



What's Influencing Practices of Open in Museum and Scientific Collections? A German Case Study

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Abstract

Multiple factors influence the willingness of collection staff to promote the publication or reuse of digitised objects, namely influences of community, institution, on a individual and on the societal level. Their influence and their relationships were investigated in this case study. Experts who are responsible for museum or scientific collections in Germany or who work with collection objects or their digital images were interviewed on these influencing factors. The results show that the community mainly affects individuals, while the individuals particularly influence the institution. Societal factors have a bigger impact on open practices. Apart from financial incentives from funders, employees and their qualifications are the most important leverage for promoting practices of open in museum and scientific collections.

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Introduction

The discussion about digitisation affects almost all areas of society. While on the one hand it is treated as the central promise of a positive future, it is also associated with various fears and anxieties. Central to this are issues such as loss of control (Lanier, 2006) and the fear of substituting people with machines in the labour market. The digitisation of collection objects is also progressing, whether in university collections or in museums, libraries or archives. On the one hand, the concept of digitisation refers to the purely technical reproduction of an object in digital form. This can be the scan of an image, the digital conversion of a sound recording or a film, or the three-dimensional representation of an object in a collection or a building. However, the term includes much more. In the political discussion, digitisation is treated as a promise for the future that offers democratisation, more efficiency in bureaucratic processes and solutions to global challenges. And just as technical digitisation and the dissemination of scientific publications has been strongly promoted in recent years, the digitisation and digital dissemination of museum and other collection objects are now being discussed in many places.

In museums and scientific collections, digitisation is oftentimes the basis for granting access to collections. Biodiversity research, which is dependent on access to the collections of natural history collections, may benefit from such a digital dissemination (Paknia et al., 2015; Shaffer et al., 1998). This applies to classical taxonomic work, but especially to newer approaches such as the automated identification and taxonomic indexing of species (MacLeod et al., 2010). Without digitised objects in high quantities and sufficient quality, such approaches, which are often based on machine learning techniques, cannot be implemented. As a consequence, animal species or their populations remain undiscovered, unexplored and possibly unprotected. Suarez and Tsuitsui (2004) have given various reasons for the importance of museum collections. For example, they point to the importance of collections of bacterial strains and viruses for public health and national security, for example in combating epidemics such as the hantavirus. The COVID-19 pandemic shows how highly relevant this is. Various digitisation projects have already led to new scientific knowledge, for example in the field of invasive animal and plant species or climate change (Rogers, 2016, pp. 762–764). This applies to museums, but in many cases also to comparable collections such as national archaeological collections (Smolnik, 2016), scientific research collections (Uhl, 2016) and ethnological research collections (Noack, 2016), and also to other institutions that collect or create, preserve, research, exhibit or communicate information suitable for the public.

The Concept of Openness

The history of the term “openness” has been closely linked to its use in the field of software development. Stallman (2015) defined four freedoms for software including the right to use a program for any purpose, to study how it works, to change, to modify and to redistribute it. Based on this, many different definitions for conditions of access and use for different entities such as texts, software and also cultural goods developed. This led to the Open Definition, which created a conceptual framework for dealing with works:

“Knowledge is open if anyone is free to access, use, modify, and share it — subject, at most, to measures that preserve provenance and openness.” (Open Knowledge Open Definition Group, 2015)

A work here is an “item or piece of knowledge being transferred”. Openness is reflected in the degree of freedom that users have in interacting with this work. One of the obligatory criteria of the Open Definition is the use of an open license, which allows non-discriminatory free use, redistribution, and modification of the work as a whole, in part, or in conjunction with other works, including for commercial purposes. In addition, the work must be accessible “at no more than a reasonable one-time reproduction cost, and should be downloadable via the Internet

without charge". Open formats must also be used for publication, i.e. technical file formats that do not present any technical or licensing hurdles.

In 2006, a conceptual framework for "Free Cultural Works" (Möller et al., 2018) was created. Like Stallman did for software, freedoms are postulated, which must be fulfilled in order to speak of free cultural works. In addition to the use of a free license when the work is published, these freedoms include "availability of the source material" (e.g. the co-publication of the original in a translation), "use of a free format" (no patent protection or other protection mechanisms for the technical file format used), "no technical restrictions" (e.g. no password or copy protection) and "no other restrictions" of any kind that would restrict the other freedoms.

The Openness of Digitized Objects in Germany

The foundation of digital openness is the existence of digitised material. Euler (2018, pp. 8–9) mentions three goals that cultural heritage institutions - and this can be extended to all collections with limitations - can pursue in this regard.

1. To make digital services available for the commercial and non-commercial distribution of content in order to increase the "visibility and awareness of cultural content and the cultural heritage institution itself (cultural valorisation)".
2. To make the digital reusable as a productive means in order to turn visitors into prosumers, "a hybrid of user and producer. Digital offers change the way visitors interact with culture and enable new forms of cultural participation".
3. To use the "possibilities of digital and Internet-networked media and technologies [...] to enable research and new research methods, to work collaboratively and networked and to document findings in a sustainable and connectable way".

The steps necessary to implement these goals with regard to the use and availability of digitised objects are similar to those in the related areas listed above. Here, too, it is a matter of digitisation, making available and enabling new types of use.

A statistical survey of the German museums in 2016 (Staatliche Museen zu Berlin & Institut für Museumsforschung, 2017) provides an attempt to assess the status quo of digitization in German museums. In total, only 2,762 of 6,712 museums in this survey were able to quantify the size of their collections (a total of approx. 333 million objects). The survey distinguishes between the documentation and digitisation of the collection. Only 1,413 museums stated that they use an information system to catalogue their collection. The overwhelming majority of the objects collected throughout Germany had thus not yet been recorded and indexed at the time of the study. The digitisation of the objects can be roughly divided into two different qualitative gradations. For internal use in the collection documentation, digital low-quality photographs are often produced that are not necessarily suitable for publication. The second stage is the publication of high-quality digitised material. The museums are reluctant to do this, even if it is only a matter of object-describing metadata. The institutions use different ways of providing metadata and digital objects. 29.5 % make them available only within their own institution, 19.5 % on their own homepage. 10.8 % feed this information into regional portals, 2.9 % into the Deutsche Digitale Bibliothek (DDB) and 2.7 % into Europeana (ibid. p. 66).

For university collections, the Koordinierungsstelle für wissenschaftliche Universitätssammlungen has collected key figures according to which 34.6% of the collections are digitally accessible and 65.4% are not digitally accessible. The latter includes only partial availability of digitised material as well as the exclusive publication of object-describing metadata. Only about one third of the university collections in Germany can be found electronically in parts and it is unclear what proportion of the objects is available (Klaffki et al., 2018).

The article is structured as follows. At first, a theoretical framework of possible influences on practices of open in museum and scientific collections is outlined. The Method section describes the methodological procedure. This is followed by the presentation of the findings in the Result section, which will then be discussed and integrated into a model of influencing factors. Finally,

the conclusion offers recommendations for practice and policy and tries to identify directions for further research.

Theoretical Framework

Influence of the Community

According to McMillan and Chavis (1986), the perceived membership of individuals in communities is influenced by various characteristics. Membership in a definable community, bi-directional influence of a person on the group and vice versa, integration and fulfilment of needs (including the assignment of a status in the community) and a shared emotional connection described by the number of encounters, their quality, the degree of involvement in a community and the degree of recognition or rejection experienced in the community. These factors are interdependent and apply to scientific communities, too. Thus, researchers and their communities are in a relationship of mutual influence. According to Gläser (2012) shared knowledge is an appealing characteristic of a membership in a scientific community.

Professional societies and associations often emerge from these communities. For German museums this happened about 100 years ago with the founding of a regional museum association in Brandenburg in 1912 and the German Museum Association in 1917. Today there are numerous organizations like the Deutscher Museumsbund, ICOM Deutschland or the International Council of Museums (ICOM) for museums, and the Coordination Centre for Scientific University Collections in Germany, the Committee University Museums and Collections (UMAC), or the European Academic Heritage Network Universeum is active (C. Weber, 2012) for scientific collections. The statements made by professional associations towards digitisation predominantly emphasise the importance of this development and the need for digital strategies for institutions that own collections. The Deutsche Museumsbund, for example, comments on the added value of digitisation and emphasises the opportunities it offers (Köhne, 2016). A common way to codify the knowledge and standards of a community is a code of ethics. The museum community imposed such a code of ethics on itself in 2004. For physical resources it states that the “governing body should ensure that the museum and its collections are available to all during reasonable hours and for regular periods.” (ICOM – Internationaler Museumsrat, 2004). These provisions have not yet been updated for online use.

Values and courses of action are handed down in a professional community and influence the actions of its members, e.g. with regard to the practice of publishing in science (Wakeling et al., 2019). The social openness of a community - in the sense of the inclusion or exclusion of nonmembers - is one aspect that provides a basis for the practices of openness. In the field of science, opening up to the broader society can be interpreted as a change in the strict modalities of belonging that is being fostered by digitisation (S. Dickel & Franzen, 2015, p. 331).

Influence of the Institution

Institutions are defined by their primary objectives and core activities. For collections and museums these are collecting, documenting, researching, preserving, exhibiting and mediating (Walz 2016b). In order to achieve these goals and carry out these activities, they are given a certain freedom of action by their funders, but their actions are also shaped by their organisational culture.

A determining factor for the objectives of a publicly funded institution is the efficient organisation of internal processes. Since practices of openness are regarded as primarily directed outwards, there is no incentive to open data or objects in this respect (Lakomaa & Kallberg, 2013). The promotion and demand of openness by funders is therefore of particular importance, who thus usually pursue two goals: on the one hand, increasing the reach of the published data and objects in the professional community, and on the other, enabling access and reuse by citizens (Neylon, 2017, p. 5). In some cases, the institution fears that digitisation could lead to a reduction of resources, for example through loss of income from commercial use (Euler, 2018, pp. 15–16). The NPO sector as a whole is not per se hostile to digitisation, but has not the high priority it should have “to ensure that sufficient financial, personnel and time resources are made available for this purpose” (Dufft & Kreutter, 2018, p. 112).

(Estermann, 2017)Estermann (2017) divides institutions into different adoption phases for different practices. While some of these phases bring changes in attitudes, the implementation of open practices had little overall impact on inner-institutional attitudes. This is particularly true with regard to the institutions' attitude towards "open content" - regardless of the official attitude of the respective institution:

"In fact, even institutions that reportedly had started to make their collections available as 'open content' persisted in their hesitant attitudes with regard to making content available for re-use by third parties for any purpose, including commercial use. As it turns out - provided that the institutions correctly reported their practice - engaging in the practice of 'open content' does not seem to require a previous change of attitude, and it remains to be seen whether and when these attitudes may actually change in the future so as to reflect actual practice. (ibid. p. 129)

Therefore, a distinction must be made between the officially declared and the actual attitude towards digitisation and openness practices of institutions, each of which has a noticeable but slow influence on attitudes within the institutions. The adoption of openness practices can also be perceived negatively if it is seen within the organisation primarily as a marketing measure for the increased acquisition of funding (Rössler, 2016, p. 120).

Influence of the Individuum

There are various factors that can influence digital openness practices on the individual level. There's a need for willingness to change, required technical skills and competencies to steer a process of change (Dufft & Kreutter, 2018, p. 111).

In the field of cultural studies, the aura of an object plays a prominent role. According to Benjamin (1980), an object is devalued in its uniqueness by its technical reproduction, the authenticity of the object is lost. These reservations - even if they already refer to analogue forms of reproduction such as photography - are put forward with regard to digitalisation and partly dominate the debate "according to the motto: 'digitalisation will also pass again'" (Euler, 2018, p. 4).

Fears about the perceived quality of digitised material are moving in a similar direction. A prominent example is the book digitisation carried out by Google, in which the hands of the employees repeatedly come into the picture, thus rendering the digitised material partly unusable. The fear is particularly significant in the case of public-private partnerships, whose inherent commercial logic would be one-sidedly geared towards quantity and neglect the quest for quality (Rössler, 2016).

Collections can now be created without curatorial expertise, correct metadata is no longer necessarily linked to the object (Fouseki & Vacharopoulou, 2013; Keene, 1998). This adds to the fear of losing control over objects and the context in which they are seen.

Influence of Society

The characteristics of communities are strongly influenced by the social, cultural and political framework. This can be seen, for example, in different national characteristics within international scientific communities. For example, it can be observed that "American high-energy physicists are much more competitive than their colleagues at the European CERN and in Japan" (Gläser, 2012, p. 161). It is obvious that these variations also occur in other areas.

Collections and the people and organisations working with them should also always be understood in their social context. Museums are particularly influenced by external factors and should not make self-referential and autonomous decisions (Wiese (1994), quoted after Kirchberg (2016, p. 300)).

The concerns and demands of politics are articulated at various levels. At the international, multilateral level, the United Nations Educational, Scientific and Cultural Organization (UNESCO) should be mentioned. UNESCO describes access to information as essential for the development of knowledge societies. In addition, it refers to Article 19 of the Universal

Declaration of Human Rights (1948), which declares the right "to seek, receive and impart information and ideas through any media, regardless of frontiers". In its "Keystones to foster inclusive knowledge societies", UNESCO recommends various fields of action. With regard to digitised collections, these include in particular the promotion of universal, open, affordable and unhindered access to information and knowledge, including the development of infrastructures and by supporting users in building digital literacy to act as creators and users. Open access to scientific and other resources should be encouraged in order to build open knowledge resources (UNESCO, 2015, p. 31).

At European level, digitisation and broad access were already prominently called for in 2011 in the European Commission Recommendation "on the digitisation and online accessibility of cultural material and digital preservation" (The European Commission, 2011). It states that "digitisation is an important means of making cultural material accessible and usable to a wider audience". In addition, the European Commission funds the European digital library Europeana, which was launched in November 2008 (J. Dickel, 2015, pp. 48–49). On a national level, Germany's cultural mission has existed since 1990 at the latest through Article 35 of the Unification Treaty. There it is stipulated that art and culture are "a basis for the continuing unity of the German nation", and that Germany's importance, alongside its economy and political weight, depends "equally on its importance as a cultural state". This provision in the Unification Treaty means that the definition of Germany as a cultural state has quasi-constitutional status (Beyme, 2012, p. 131).

Politics operates in a social environment in which increased public expectations regarding the availability of museum information can be seen (Hagedorn-Saupe & Schweibenz, 2015, p. 62). The fulfilment of these expectations is made possible or hindered by legal frameworks. The publication of digitised material raises questions, particularly with regard to copyright (Euler, 2018, p. 14), but also privacy law, civil law or general personal rights may be affected.

The latter concerns above all the ethically sensitive area of the handling of human remains (Mühlenberend et al., 2018). Further ethical problem areas can be identified which describe the scope for action in the collection context. Meijer-van Mensch (2016, pp. 337–338) defines seven problem areas, five of which seem relevant in the context of openness practices:

- responsibility towards creators
- integrity of the objects (physical existence, aesthetic, emotional and spiritual values)
- responsibility towards the professional community
- responsibility towards visitors
- responsibility towards non-visitors

Particularly noteworthy here are the last points, which also refer to digital visitors and non-visitors and thus directly to openness practices. The re-monopolisation of public domain content by memory institutions also plays a role here, as content that is actually made available to visitors and non-visitors is artificially restricted in its distribution and reuse (Euler, 2018, p. 20).

Method

The previous considerations lead to the following research questions:

1. What factors influence the willingness of collection staff to promote the publication of digitised objects?
2. What factors influence the willingness of researchers to use or reuse work digitised objects?
3. What is the relationship between these factors?

In order to answer this question, it is necessary to identify and describe social mechanisms and motivations. This is done by using inductive qualitative methods (Gläser & Laudel, 2010, pp. 70–73), since the work is to be theory-generating (ibid. pp. 26-27). Among the multitude of possible methods, the expert interview seems to be particularly suitable at this point for practical research reasons: It shortens observation processes, since aggregated knowledge can be specifically queried via the experts. Access to the interviewees is significantly simplified, since they are often in a position where they themselves can decide whether or not to participate in the interview. It is therefore generally not necessary for superiors to request permission for an interview. Furthermore, it can be assumed that the interviewees have a motivation to discuss the topic and thus an increased willingness to talk (Bogner & Menz, 2005).

It was decided to conduct semi-structured interviews in order not to limit the interview partners too much on the one side, but having a certain comparability of the answers on the other side. Three pre-tests took place, leading to adjustments in the interview guideline.

The interviews took place in May and June 2019 and were conducted partly by telephone or video call and partly in person. All interviews were recorded. The audio recordings of the interviews were transcribed according to Dresing and Pehl (2011). The transcripts served as raw data source for a qualitative content analysis based on Gläser and Laudel (2010, pp. 199-205). The open source software Taguette (Rampin et al., 2019) was used for coding the transcripts. Finally, the final interpretation of the mechanisms and the construction of an answer to the research questions took place. For this purpose, identified causal mechanisms were generalized.

Participants

The experts were selected on the basis of their expertise as evidenced by scholarly publications and the externally visible practices of their institutions. The interviewees are responsible for museum or scientific collections or work with collection objects or their digital images. The selection of the experts was made with the aim of including a variety of institution types, object types and assumed digital literacy. Only non-profit organisations (NPO) were considered. 13 out of 17 responded, 12 of them positively. No interview could be carried with 6 persons despite initial consent for various reasons (scheduling difficulties, illness, change of job). Finally, 6 persons (2 male, 4 female) were interviewed in leading persons of museums and institutions with scientific collections.

Results

As can be seen in Figure 1, all of the experts surveyed on this subject consider their own institution to be significantly more open than comparable institutions.

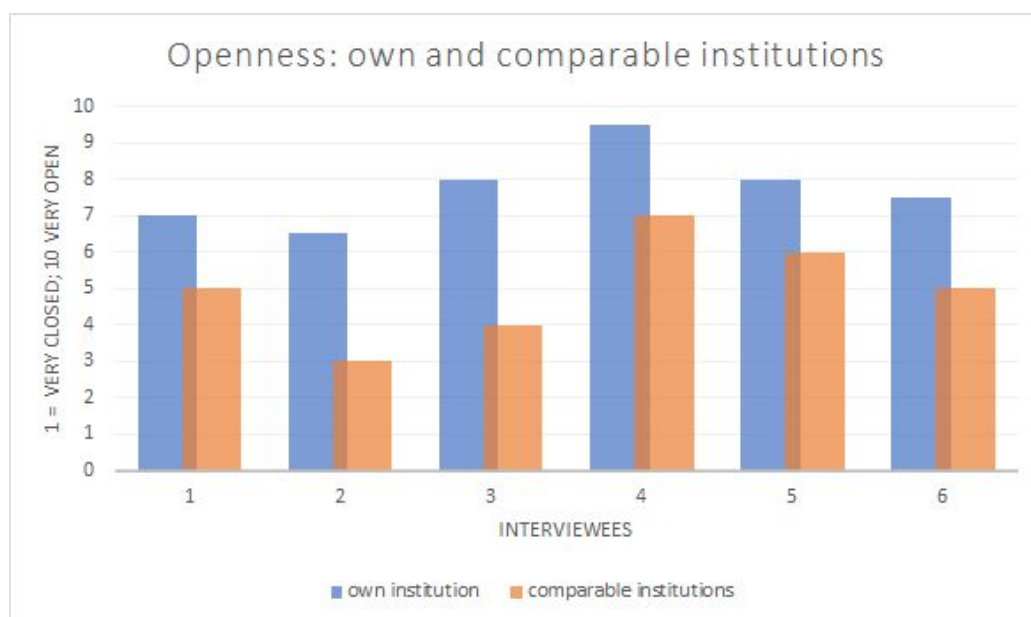


Figure 1. Perceived openness of own and comparable institutions.

In the following, the main results of the qualitative content analysis will be presented on the basis of the categories of the aforementioned categories. Since the area of ethical questions in the answers has taken on a high relevance, this section has been added. Some text passages were assigned to several codes.

Community

All interviewees confirmed that digitization and open practices are discussed in their communities. Opinions differ widely on how to handle digitised material. For the learned and professional associations that have positioned themselves on this issue, a positive attitude towards open practices was expressed. Fundamental resistance at the level of the associations is presented as overcome:

"It's not at all like twenty years ago, or fifteen years ago, when it was still a hot debate and there was a fight about it, and then there were just the fierce opponents of digitisation, or of Open Access and so on." (Interview 2)

On the contrary, professional associations would now press for openness practices. The scientific community with its open science practices was cited as a role model.

The influence of colleagues from the scientific community was considered partly non-existent and partly very significant. Especially for the aspect of the sovereignty of interpretation ("Deutungshoheit"), it was found that practices of openness would be in contrast to practices learned during studies.

"I believe that if you are new in the field, then/or I will formulate this for myself personally. At the beginning, I could understand very well that I had the sovereignty of interpretation over the holdings. Yes, I thought that was the right thing to do. I have these or in the sense that they are experts and they take care of the holdings. They know that very well. They've thought about it for a long time." (Interview 4)

For the museum community, in particular, it was confirmed that the sovereignty of interpretation of experts in museums is an important category and is also proclaimed at current conferences. The "mystification" of digitization and open practices were described as a hindrance. The

discourse within the community is currently too diffuse and allows too much fear. Elsewhere it was said that it was no longer a question of whether to act openly but only how best to do so.

Institution

At the institutional level financial issues were the main focus. While some experts noted that the revenue lost through openness practices would be in the two to three-digit euro range and therefore marginal, several interviewees expressed the need to look carefully at commercial use to preserve the revenue. However, the threat of loss of revenue is only a small aspect. The financial situation with regard to the staff needed for the successful application of openness practices is considered particularly difficult. This applies first of all to the sheer number of persons in the staff, which is perceived as insufficient. The staffing is seen as directly related to the future standing of the institution. For this reason, outsourcing, i.e. the takeover of the relevant activities by third parties, is not an option. A second aspect regarding the personnel situation is the lack of digital literacy of the current staff.

Dealing with resistance was also discussed. The establishment of networks of pioneers was described as one possible way of solving this problem. One example is the establishment of an unofficial working group consisting of heads of unit, IT management and the institution's own information brokering and library. Anyone who refuses to open their institution digitally is in danger of being excluded:

"There are probably enough people sitting around here somewhere in their offices who think all this is stupid, but I just don't talk to them." (Interview 2)

Refusal is cited as a major challenge for the organisation and also for the managers working with them. This is accompanied by the task of abandoning current tasks and activities in favour of openness practices:

"we [...] are also not getting more personnel resources for these completely new questions, so it means to stop with other things." (Interview 6)

Openness practices were presented as positive for the institution. The relevance of the institution would be underlined by the provision of digitised material, acceptance would be increased. In addition, curiosity could be stimulated among potential visitors. A shortcoming was also noted with regard to cross-institutional networking, which would simplify practices of open.

Digital openness practices are also positive for the collections themselves. The use of digitised material can, at least in some cases, replace the use of the original and thus foster their protection. Digitisation also offers the chance for the institution to learn more about its own collection.

Claims of control and sovereignty of interpretation were named as a negative factor influencing openness practices:

"But it makes it clear that there are still many [organizations] that really do formulate this claim of ownership, 'this is mine'." (Interview 3)

Individual

The interviews described very different personal attitudes and their influence on openness practices of those working in the field of museums and scientific collections. A development towards greater openness can be observed.

"So I think there are some who are very open, there are some who completely refuse to be open. But the trend is towards more openness, I feel." (Interview 1)

Several of the interviewees said that the evaluation of practices of open was a generational issue, or at least one that could only be taken forward through staff turnover. Some statements

suggest that it is possible but takes time to change existing attitudes with “trust-building measures”.

"Because, as I said, older colleagues naturally had completely different assessments. But that was also connected with the work situation in general. There are or were often colleagues who worked in a kind of ivory tower [... T]hen to say that we are making this available, was always a barrier. So I did not learn that from them. I would assess myself in such a way that I am open anyway and want to give and receive sympathy. And that's, I think, really a personal attitude, which is also reflected here." (Interview 3)

It is desirable, but not always possible, to address staff concerns (e.g. regarding metadata quality).

"Thirdly, this is also a matter of attitude. So I don't want to deal with technology at all. I've always done it differently and I want to do it that way in the future. And that's, I think, the change that happens automatically at some point when younger people come along. And it's actually also this sedateness that is often present in a government agency." (Interview 3)

The defensive attitude towards technical issues as a whole, which is evident here, has been repeatedly associated with the age of the employees. This defensive attitude is generally assumed for changes in general.

Technical skills of various kinds were repeatedly mentioned. On top of this, the legal framework does not seem to be clear even to those who deal with it in their daily business. Ignorance of copyright law in particular was highlighted.

"This applies to other areas of digitization as well, or even worse, but that's what I've been annoyed about since the mid-90s, that people are so completely thoughtless about it, and that's really/ well, I mean that's relatively at the core of the work of humanities scholars, right? Dealing with sources in the end, right? You have to learn that sometime." (Interview 2)

A strong motive for refusal seems to be the concern for the institution or its standing. The creation of archives by third parties could lead to the institutions losing their uniqueness and thus their relevance.

The threatened loss of control and the sovereignty of interpretation over the object was mentioned at various points. The loss of control is perceived as particularly critical when ethical limits are exceeded in the use of digitised material. But unreflected use is also viewed critically:

"Archives often also have a problem with material being coloured when it is used for television. That is, that it is changed in a way that is not correct." (Interview 4)

Most respondents were critical of the commercial use of open digitised material.

"[I would] actually be in favour of a far-reaching openness to digitised material, especially for the scientific sector, for the private sector of course, less perhaps for the commercial sector. [...] Whoever wants to use it commercially should then at least pay [...] the licence fees for it, because then it will also benefit the public again. (Interview 1)

However, the opposite was also stated:

"[...] I always say in the area of commercial re-use, if others do something with what we provide, then they have done something with it that we wouldn't have

done and it's okay. So I am very much in favour of democratising [...] the collections, because they belong not only to the citizen, but also [the economy].” (Interview 5)

The extent of the influence of individuals on openness practices was assessed differently.

Society

The financing of the institutions and the openness practices practised there have repeatedly been cited as a key influence at the socio-political level.

“Well, I would almost say that this is a pure question of money. So we have money and organisation, so there is/ everyone wants that, right? There is nobody who says: “We can't publish this.” [...] Well, we have, even if we get money provided now, it is of course not so infinite that we say, we are now hiring five people who will take care of it full-time, right? If we could do that, then it would be no problem at all, then we would do it.” (Interview 1)

The provision of funding is seen as a strong incentive and enabler. Possibly existing pressure from politics or other areas of society could accordingly only be satisfied if the necessary funds were provided. This is not the case.

Another point that has been raised several times is the inadequate legal framework. In particular, copyright law has been repeatedly criticised as inadequate and outdated. The regulations on orphan works, for example, are not sufficient. Practices of open are slowed down by current jurisdiction.

Beyond these aspects, a public mandate for openness is perceived, which is generated by various actors and which is also accepted by the institutions:

“So it is certainly perceived that this is also a public mandate, which in individual countries also generates different pressures on memory institutions. And that of course one would also like to comply with.” (Interview 4)

In addition to politics, the scientific community is also mentioned as a stakeholder. Science benefits from digitisation. This is true for scientific work at their own institution as well as for third parties. Research funding agencies such as the German Federal Ministry of Education and Research (BMBF) would specifically promote openness practices for re-use. Wikimedia is reported to be another strong actor in promoting openness, with several individual activists also involved. More involvement of the corporate sector was desired.

Ethical considerations regarding the open availability of digitised material have been raised on various occasions. The potential misuse of digitised material from Nazi Germany has been raised several times. It is feared that the digitised material may be used for political propaganda. Especially incitement to hatred (“Volksverhetzung”) or the defamation of the memory of the victims of Nazi Germany is a sensitive topic. Increased sensitivity is also necessary when dealing with objects from the colonial era. Another critical issue is the handling of human remains (e.g. mummies, bog bodies, anatomical specimens). One of the key questions is whether it makes a difference how long a person has been dead if you want to exhibit them or parts of their remains.

In natural history collections, there is also the question of how preparations of animals killed for collection purposes are handled. But even recordings of bird calls can be considered sensitive if the metadata describes where and when the recording took place: Conservation measures could be undermined if the location of endangered species became known. When it comes to digitized monuments and their description, the protection of these monuments is similarly at risk if they are made known to a broad public.

The implementation of openness practices for ethically questionable materials is considered a particularly difficult and unsolved challenge. Possible solutions to make such materials available digitally include watermarks and mechanisms to prevent reproduction or the targeted

use of non-free licenses. It was also said that it is not the task of the institutions providing digitised material to examine the way in which it is used.

Discussion

The results allow different conclusions regarding the hypotheses put forward in this study. First, the relationship between personal and institutional factors of influence should be mentioned. The personal background of the employees has a significant influence and is in strong interaction with other influencing factors. Part of the negative attitude at the individual level is fed by a concern for the institution, whose relevance is seen threatened by the practices of openness. This is the case both in a positive (image gain) and negative sense (loss of relevance).

As described above, both quantitative and qualitative staffing is seen as crucial for the success of digitisation and opening projects. If there are not enough or not sufficiently qualified or motivated staff available, these projects are sometimes doomed to failure, or at least slowed down considerably.

A strong obstacle to openness practices is above all the content-related complex of control and interpretative sovereignty over the collection objects. Those who carry out academic studies in the collection hold back digital copies until their own research is published. The staff sees a kind of privilege with regard to the scholarly processing of "their" collection objects.

This attitude continues in the repeatedly expressed desire to control types of use. On the one hand, this results from justified ethical concerns, for example, the fear that collection objects could be used in incitement to hatred of the people, or that publication could counteract nature conservation measures. On the other hand, the desire originates in a fear of a loss of relevance of the institution. Furthermore, the institution should also be protected from critical scrutiny, or at least concerns about the quality of metadata in the publication can be interpreted in this way. This attitude is reflected in the variously mentioned distancing from free commercial use, which contradicts true openness according to the Open Definition.

Digitisation seems to be leading to the formation of frontlines in the institutions. As a result, the management is heavily involved in reconciling these frontlines. Energy and time are spent on mediation in this conflict, which in turn has a direct negative impact on the implementation of openness practices. The fact that progress is sometimes only possible through exchange of personnel suggests that the institution has little influence on individuals.

Individual attitudes thus have a decisive influence on institutional action, but the institution influences individuals only to a lesser extent.

An influence of the discourse in the community, which is sometimes perceived as fuzzy, on its members can be determined. At one point in the interviews, it was said that there's a need for more clarity. On the other hand, it was mentioned several times that the discourse on openness had come to an end, now it was only a question of how exactly to implement openness practices. The latter seems to apply at least to the interviewees. If one follows their perception that there is a formation of fronts among the employees of the institutions, it can be seen, however, that the discussions in professional associations and professional communities do not have a deep impact. Anyone who has objections about digitisation and openness practices is difficult or impossible to convince via professional discourse.

Nevertheless, the interviewees greatly appreciate the discourse in the professional community and some of them hope for more discussion, for example, to learn about best practice. The role of the community as a driver of progressive thinking is also reflected in the desire for more debate on the abandonment of control and interpretation.

Nevertheless, existing practices in the respective professional communities are adapted. If, for example, biologists work in a natural history collection, common practices regarding the use and publication of research data etc. are adopted there.

The community influences individuals only to a certain extent but has an influence on institutional action through its influence on persons in leading positions and its ability to initiate and shape discourses.

The same applies to the influence of the societal framework on the attitudes of individuals. Political influence is perceived by some to be very limited and weak. They are viewed critically if

they are carried out without accompanying financial measures such as subsidies for digitisation projects. The resulting gap between expectations (digital openness) and reality (insufficient staffing) causes dissatisfaction among the interviewees. Funding enables direct progress to be made, especially if there is sufficient funding to attract expertise to the institution. This applies both to special funding programmes and to direct support for institutions as part of a digitisation strategy.

The influence of the scientific community is seen as positive, and in some cases, it has been explicitly mentioned as a model for museums and scientific collections in terms of the acceptance of digital and openness practices. There is a discrepancy with the delayed publication of collection objects in case the staff members themselves want to publish about them.

The influence of civil society actors like Wikimedia was perceived as positive. The private sector is not developing any significant influence.

The existing legal framework was repeatedly cited as a major shortcoming. In particular, the current copyright law at national and European level does not meet the requirements if open practices are to become the general rule. Disappointment was expressed about current developments in copyright law.

The societal framework has a great influence on openness practices by providing financial resources for digitisation while at the same time demanding openness. Influence of politics on individuals cannot be demonstrated in this study.

The resulting interplay of factors influencing the use and publication of open digitised material is shown in Figure 2. The relationships presented here suggest that openness practices regarding the publication of open digitised material are primarily determined by the institutions. Their key influencing factors are on the one hand the societal framework, which is most effectively manifested in the promotion of relevant policies. On the other hand, the institution's staff is a decisive influence, even if financial and personnel resources are not desirable.

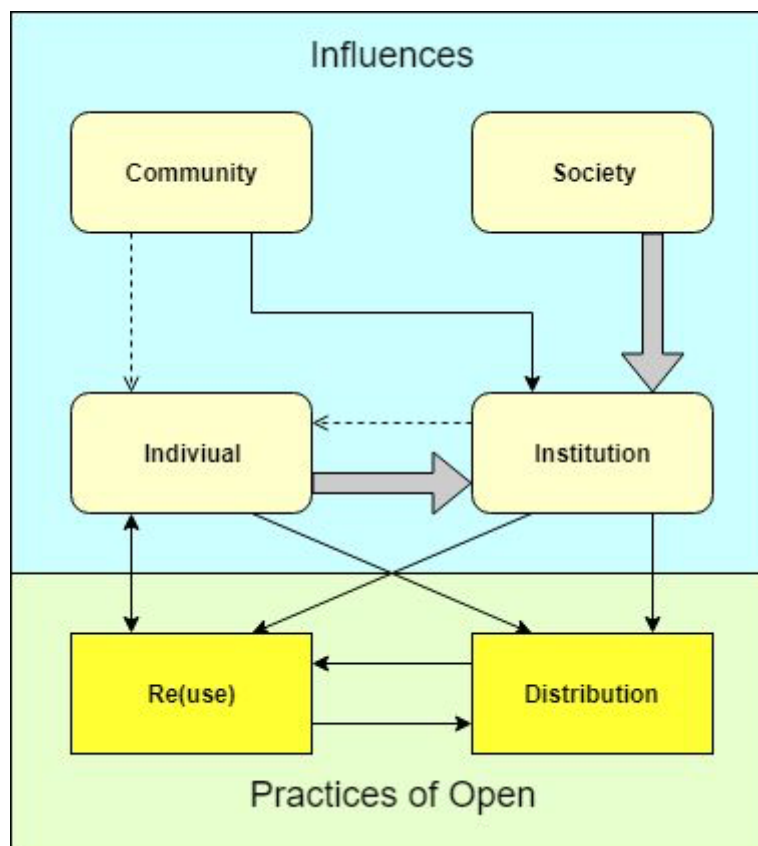


Figure 2. Factors influencing openness practices (use and distribution)

Institutional promotion and political demand for openness practices in combination with intrinsically motivated and sufficiently qualified employees can be identified as the main positive influencing factors. If openness practices are to be promoted, these are the points to start from.

Conclusion

This small case study is biased by the selection of the interviewees. The appreciation of openness by the interviewees might not be representative. However, given the extensive experience of the interviewees and their deep roots in their respective communities and institutional environments, it is likely that a lot of their assumptions can be generalised.

An examination of the influencing factors in Figure 2 makes it clear that staff and their qualifications are the main factors influencing openness practices that the management of an institution can influence itself.

It is not a new insight that the digitisation of museums changes the curator's job description (Keene, 1998, pp. 83–84). However, the practical implementation of the tasks arising from the changed professional profile for the institutions owning the collections has not yet been solved. Partly, the exchange of personnel is seen as the key to success. In the public sector, this is only possible to a very limited extent. Other approaches must be found. Needs for advanced training must be recognised. Appropriate formats must be developed by the institutions themselves, but also by professional associations and universities. It is important to preserve non-digital fields of competence, domain-specific expertise and social and communicative skills due to their lasting relevance, while building and expanding digital skills (Seyda et al., 2018; E. Weber, 2017).

In order to define the desired competence profiles, more research should be carried out, as is common in other sectors (Pontika, 2019; Zellmann & Blümel, 2018). Studies such as those by Barnes et al. (2018) and Carvalho and Matos (2018) offer promising starting points. In addition, it seems to make sense to promote exchange with related disciplines such as library and information science and to build on international approaches in this context (Choi et al., 2014; Kennan & Lymn, 2019). A possible way to build digital open skills is to diversify the workforce. The tendency to reproduce existing social and professional structures in new hires, to consolidate competency patterns instead of diversifying them must be broken (Sandell, 2000). Hutchison and Cartmell (2016) describe how Museums Galleries Scotland (MGS) in Scotland tried to bring new and needed skills (including information management and digital skills) into museums through internships. One of the outcomes of the experiment they describe is the need to change expectations of future employees and opening the institution for people with different educational backgrounds (Blake Stevenson Consultants, 2015).

Another significant factor influencing openness practices is the current legal framework. It has been confirmed that the existing copyright conditions do not meet the requirements of digitisation. The desire for a copyright law that is favourable to digitisation was repeatedly and prominently represented in the interviews. On the one hand, the legal situation is perceived as too complicated and not fully understood by those working in the collections. On the other hand, current legislation, especially in copyright law, slows down or prevents open practices.

Many institutions find it difficult to take the path to an open collection. To a large extent this is also related to the fears of loss of control described above. One possible approach to counter these fears may be first limited attempts at crowdsourcing (Fischer, 2019; Nauber, 2015). It is important to learn from the experiences of other GLAM institutions (galleries, libraries, archives, museums). Cooperation among the institutions as well as with relevant openness actors such as Wikimedia can help to carry out such actions successfully (Fischer, 2016).

Creusen et al. (2017) propose various measures to actively and positively shape the digital change in the organisation. One of the proposed measures, which can also be applied to the area of openness practices, is the exchange of knowledge with leading institutions through so-called "learning journeys" to bring employees into contact with those working there. This makes use of the influence of the professional community on the individual, which has been demonstrated in this study. A further instrument, which is also partly used in the interviewees' institutions, is the formation of working groups with relevant expertise and motivation. Although the formation of clusters within the institution is important for the generation of dense expert knowledge, the exchange with employees outside of this cluster must be specifically sought

from within the expert network in order to enable the spread of expertise within the institution in the first place.

Further need for research became apparent during the study. Since the individual plays such a central role in the establishment and implementation of openness practices, factors influencing the individual should be specifically investigated. Another desideratum concerns the missing or inadequate technical infrastructure mentioned several times in the interviews. On the basis of best practice examples, for example from Open Science or scientific librarianship, professional and technical standards should be agreed and shared. The FAIR principles (Wilkinson et al., 2016), according to which research data should be findable, accessible, interoperable and reusable, should be an important suggestion here. Efforts for a national research data infrastructure for material and immaterial cultural heritage (Altenhöner et al., 2020) point in the right direction.

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