usable state of their materials is an integral part of librarians' care taking. The work of the conservators is defined by the local setting, and by the specific corpus of objects they work with. The conservation team talks about this corpus in different terms to members in other areas of the library and people working on the mass digitization project.²

integrated circuits and the digital computer. The aspiration to create a universal library, something that resonates in the descriptions of today's mass digitization projects, is probably over 2000 years old, as famously symbolized by the grand library of Alexandria (Thiem 1995). The possibility to provide access to 'all the world's knowledge' for enjoyment from the comfort of one's home was an ambition voiced by early information scientists such as Paul Otlet in 1910 and resulted in the establishment of an institution dedicated to this task, the *Mundaneum* (Levie 2006). In 1927, Russian-German engineer Emanuel Goldberg, at the time director of Zeiss Ikon, a subsidiary of German optics company Carl Zeiss, patented a 'work desk' allowing the retrieval of specific information from vast amounts of books and documents stored within it—a *search*, purely based on 'analog' microfilm technology (Buckland 2006). The so-called *statistische Maschine* consisted of a modified film projector and a photoelectric cell which allowed it to recognize code patterns that had been included with every previously photographed document. Not coincidentally, the principles of 'optical character recognition' (OCR) developed later, resemble this automated 'optical code recognition' system. While two prototypes had supposedly been built (Goldberg himself is said to have used one of them in his personal office), the project came to an end when Goldberg was forced to resign from *Zeiss Ikon* by the Nazi regime and had to leave Germany. The perhaps more prominent version of this concept, though only existing in the form of a magazine article, is the *Memory Extender* ('Memex') envisioned by Vannevar (Bush 1945), a work often cited as one of the most influential texts in computing history (Nyce and Kahn 1991).

²In the Austrian National Library, the preservation of documentary heritage was extended to include digital materials in/with the year 2000. Since then, electronic media have been subjected to both legal deposit as well as collection efforts, and the library has been engaging in activities related to 'born digital resources' (i.e., materials that originated in digital form), as well as digitization. Within the context of many European libraries' efforts in digitizing their holdings, or parts thereof, the library's management is envisioning a future wherein the complete holdings will be available in digital form by 2025, and several smaller and larger scale initiatives have been conducted already. Among them are 'on-demand' user-requested digitizations, and medium-scale digitization projects of parts of the holdings such as audio-materials or papyri. More recently, the library has also started to engage in mass digitization of historical Austrian newspapers, legislative texts, and its picture archive. One of the current main efforts in this regard is *Austrian Books Online*, a project wherein the library cooperates with Google as 'Library Partner' of the 'Google Library Program' (see Kaiser 2012). Within the project, the

In my interactions with them and in conversations I witness, they refer to the book solely in material terms, with no mentions of valuation based on other criteria. An ‘old’ book, such as the ones being scanned in this digitization project, is not described as ‘old.’ Neither is it discussed along criteria of ‘historical value as a cultural heritage object,’ or by joking about its seemingly absurd title. It is rather talked about as having distinct material qualities typical to a certain manufacturing style, or a fragile, vulnerable thing that needs to be prevented from disintegrating. Talk about sub-collections involved in the digitization project is organized around the (in this case worse) ‘conservation state’ compared to other parts of the overall holdings; or the average physical ‘thickness’ of individual volumes compared to other subcollections.

The ‘single’ object is predominantly only of secondary concern. What matters is the corpus, and the relation between the individual objects that constitute it. This arrangement is volatile. It is a disintegrating state of affairs which needs to be stabilized. In general, monitoring the damage of such a large quantity of books is elaborated guess-work, against a big unknown body of objects constantly moving toward further decay. An ‘assessment of the conservation state’ in day-to-day operation is conducted on a per-book basis (e.g., when a reader requests it), accompanied by scheduled routine assessments of subparts of the collection; often not on an individual per-book basis, but by taking samples of books deemed to be in a similar ‘physical shape.’ Basic documentation (the numbers of conducted repair tasks in categories such as ‘loose pages,’ ‘fissure on cover’) serves as a further indication for the state of things. Individual documentation of the conservation state of a particular object (e.g., in the internal catalog) is not common and disregarded as impractical due to the sheer size of the collection. The conservation expert can thus ‘get a picture’ of the overall state, without necessarily having ‘hard facts’ on her *whole* inventory at any given moment.

Only at very few points in time, is a so-called ‘full revision’ or ‘*Schadensbilddaufnahme*’ is practical (described to me as a ‘twice in a lifetime’ event by members of this team)—a time-consuming process wherein every single object is individually assessed. The Austrian Books Online project is such an event for the conservation team. As such, this digitization is not just about creating digital representations; for the conservators, it is to a greater degree simply an event to learn about their corpus and its characteristics—the material ‘shape’ it is in.

What is the ‘conservation state’ of a book, or a collection of books? Just when is an old book considered to be ‘in bad shape’? What are the properties to evaluate this condition? How are they ‘assessed’ in practice? For answers to questions such as these, it is useful to consider the kind of repair tasks that are routinely conducted. An instantly identifiable feature of the ‘conservation state’ from members’ talk and how they organize everyday work, lies in the fact that it seems to be organized around two principles.: The fact *that* there is recognizable ‘damage’ to the object, which is intelligibly different (even for nonconservators) from abrasion or wear; and that this damage can be *fixed* to return the object to a desired state of functionality. The condition of an object is described by referring to whether or not it has a *Schaden* (‘defect,’ ‘damage’) that falls into one of the categories of repair tasks, which members use in talking to each other and documenting their practices.

complete historical archive of books from the beginning of the sixteenth to the second half of the nineteenth century is being scanned and made available online, both through the library’s own website, as well as *Google Book Search*. The dimensions of this undertaking are substantial, since around 600,000 volumes have to be prepared, digitally indexed, transported to an off-site scanning facility, scanned, digitally transmitted, and stored. The Austrian National Library is cooperating with Google, Inc. on this project in financial as well as operational terms. While the preparation of the books in conservation terms (the provision and management of meta-data, quality control of the scanned material, the implementation of digital long-term preservation solutions, and the development of user-access solutions) is financed and conducted by the library, the transporting of the books, the actual scanning process, image and OCR post-processing, as well as insurance costs are the responsibility of the company.

When visiting the workshop of the conservation team, inquiries into the repair tasks undertaken would result in more or less elaborate descriptions of 'fixing defects' of the following nature:

- loose jacket, damaged jacket
- fissure on/loose 'bonnet'
- fissure on/loose 'foot'
- broken spine
- loose pages, fissured pages
- loose Titelschild (title label)
- mold on the outer pages
- etc.

Members of the conservation team predominantly talk about *functional* aspects of their book objects, and only sparingly relate to *aesthetic/Gestalt* features (often only in conjunction with a fix to a 'functional' problem). While both of these categories exist in members' talk, the priority in dealing with the former kinds of problems becomes instantly clear. Members would say, "It's not about eliminating every bad spot, we just have to ensure that it survives the transport and the scanning and that nothing gets lost during the process." Such concerns resemble repair and maintenance practices described as directed toward restoring order (Henke 2000; Gregson et al. 2009).

More specifically, they are an "attempt to arrest the traces" (Gregson et al. 2009: 248) of usage. The main objective, however, is not the elimination of traces of usage, but the protection of further decay. The 'integrity' of a work is ensured when it can be 'fixed' to a degree that no *Materialverlust* ('loss of material') occurs during its use or while it is stored; the goal is to secure the book so that it will not *disintegrate further*.

The process of assessing damage that counts as damage is considered to become 'apparent' during a 'reading occurrence' such as the one cataloging-personnel carry out when they take a book from a cart and open it to perform their work. Once they take a volume into their hands, open it, and quickly page through it, 'functional' damage can be recognized through the use-situation itself. Any dysfunction occurring during the reading occurrence indicates that there is indeed a problem. While their "professional vision" (Goodwin 1994) allows the conservators to assess a problem to different and greater levels of detail, they attribute 'lay persons' with the ability to identify that a problem *exists*, or conversely that no problems exists for a given object.

Furthermore, the use-situation is described by members as performing an assessment of the anticipated demands on the material during their subsequent journey in the digitization project. Conservators explain to me that modern book-scanning technology allows for a procedure which puts a physical strain on the book comparable to an ordinary 'reading occurrence.' The book is opened to a maximum angle of 120 degrees and an operator flips the pages while an overhead camera takes pictures. Thus, from the point of view of the conservator, the negligible differences in how the material features are put under pressure result in these situations being of such a similar kind, that one can be used to evaluate the other; an object which can be *read* without problems can also therefore be *scanned*.

When the conservators get a returned batch from the scanning facility, they move the shipping carts back up to the manipulation room and perform a 'visual assessment' of their books. A conservator glances at the picture of the cart taken before the books were shipped to the scanning facility and compares it to what she has in front of her eyes. Her eyes move between photograph and cart as she checks if the order on the cart is right, if there are loose parts somewhere, if something is 'off.' After she is finished, she takes orange slips and places them inside the books that need care and repair work. This technique is intended to give the conservators a quick idea of possible

‘structural problems’ with a batch. Should certain problems arise repeatedly with books in the same batch, this information is not only useful to estimate the amount of necessary repair work, but also as an indicator that there is something wrong with the workflows at the scanning facility. Since the library and Google conduct the different tasks of the digitization process independently, the conservation team has no insight into the exact procedures and is not involved in ‘minor’ workflow changes at the scanning facility. However, such changes do have an effect on their work, since they have to ensure they can meet the schedule for preparing future batches. If they have to spend too much time on post-scanning repair, they will not meet this schedule.

On these grounds, digitization has a profound impact on how caretaking work is conducted in a rare instance of ‘full revision,’ both in terms of being its cause, as well as prompting routines that shape maintenance practice. This close interplay becomes even more apparent if one looks at the actual repair activities.

3 TEMPORARY RESTORATION

The repair and conservation work that is carried out on library books is usually not aimed at achieving any form of pristine condition in aesthetic, nor in functional terms. Members talk about ‘securing’ and ‘temporarily restoring,’ not about ‘repairing’ in a more inclusive sense. The conservators would also point out how the ‘fixes’ they have applied to a book are often only temporary, ‘good enough’ solutions preventing further damage to the original materials, and are even expected to break at times. A ‘complete re-assembly’ is seldom desirable, even if it is considered to be a functionally or aesthetically better solution, and is avoided where possible.

For one, because as conservators said, it would “lower the status, the value of the object, its authenticity,” by which they only vaguely mean its ‘historicalness’ is not to be tampered with, but predominantly its integrity as a material object crafted using certain techniques of book-making. The notion of authenticity performed within this context is thus a locally situated negotiation in and out of repair practice (Jones and Yarrow 2013).

Furthermore, time constraints do not allow for extensive restoration tasks on a large number of books, a factor further exacerbated by the tight schedules of the ongoing mass digitization project. The restoration work during the project is therefore conducted mainly in the general area of preparation for shipment to the scanning facility. It predominantly consists of what are considered to be ‘routine’ practices.

An exception is work intensive subcollections, prepared ahead of schedule down in the conservators’ workshop when the normal daily workload allows for it. Furthermore, certain types of damage require the use of special instruments and environments (e.g., for removing mold). The ‘routine’ fixes and small repairs can usually be conducted with a small number of tools on a simple workbench in the preparation area. The conservators working here are mainly on their own, independent from what is going on down in the workshop, and fully devoted to working on the *Austrian Books Online* project. To perform restoration work, a conservator will take a book from a cart marked with a blue slip of paper, signaling that there is ‘something wrong’ with it, and take it to their desk. While they assume that there is a certain problem with the book, the repair task begins with a diagnosis of the problem, and a decision on what action to take. In relating to the book at hand in need of a quick fix, the irredeemably localized and contextually contingent nature of ‘diagnosing damage’ and ‘deciding what to do’ in book repair work becomes apparent. Demonstrating their work to me, conservators would make use of categorizations of an object, using the collection-as-a-whole as a ‘resource’ (see Zimmerman and Pollner 1970; Garfinkel and Sacks 1986).

Pointing toward the lower point of the spine of a book, telling me it is “one of Prince Eugene’s books, they have a particular jacket and always break here,” the conservator produces an ad hoc

categorization of this particular book as being part of a corpus of works that 'always' need repairing in the same place. He does so by relating it to a subpart of this particular collection the library holds. That this is 'one of Prince Eugene's books' serves as a contextual feature of deciding what to do. These categorizations are furthermore used to define what a 'routine' repair task is; since everything beyond routine is to be excluded and 'pushed in red' (marked with a red slip of paper signaling exclusion from the digitization process) to be worked on at a later time. Again, the ultimate goal is to prevent further damage; postponing a repair can be an alignment with that goal, on the cost of declaring it 'defunct' for usage (by readers or a scanner). This tension between preservation as a heritage object (the legal obligation of this national library) and functional capability for usage is the result of everyday librarians' practice; neither a discursive, social construction, nor an immanent feature of 'objects.'

4 THE BOOK MULTIPLE

The collection the conservators attune to is not a collection of beautiful museum objects with a rich, intertwined history. They relate to the same books, but their objects are messy assemblages of leather, paste, paper, thread, dust, mold, glycerin, integrity, fragility, craftsmanship, and decomposition. They are conscious of their objects' 'histories,' but that only matters in the pragmatics of getting objects functional again, or preventing them from being further damaged. The stories they tell about the 'historical collection' are ones about "poor jacket quality of 19th century books."

These stories differ substantially from the ones told by librarians mainly concerned with cataloging and metadata-management work on the collection. Their object of care is the book embedded in circumstances of whole empires, peoples, geographies, traditions, cultures, laws, relations, conversations, scholarship, provenience, and accumulation. Their goal lies in improving its descriptions, and supporting others who do so. Paying attention to how their books were described in the past, how they ended up in the holdings of this library, and how these holdings form a corpus, characterizes their work. As such, digitization of their inventory is framed in adding yet another description, another representation of the object to the ones that already exist within this library.

Members' talk emphasizes the collection as a cohesive, orderly whole over a mere large accumulation of old, rare or unique works. Forming the collections' consistency is achieved in talk by differentiating the corpus into subdivisions and relating them to each other, introducing historical continuities of the libraries' purpose and activities and providing rationale for their 'place' within the whole collection. There are the books assembled by individuals (such as Prince Eugene of Savoy); there are different corpora of works not written in German, rooted within the *Pflichtablieferung* (a 'legal deposit' clause to provide the library with copies of every work printed) which was established in the sixteenth century during the Habsburg monarchy; there is also the fact that the library was oriented toward 'universal' criteria until 1920 as opposed to the 'Austrian' focus continued/adopted afterwards.

Yet, it is not simply talk that keeps the objects in question distinct. The setting resembles themes congruent with recent trajectories in science and technology studies (STS) to extend the displacement of epistemology's grand themes "to the realm of the ontological" (Woolgar and Lezaun 2013: 322). A core leitmotif of 'Post-ANT' (Law and Hassard 1999; Gad and Bruun Jensen 2009) propositions to subject ontological topics to empirical treatment is to call attention to the multiple ways of the world no longer in terms of representations, but to trace and describe different practical enactments of 'reality' in different situated instances.³

³The most prominent example for such diagnostic approaches is perhaps Annemarie Mol's book *The Body Multiple: Ontology in Medical Practice* (2002). In this text, Mol establishes the question 'What is atherosclerosis?' as a practical question of a diverse range of "doings" in different parts of a Dutch hospital. The various practices relating to atherosclerosis each perform or "enact" a different version of this disease, "different atherosclerosis." Taking up Latour's frame toward the

However, in studying librarians' work, such 'multiplicity' continuously emerges within the field prior to any analytical postulate. The socio-material matters identified by the ethnographer during the course of investigating 'librarians' work' are in part inherent in participants' own reasoning toward their work practices: doing ethnography reveals salient instances wherein the analyst's "constructs of the second degree" (Schütz [1953] 1971: 7) find their parallel in librarians' vernacular theory of what it is they do. The 'multiple associations' between the 'social' and the 'material'/'objective' are, so to speak, often made for the ethnographer by those he studied, during and as part of their everyday affairs. As such, different 'versions' (as referred to in the parlance of a general ontology of multiplicity) of objects, the required work to make them coherent in different parts of the library and the digitization project, are, independent of the analyst's 'intervention,' an integral part of the practices encountered.

Consider the following excerpt, touching upon discovery as a stabilizing by-product of mass digitization. An 'artifact' always derives its stability through the constant maintenance of the catalog. A digital version of the book thus does not 'change' the heritage object. It adds a new dimension of how it is described, it makes it even more stable, even more immutable. Digitization enables a new way of exploring what constitutes the library's holdings. Additionally, the project of digitization itself is an opportunity to explore the corpus. Both of these aspects are raised in the following quote, where a librarian talks about what she calls her "found pieces" (Fundstücke). By this, she means books that her team has found to be of particular value as a result of being resurfaced by the digitization project. This quote is taken from a casual conversation with the ethnographer about the holdings and the large amount of objects these holdings consist of:

So here I have like a whole box. I call that found piece, because we partly don't know that we so- That often are like small, thin booklets. That it is actually unique. That nobody ... at least not knowingly, yes? We don't know it, nobody except from us has this work. ABO serves. It's not just about opening with the scans, but also it serves protection because we now know we have to extra protect it. We suddenly discover what we have here. And we can protect it.

The expression of 'protection' is interesting because it diverges from the 'major consensus narrative' expressed in official documents, which is also a narrative presented at large within the digital department of this library, namely that scanned images serve a 'protective' function in case of a catastrophic incident destroying the 'original' material. The librarian does not take up the narrative in this instance, but instead offers a different conception of the function of a scan in the role of 'protection.' The electronic book serves as a means of discovering the 'uniqueness' of the *physical book*. As she explicitly states, "it's not just about opening" the collection to readers from the outside, but also for the caretakers themselves. The scans are made relevant for her own work; yet, she decisively emphasizes protection in the sense of protecting the object as a unique object; not in terms of protecting the object in other ways and according to other valuations. However, she also acknowledges the issue of 'opening' the holdings to the outside, and it being an important, or the important part of the library's endeavor of provision ("not *just*," my emphasis).

The mention of "small, thin booklets" instructs her conversation partner to recognize the significant function of the digitized book in enabling the discovery of even the most seemingly 'unremarkable' objects that she would 'miss' in her own modality of practicing documentary

subject/object distinction (Latour 1993), and within the customs of actor-network theory and its semiotic cousins, she mobilizes the ethnography to propose a general ontology. Out of her empirical accounts, a discussion of constructivist social theory approaches toward the 'objective' and 'reality,' and the Goffmanian ([1959] 1990) conception of performance of self, Mol develops a central philosophical assertion. The enactment of an 'objective' entity through socio-material practices reveals the status of the object as *multiple*: "[o]ntology-in-practice is multiple" (Mol 2002: 157).

heritage. In doing so, the different 'functions' are offered to be understood in terms of a unified enterprise; while at the same time establishing the difference of the things in question. Similar motifs of digital books' function of 'discoverability' are expressed within this team by telling stories about a researcher from the other side of the world expressing interest in the physical book after having discovered its unique properties via electronic means, or by hypothesizing about how the physical book in the collection will become 'more visible' due to its electronic representation being online for the world to see.

This quote also exemplifies the reflexive attuning to identity and difference of the objects in question. The ethnographer encounters several instances of talk where the differences of objects of librarians' care (books, scans, text, and data) are explicitly made a topic of conversation. While these different 'things' are subjected to different practical concerns within the library, they are all nevertheless routinely raised in instances of talk not part of the situational context of a particular practical concern at hand: people engaged in book cataloging talk about a scanned image; as people engaged in overseeing quality control of scanned images talk about cataloging books. The way in which they do so is interesting, because it is recurrently taken as an opportunity for reflecting upon an 'own thing,' 'the other thing,' and their relation to each other.

The most conspicuous occurrence of such reflection shows itself where the respective 'function' of the things in question is compared to each other (such as in the excerpt above). In doing so, members express their understanding of differentiation between the multiple ways in which a thing can be used and how it relates to the other things. For example, the motif of 'discoverability' is thematized when, another member of this team contests the "commonly-held view that a serendipitous find is only possible by browsing bookshelves" in highlighting what he thinks the electronic book is good for. Interestingly, such a "commonly-held view" can be found on the other side of the building, within the digital department, where the benefits of "what is possible only when we have full text [of the books able to be processed by software]," namely a "more detailed way to find what you want" is emphasized over the—in this instance, "mere"—serendipity as a result of only being able to vaguely assess the content of a book by its bibliographic metadata and subject classification. Identity and difference of objects, and their relation to practice, are a concern for librarians—an explicit concern. The inherent reflexivity toward such questions is especially relevant to one of the key elements of a large corpus of artifacts: maintaining order.

5 MAINTAINING DESCRIPTIONS

Producing consistent descriptions is an important device for establishing and maintaining internal order within libraries' holdings. It is not only a precondition for usage of materials, but also plays an important part in maintaining heritage. Descriptions form the material, explicit expression of how individual works relate to each other, at present and in times past. Descriptions—which usually take the form of a written account—can represent an item. This method of meta-information has a particularly useful benefit. Its material record can be kept separate from the item itself. Thus, a catalog of such meta-information can be compiled. This representational codex, a layer of abstraction (or a 'gloss' if you will), is able to give some indication of all the items that make up a particular corpus, absent of the object at hand.

In this library, any book will have a multitude of such representations:

- It is described in an old, handwritten catalog (which, of course, is in itself an object of the library now). This description almost appears 'unordered' when one is used to the metadata customs of our time. It is, however, often quite elaborate, for example, featuring the provenience of the book, how the library came to acquire it, and a description of its material features.

- It is described in an abridged, typewritten transcription of this handwritten catalog on index cards, made in the 1960s. This ‘mechanized’ catalog is standardized in the meta-information it features. At the same time, it is not as comprehensive as the individual book concerned, since additional descriptions beyond formal bibliographical data (author, title, imprint, and signature) are not included.
- It is described in a second catalog based on typewritten index cards, organized around content-based meta-information (keywords). This representation describes its relation to other books or items that store information.
- It is described in a relational database that is based on the older catalogs; primarily on a digitization (scanning and OCR) of the typewritten Zettel-catalogs. The basis for the database currently in use was a scanning project in the 1990s; additional descriptions get added continuously, also taken from the old handwritten catalog.
- Finally, it is described in a catalog for users of the library which can be accessed online. The library is currently integrating all its different catalog databases so users can retrieve results for all of them via a unified search mask (“Quicksearch”).

These different layers of descriptions enable the library to function in a fundamental way, and they give a historical account which is an integral part of the cultural heritage the holdings represent. However, achieving consistency is bound to continuous efforts.

To ensure the order of things within a library, the book and its representations have to match in terms of the state of affairs. There are instances when this relation can become a problematic conflation point of different enactments of the objects of care. This problem emerges when representations facilitating order are put into question, which is continuously the case in the mass digitization project. The first important step when books are pulled from the shelves for digitization is to equip them with a barcode linking them to their description within the catalog database. However, this process is not only ordered by representations, but also shaping them. After a book is pulled from the shelf and loaded onto a cart, it is checked against the catalog, and its description is updated. On the one hand, this is a step in a broader continuous effort of the library to establish the electronic database as the canonical, consolidated, comprehensive repository of descriptions. At this stage, the most important representation of the book can be supplemented, corrected, and further standardized and systematized. Inconsistencies, which have occurred as a result of the multitude of descriptions that exist of a book within the library, can be removed.

On the other hand, having ‘correct’ metadata is considered to be a ‘mission-critical’ requirement, in terms of process. The personnel have approximately ten minutes per book to keep up with the schedule of a certain batch prepared for transport; problem cases that would take a longer amount of time are immediately postponed. In the processes that follow, these works are the exclusive responsibility of another team. The strong emphasis on ‘getting it right’ when it comes to the unambiguous structure of metadata-sets observable at this time is a direct consequence of the digitization process. While a librarian is used to dealing with historically grown inconsistencies and multiple trajectories of how catalog entries describe books, computer programmers at the other end of the chain have confronted them with a different sense of ‘metadata,’ in how they construct the relation between the digital object and its respective description. The metadata-adjustments meet a demand set by the ‘end product’: the electronic book and the logic of its processing.

For example, a work consisting of multiple volumes might only have one entry within the catalog:⁴

⁴The entry reproduced here resembles the simplified version an end-user would see when searching the online catalog. The original can be accessed at <http://data.onb.ac.at/rec/AC10286864> (Retrieved 15 September 2015).

Title: Schillers Werke.
Person/Institution: Schiller, Friedrich
Place of publication/Publisher: Stuttgart/Cotta
Year of publication: 1867
Language: German
Description: Footnote: Vol 1--10.

This is perfectly suitable for a reader. She is interested in *Schillers Werke*; and the 'description' that this is a multi-volume work suffices. She can tell her librarian she needs 'Vol 1,' or 'the first one,' or perhaps even 'the one with the poems.' On the shelf, the individual material objects that coherently and intelligibly make up *Schillers Werke* sit right next to each other, so the librarian will not have a problem selecting the desired volume. However, these pieces of information have to be provided in a *structured* way in order to be machine-readable. When later on in the process a physical book is scanned, the images created have to be linked to the corresponding catalog entry. Therefore, separate (sub-)entries have to be created for each particular volume of *Schillers Werke*, so a data object can be unambiguously linked to a set of metadata. Data objects cannot 'sit next to each other' in the same way physical objects can. In order for a machine to 'understand' the relations between them, these relations have to be made explicit. The creation of the electronic book therefore affects the description both of itself, as well as of its physical counterpart. The whole logistical chain of the scanning process and the logics of data-processing are embedded into the canonical description of the book in the library in this way.

This discrepancy in the understanding of 'descriptions' is a source of tension, a point where conflicting, coinciding enactments have to be coordinated—and the members of this library are very aware of that. Beyond situated instances of referring to the objects of 'documentary heritage' when they relate to multiplicity, they also explore the nature of their profession in terms of cultural differences within the organization in epistemic dimensions. A striking example of assessing not only distinctive expert knowledge, but also assembling it around modes of conduct and technology consists of a member of the digital library pointing to her computer screen saying, "there is a different *Denkkultur* [between computer scientists and librarians with "an affinity for technology" and "classical" librarians oriented towards Humanities-scholarship]." This vernacular, and, if one may say so, indeed very apt glossing over of the concept of "epistemic cultures" (Knorr-Cetina 1999) to denote the "machineries" through which programmers write software formed by a particular understanding of how information artifacts can be meaningfully represented in contrast to how the librarian of book-culture understands the issues, was followed within the conversation by the identification of areas which would require "mutual learning from each other." Through instances such as this, the nature of their profession is questioned by members and explanations that thematize 'socio-technical reconfigurations' (new technologies, new skills, different kinds of expertise, shifts in requirements formulated by users, etc.) are offered to account for such questions to be posed. The 'multiplicity' and sometimes conflicting nature of the objects of care, how different practices are related to them, and that they need to be coordinated somehow, are deliberations librarians are confronted with in their day-to-day work, and which they reflexively take up in organizing that work.

Through maintenance of the catalog, books retain their 'historicity' and their particular constellation is stabilized and further reinforced. At the same time, the practice of creating 'better' (more extensive, standardized, machine-readable, etc.) representations of the inventory ensures the continued key operation of the library: providing access to its materials. Digitization plays into both dimensions. What librarians, according to a classic joke, do not care about—the content of their books—becomes 'mobile' with the introduction of digital surrogates of substantial parts

of their inventory. The establishment of new orderings of knowledge emerging around the book as “data object” (Rieder 2013) is already having consequential repercussions within the world of libraries and creates numerous new challenges (see Bishop et al. 2003; Evens and Hauttekeete 2011). At the same time, digitization reifies, and even redefines the ‘original’ (see Latour and Lowe 2011).

6 CONCLUSION

Librarians’ work is directed toward collection, housing, order, provision, and preservation of documentary heritage artifacts (‘documents’). Such artifacts are, like any other artifacts, social. Documents are an integral part of making and maintaining social order; yet, they themselves are part of that order and therefore need to be attended to, and cared for (Levy 2003). This chapter has explicated two sets of such care and maintenance practices: physical maintenance of books, and organization and maintenance of descriptions.

I have described the librarians’ object and corpus in terms of multiple enactments (Mol 1999, 2002). In studying librarians’ work at the different sites of the Austrian National Library, I have shown the performance of socio-material order being distinctive to this arrangement engages different kinds of objects.

A ‘historical’ one, embedded in the circumstances of collection work of this library. It is set apart from the book-to-be-read by its character of aesthetic value and significance on its own—it is not sourced for the textual ‘information’ it contains. Its readers are not so much interested in the Confessiones of Augustinus as they are interested in these Confessiones of Augustinus, this particular object at hand. The object itself is the story, not its content. Its character of ‘immutability’ derives its stability from a dense network of tales of its ‘mobility’ over centuries, its provenience; descriptions which are collected and being added by the librarians themselves, and in their support to others who do so too. These stories form a corpus. The corpus of the historical object is of an emergent solidity, as its descriptions are becoming increasingly dense.

Conversely, the corpus relating to the material object is characterized by steady movement toward decay. The material object is fragile and vulnerable, enacted in practices of caretaking through constant routines of repair and restoration work. These characteristics stand in contrast to the predominant discussions of materiality within STS stressing stability and durability (see Denis and Pontille 2015).

The coexistence of these objects eventuates in a corresponding ‘digitization multiple.’ Whereas digitization adds yet another layer of representation to the historical object, it attends to the material object in terms of care, in that it enables a rare instance of ‘full revision’ of its fragile state as far as the whole corpus is concerned, and a last resort against the ultimate decay (disintegration). Thus, digitization is shown to be transformative not only in turning an ‘analog’ book into a ‘digital’ reproduction, but also in shaping physical objects, their representations within the library, and the divergent practices in which they are enacted. Ultimately, digitization (in the narrow sense of digitizing a particular set of objects) is an endeavor to come to terms with digitization (in the broader sense of transformation of socio-material-cultural arrangements) within this setting. The Austrian Books Online project is a mode of ‘research and development’ toward the library of an imagined future conducted through the practices of librarianship itself. This study can thus, on empirical grounds, add to contributions emphasizing ‘research’ not only being a domain of library and information studies as an academic discipline, but also as an inherent feature of librarianship as a profession (Cornelius 1997; see also Carlin 2009).

The ways in which this is the case have been demonstrated by trying to point out how ‘multiplicity’ is of intrinsic relevance within the field itself, as a members’ concern. Following librarians through digitization work has shown them to be highly conscious of the ‘multiple’ of their objects within and beyond the library, the coordination work required to align them in day-to-day work,

and the actor-networks to be stabilized so that a large-scale digitization project can be assembled successfully. As librarians explore the nature of their profession and describe their work, questions of identity and difference of objects, and socio-material relations within the setting are being raised as such questions are important to the organization of work right now and toward shifting socio-material configurations. As the analysis has shown, matters of 'ontology' are relevant within this particular setting as topics—librarianship can be said to be characterized by members' distinctive concern for questions precisely such as this. That the 'doing' of an ethnography has laid open convergences of such vernacular theorizing of conduct and their manifestation in concrete work practices, along with the conceptualizations of the analyst in the study of librarians' work, might thus be consequential to approaches adopting a general ontology of multiplicity in their explanation of objects and the social—in methodological, as well as theoretical terms.

I would thus like to propose to understand this text as an argument for shifting the basis of the study of the status of (digital) objects within librarians' practice from a distinctive ontology of multiplied realities toward empirical investigations of 'ontological topics' bound to the digital, as made relevant within such settings themselves (Lynch 2013). Furthermore, such a stance can be valuable beyond this confined case study, in further inquiries into archival assemblages and 'the digital' within society. Adopting an 'agnostic' stance toward the 'whatness'/the difference of the digital, and instead focusing on how it is actualized in various social settings undermines the binary, quasi-ontological precondition underlying the greater part of social theory investigations of 'digital' issues.

Additionally, studying librarians' work as repair work provides an opportunity for critical engagement with digitization projects and related issues of knowledge politics beyond what is mainly discussed in public, as well as academic contexts, namely the implications of private corporations such as Google entering the domain of public knowledge infrastructures (Jeanneney 2005; Baksik 2006; Lackie 2008; Lewis 2013). As this chapter sought to elaborate, mass digitization confronts the conservation of heritage objects, and the maintenance of bibliographic order with significant challenges through the process of digitization itself. Beyond 'copies' of culturally significant works now being stored on servers in Mountain View and processed by Google's algorithms, digitization projects have profound internal effects on the maintenance and Gestalt of public knowledge infrastructures. Understanding these effects is critical for future developments in regulatory frameworks and policy incentives directed toward the digitization of cultural heritage (see Niggemann et al. 2011). Studying librarians' work ethnographically provides an opportunity for social theory wherein, by "letting the members teach [you]" (Randall and Sharrock 2011: 16), a critical engagement for the analyst can be based on descriptions of 'criticism' and 'critique' already internal to the field and its members' practices—by first turning 'critique' into an empirical topic on its own (Lynch 1982), and then developing a 'critical stance' on that basis.

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