Chapter 9
One Museum, Multiple Doors—Design for Experience of Living Cultural Heritage for Different Stakeholders

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Abstract We define cultural heritage, drawing on UNESCO, as tangible and intangible artifacts (e.g., tools, dresses, symbols, languages, decorations, buildings, stories, songs, rituals, etc.) that are developed in a culture. Based on teaching academic courses on design for cultural heritage and on work we did in relation to various collections of cultural heritage, we developed a taxonomy that distinguishes different types of stakeholders for cultural heritage collections. Different stakeholders vary in their needs and in the intended or expected experiences. For a culture to survive generations of participants, individual cultural heritage artifacts need to be maintained as well as be available for examination and (responsible) use. We propose that for being understood by new generations, the documentation for each artifact should include: (a) a description of the current state as well as of its original state; (b) an account of the original context of its creation and of its creator(s) in the context, a history of use, maintenance, changes, evolving role in the culture; and (c) a diary of use and maintenance by the current (temporal) owner(s). Cultural heritage artifacts often move into departments of public museums that should cope with a growing variety of intentions and needs between culture scholars, amateur culture participants and the general public. However, presentation of cultural heritage museum exhibit that provides optimal information for a scholar may be boring for the general public. Solutions are discussed in terms of museum business models, ICT support, and logistics, and involvement of cultural heritage related communities.

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9.1 Introduction

During the last 6 years, we have been teaching university courses on "Design of ICT support for Cultural Heritage" in a variety of different cultural contexts (Uras, Consiglio, van der Veer 2015b):

- bachelor design projects of about 200 student-hours in a faculty of architecture in Italy;
- a 20 student-hour course for consultants of cultural institutes as part of a project on the Internet of Things in the Netherlands,
- biannual courses (80 student-hour each) for master students in a computer science faculty, department of usability engineering, working in 3-person design teams, mostly in collaboration with some students from a university of fine arts in China;
- a 20 student-hour course for (Spanish) students working in three-person teams: a mixture of computer science MSc students and museum curators.

In these courses, our students provided example cultural heritage artifacts and collections, from their own participation in diverse cultural environments. The examples featured a diversity of objects, including: musical instruments; historic costumes; Chinese historic furniture; Chinese paper cutting; rural dance games; historic memorial ceremonies; archeological pottery remains; etc. After we had some initial experience with this course type, we realized that our students often needed some initial support in identifying what are the individual artifacts for which to provide experience and information, and for what type(s) of audience this should this be made available. Based on this understanding, from then on in each course we proposed that students should start with:

- Identifying the main types of cultural heritage artifacts in an environment or a collection. This implies asking questions such as: Is this the unique choreography, and/or the traditional costumes, and/or the inherited music? As sometimes the same dance is performed on new, contemporary, music, or danced in contemporary outfit.
- Identifying "secondary" objects that belong to one or more of the primary objects (historic pictures or recordings of the dance; documents of events).
- Identifying the different types of stakeholders involved in various aspects of the living culture: maintaining and providing the primary artifacts, teaching the use of the artifacts, teaching active participation in the culture, documenting the cultural history or the current culture and events, regular participants in events, novices, and interested public that might turn into novices.

Besides this, we and our students are involved in maintaining collections of cultural heritage objects, e.g., A society for historic costumes in Sardinia; A Spanish museum of historic as well as contemporary folk music instruments and a related music school in Spain; A collection of seventeenth to nineteenth century art musical instruments in the Netherlands; A museum for the history of early movies; A collection of early movie projectors; A collection of early stereoscopic pictures

and magic lantern slides as well as the early projectors for these; and a collection of (mainly Dutch) twenty and twenty-first century radio plays. We discovered that in all these domains the curators of both private and public collections struggle with the challenge of accommodating the interests of the various types of visitors that comprise the public of their collection and related performances, and we are developing a design approach to handle this diversity of visitors in a way that supports the viability of this type of collections. We consider our growing insight may be of benefit for other types of (museum) collections as well.

Thus, in this chapter we will share and discuss our insights on designing Information and Communication Technology (ICT) support for cultural heritage collections, both when these are still maintained in their original cultural context and when the artifacts have been moved to a general museum with broader content and, consequently, with public that varies more in knowledge, interest, and intentions regarding their experience of the artifacts.

First, in the forthcoming section, we define what we mean by cultural heritage. Based on that, we describe (in Sect. 3) an ontology to structure a collection of cultural heritage artifacts such that people who want to participate in the original culture will be supported in their various needs. We will discuss how to provide access to relevant knowledge on cultural heritage; how collections of cultural heritage in the course of the time move from the original community storage to general museums; how museums are currently often enforced to reconsider their business model and to provide service first of all to the general public; and discuss why this requires a special attention and measures to continue support to the original culture of cultural heritage collections.

In Sect. 4, we will show how to support the different stakeholders of cultural heritage artifacts and collections. Different stakeholders do need different types of experience, which can be accommodated by providing a choice of resources and dedicated venue. Finally, we will show how a separate route through the museum can be provided without splitting the general collection management.

9.2 Cultural Heritage: An Ontology and Stakeholder Experiences

Uras, Consiglio, and van der Veer (2015a) state*: "Cultures develop in societies, by people co-developing and sharing artifacts … of many types: languages, rules, gestures, physical objects, documents, stories,* etc. *The artifacts are the product of the culture and, at the same time, the main way to keep the culture. As the people living in the culture will die, the artifacts are needed to keep the culture alive. They are inherited by new generations of members of the culture. Since the artifacts get used, and transferred, they change, get worn out, acquire additional meaning and lose some "previous" meaning, and finally may get lost, or lose their original function and*

meaning. After that, these artifacts are no longer cultural heritage but just heritage, and at the same time the culture may be in immediate danger of dying".

UNESCO (2017) states: "*The term cultural heritage encompasses several main categories of heritage:*

- *Tangible cultural heritage*
  - *movable cultural heritage (paintings, sculptures, coins, manuscripts)*
  - *immovable cultural heritage (monuments, archeological sites, and so on)*
  - *underwater cultural heritage (shipwrecks, underwater ruins, and cities)*
- *Intangible cultural heritage: oral traditions, performing arts, rituals*".

Our concept of Cultural Heritage is based on both sources: The concept indicates all types of artifacts listed by UNESCO, as far as they are related to a living culture - as tools to be used by people who aim at continuing participation in a culture, as documents to understand the history of the culture for learning and teaching, or as fragile artifacts that will inform and inspire copiers and makers of new tools.

9.2.1 An Ontology

To support systematic analysis and design for the domain of cultural heritage, we distil key concepts from our definition that help structure the artifacts in the cultural domain and relate this to the different people that participate in the culture and keep the culture alive. We note that cultural heritage refers to tangible and intangible artifacts that are kept by (mostly temporal) owners (a person, institute, museum, or community). A dictionary-like definition of culture, in this respect, refers to the set of shared attitudes, values, goals, and practices that characterizes a community, and the integrated pattern of human knowledge, belief, and behavior of the Participants in the culture (Merriam Webster 2017).

In each culture, people may participate in one or more of several roles. Focusing mainly on the active participants in the culture, we identify three roles: scholars, amateurs, and the general public.

Scholars actively support maintenance and knowledge of the culture, the artifacts, and their use in the living culture: collectors, restorers, and curators, makers of facsimiles, expert performers, researchers of artifacts or of the history of the culture. Based on the examples that students introduced in our courses and the collections we worked with we discovered that there may be many different types of scholars that are related to a single type of cultural heritage objects and collections, so expanded our definition of scholar to include all who are considered experts by the cultural community. Our concept of scholar will, consequently, include all who are considered that are in fact studying, preserve, renovate, copy, or even update tangible as well as intangible cultural heritage. So far, we studied a broad variety of cultural domains and communities, e.g.:

Radio play communities: Individual plays and series of plays have authors, actors, sound technicians, radio station managers, restorers of historic sound tracks.

Musical instrument cultures: Individual instruments have makers (designers, and builders), facsimile makers, experts in analysis (e.g., dendrology) measurement and description, restorers (including experts in woodwork, metal, textiles, paint), climate experts, players, and teachers of all this.

Historic early films: Experts on the history of movie styles, players, studios, authors, technical experts on safe storage, maintenance and restauration of nitrate, and acetate film, and experts on color preservation and color restoration, and digitization technicians.

Rural dancing games: First of all, there are the local "official experts ", mostly older people who learned the games from their ancestors and are currently educating the younger (and sometimes are documenting the current details of the choreography and the valid rules). Based on our expanded definition above, all people who are participating in the game are a type of scholars, as are the people who provide the props (chairs, ribbons) and prepare the layout of the playground.

Amateur is our label for a member of the audience that is willing and able to take the role of member of the culture, knowing, appreciating, and understanding the culture and actively participating in, and supporting, exhibition and performances. In various domains that featured in our courses, the distinction between scholar and amateur is vague: the audience in some cases will be allowed to participate on certain occasions (join the chorus or the dancers, contribute knowledge they inherited from their parents). In most domains, amateurs are not supposed to adjust or change artifacts or rules. Participants in a culture mostly gradually develop into their role, based on living (or even literally being born) in a society where the cultural practices are still actively being performed and attended.

Especially in public collections like in museums, there is a 3rd role indicating interested people who are not members or participants in the culture: The general public. This audience might be excited about inspecting objects and events that appear strange as well as intriguing or beautiful to them.

There are other approaches to museum and cultural heritage audience segmentation, from which we mention the one developed by Falk and Dierking (2013), who report an analysis of museum visitors' intended experiences where they identify six different types: *Professionals*; *Hobbyists*; *explorers*; *facilitators*; *experience seekers*; and *rechargers*. The types *Professionals* and *Hobbyists* are equivalent to our roles of scholars and amateurs, respectively. The other types mentioned (*explorers, facilitators, experience seekers*, and *rechargers)* are, from our point of view, different sub-types of what we label general public. Our analysis focusses on cultural heritage and its main stakeholders at a higher level of granularity, and, consequently, we do not discuss these differences here. In Sect. 9.1 of this volume, we find two chapters that show a focus on a different type of museum visitors that in our analysis is a part of the general public: Apostolellis, Bowman, and Chime (Chap. 2, this volume) focus on "young audiences", school groups and students; and Sim et al. (Chap. 4, this volume) on "children". Both publications consider a subgroup of what we label, "the general public" (no scholars or amateurs

in relation to the domain of the museum). On the other hand, Boonen, van der Heijden, and Giaccardi (Chap.3, this volume) make a distinction between "expert visitors" (we would label them scholars) and novice visitors (part of the general public) in the context of a museum of design.

9.2.2 Cultural Heritage and Stakeholder Experiences

We are particularly interested in how museums should deal with the variety of intentions and needs of the stakeholders of cultural heritage collections. In this section, we focus on how the various stakeholders of cultural heritage experience the way the museum provides them the service they need: Will they be able to find the knowledge they are looking for? Are they able to perceive and understand the artifacts as displayed, rendered, or represented? In current human-centered design approaches the concept of experience is often used to indicate in a holistic way the quality of use of a service. UXPA (2017) describes the concept in their Usability Body of Knowledge Glossary:"*User Experience (UE): Every aspect of the user's interaction with a product, service, or company that make up the user's perceptions of the whole.*"

The concept of experience needs to be defined in relation to stakeholder types. We refer to Vyas and van der Veer (2006a), where the concept of experience is defined in four distinctive but related components, which we apply to the stakeholders' needs and goals related to the cultural heritage artifacts:

(a) understanding the meaning of the artifacts,
(b) emotional aspects related to the perception and use of the artifacts, including esthetical valuation,
(c) triggered intentions and actions in relation to the artifacts, and
(d) attitude towards the artifacts (for instance being attracted to them or wanting to avoid a relationship with them).

For different types of stakeholder roles these aspects may have rather different content, for instance: a music player may (a) understand in some professional way the score of the song to be played, (b) consider the score to be too much prescribing the performance to allow individual creative expression, as well as too complicated to be well performed without more practice, (c) is triggered to execute the score in a way that fit the instrument and the context of the event, and (d) would prefer this score not to be part of the current performance. For a regular member of the audience each of these aspects will have a rather different content, though (a) there is certainly an aspect of understanding the relation between the score on the musician's desk and the sound, (b) the playing will evoke some emotional reactions, (c) the listener will build an appreciation that in the end will trigger applause, and (d) the listener may decide not to return to the music hall if the same music will be played.

Scholars in the types of cultures that we analyzed mostly consider their role to be a mixture of a profession or a mission. Their intention is to keep the culture alive

and to keep it integer, by both supporting development and maintaining authenticity. They live the culture, they continue to learn as well as to teach, to study and guard the artifacts as well as to provide responsible access to the amateurs to experience the true heritage. And they are aware that their continued devotion is required to keep the culture alive. The different types of scholars that are distinguishable in some cultures each may aim at, or need, different experiences: manipulating original historic artifacts like 100-year-old costumes or 300-year-old flutes is needed for maintenance, for measurement and for some type of analysis, though makers of copies in most cases are completely happy and well documented through the availability of pictures, descriptions, and measurements.

An amateur contributes to the culture in several ways, from being a sense-making audience at events, to (financially or politically) contributing to a healthy context.

Scholars and amateurs are both needed to keep a culture alive, as stated by the Khan Academy (2017): "'Culture' refers to *the integrated pattern of human knowledge, belief, and behavior that depends upon the capacity for learning and transmitting knowledge to succeeding generations*". Like scholars, amateurs will only continue to experience the living culture first hand if they remain open to learning as well as open to let their peers learn, and if they continue to attend and participate.

These two categories of stakeholders in a culture may regularly shift between their roles of scholar and amateur: being authors of a novel and readers of other prose, one day a performer and the next day a member of the audience, making a flute and then listening to someone else playing it.

The general public, on the other hand, will aim at a completely different type of experiences: To them, the cultural heritage object collection is an opportunity to meet novel objects in an unknown context. If at first sight the context is attractive enough to them and, if the encounter keeps them interested, they will start their exploration, be entertained and develop a rather new experience that may include (following the conceptual analysis of Vyas and van der Veer 2006a and 2006b):

- Developing an understanding of functions and meaning of the artifacts and their cultural context;
- Acquiring an impression of the emotional values of the culture and its artifacts;
- Acquiring a tendency to act regarding the exposition (buying documentation, discussing with peers, leaving) and possibly to interact with it when appropriate and available; and
- Feeling attracted (or the contrary) to the culture as understood so far, which might even result in an intention to learn more or join.

9.3 Private Collections and Museums

Cultural heritage artifacts (e.g., the physical objects, the scripts, the rules, the stories, the rites, or the values) are the actual items that allow transfer of a culture between its participants and between generations. These artifacts need to be kept and made available to the participants in a culture. The artifacts originally are being developed in their culture, are being used for generations (hence "heritage") and owned by successive individual amateurs and scholars or by a community of these. At a certain moment, they are explicitly considered heritage, get the special treatment as such (their historic value is acknowledged, repair is now considered restoration, use is restricted or safeguarded to restrict wear) and they are carefully stored in safe climate conditions. Their use and their state are recorded (especially for intangible artifacts), and copies of tangible objects are being made and used when possible.

Gradually these utensils develop into collection items, regarded as the authentic items of the culture that the scholars will need to study and the amateurs might be allowed to inspect and in special cases even handle in controlled conditions.

Most collections of cultural heritage artifacts originate in the original culture, and are kept there to facilitate learning and teaching as well as to provide a feeling of authenticity and to support the collective memory of the cultural stakeholders.

9.3.1 How to Provide Access to and Document a Collection

During our teaching practice, we and our students developed an approach to identify cultural heritage objects, to categorize and describe relevant knowledge, and to preserve the knowledge of the cultural heritage objects for current and future stakeholders. Based on this approach, we designed a structure where, for each artifact, at least three types of knowledge need to be available, if possible incorporated in a website or at least a hypertext structure based on a content management system:

- A history of each object. Figure 9.1 shows samples of a student project on developing a not-public tablet tool for a cultural heritage community on historic costumes, which shows that even the general history may well contain private details referring to individual ancestors of current members of a culture. Inside the original culture this may not cause problems, though it could be inappropriate to provide these details to the general public.
- A description of the object (see Fig. 9.2) seems relevant also for the general public, though the appreciated amount of details (and the size of pictures or video clips to be downloaded) may be different for different roles. For example, a 10-page restoration report on an eighteenth century violin (including chemical analysis of the varnish or a dendrography of the soundboard wood) analysis may be exciting and extremely informative for a scholar who wants to consider this

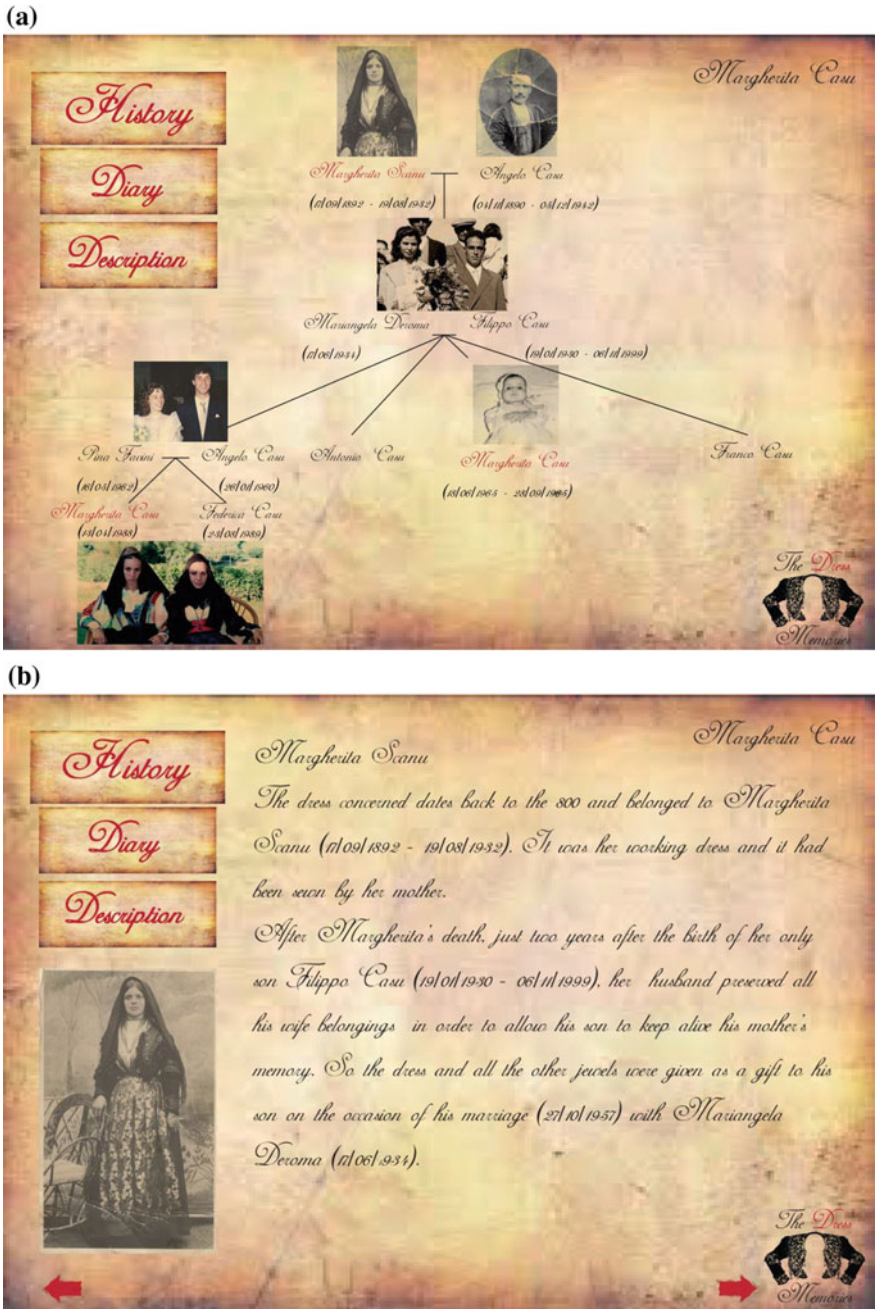

Fig. 9.1 General representation of the history of one artifact, a historic costume (**a**) and specifics of a single period (**b**)

Fig. 9.2 Description of one element of composed artifact. The details on the jacket may be interesting for a scholar who needs to provide a copy for the annual festival, though not necessarily for amateurs dressed in this facsimile at the festival

type of analysis for an artifact he is supposed to describe, and totally boring for a member of the general public who might just want to know how high the restoration price was and how long the process took. For an amateur, pictures showing before–after differences might be a relevant and instructive type of description.

- A diary of the activities related to the object as far as the current temporal owner is keeping it (see Fig. 9.3). Diaries need to include all relevant knowledge needed to understand the actual state of the artifact at a given time as well as the background of all changes. Consequently, there will be data that contain private information on the current owner or keeper, or on others who manipulated the artifact (including amounts of money paid for services, people involved in cases of abuse). Often, diaries are at least partially considered to be for the eyes of the current keeper only, and a change to a new responsible stakeholder requires careful decisions on what to keep and whom to allow access to this on what date (Our courses contain a separate lecture entitled "What if the owner dies").

For the collections that we ourselves are involved with, we often need more different categories of specific information, like restoration, multimedia, and a separate account of the original culture. For example, Fig. 9.4 shows an entry page of one artifact in a collection of 17—19th Western musical instruments. Authorized

Fig. 9.3 Entry in a diary of a single artifact

visitors (who did acquire a login and access) may go to various categories of information:

- a detailed description including measures, material, pictures, a scan—relevant for scholars with a technical role (restorers, copyists);
- a video recording with a URL of the specialist player, details of the strings and the bow used, a facsimile of the original score and transcription of the score as performed;
- the history of previous owners and the music they performed with the violin—relevant for historians of the culture;
- an account ("diary") of what happened with the violin while in the custody of the current owner, including facsimiles of programs of performances where the violin was played, invoices for assurance during these events—part of the diary may well be considered private to the current owner and will not be made available through a login;
- a detailed restoration report including pictures and an indication of techniques applied;
- description, referenced by period publications, on the location and culture of origin, relevant facts known about the author (where he was an apprentice, who was his successor, who ordered or bought his instruments)—relevant for players who are looking for a match between a piece of music and the best instrument to play it.

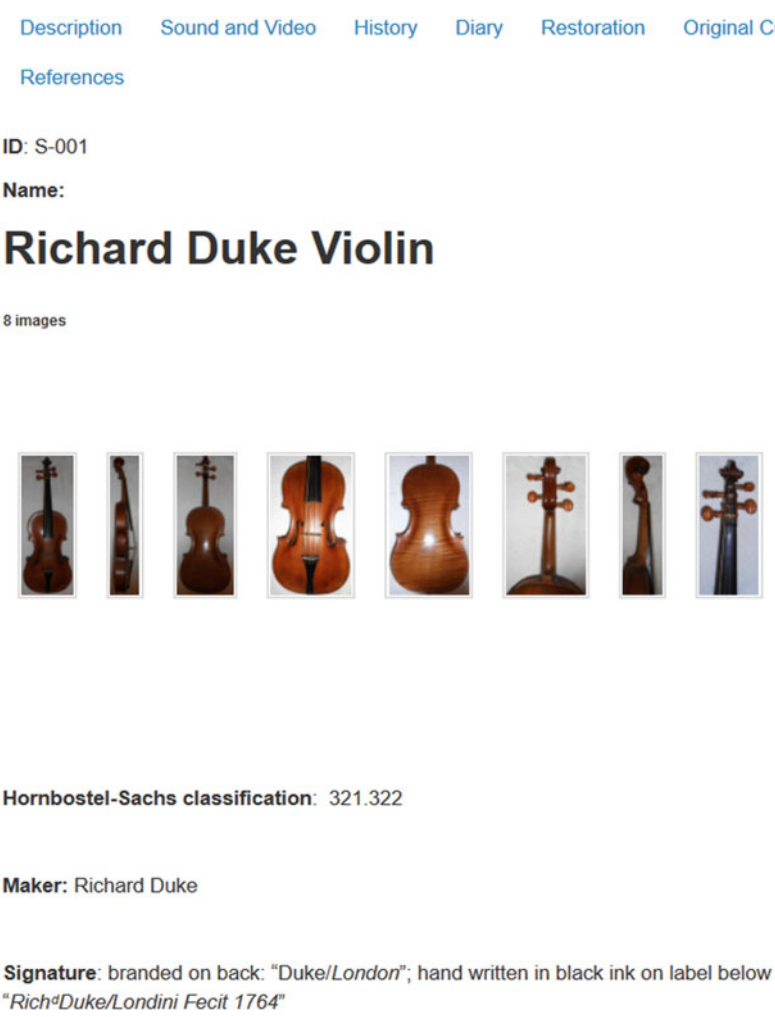

Fig. 9.4 Entry web page for a single artifact in a collection of historic musical instruments for access a login is required)

9.3.2 Collections Often Move to Museums

Cultural heritage collections require special logistics (space, climate and lightning control, timely maintenance, protection against damage and unmonitored manipulation), devoted curators, and documentation, as well as a stable financial base to guarantee continuity of all this. Over time, collections grow. A private collection of folk musical instruments that we visited in Spain contains currently 5000 physical objects. The artifacts are kept in a large storage facility, each tagged with simple paper label with a unique number that corresponds to a numbered paper card in a set

of boxes. Regularly, different selections from the collection are exhibited in museums. The documentation needs to be manageable, and ICT support (including a content management system) becomes compulsory.

One requirement is an ontology of these artifacts that allows finding the related documentation in the system, based on a classification that is accepted and usable for scholars in the culture and experts in the domain, e.g., for any type of musical instrument collection the current classification based on Hornbostel and Sachs (1914).

The other requirement is a safe and valid way to authenticate and identify physical cultural heritage artifacts and to relate these to the entries in the database. To this end the current state of the art includes the use of RFID tags to locate specific artifacts in large storage contexts and to identify an individual artifact (for any stakeholder who is not a real expert in this matter), and QR codes to allow easy connection with a relevant internet location that contains information unique to the artifact. Expectedly, soon, a safer way of tagging (that promises a better defense against forgeries as a side effect) will be the use of PUF NFC readable tags (Yu and Devadas 2017) that may be connected to the physical object in a tag inlay or embedded in a paper label.

For large collections, the development and maintenance of this type of ICT support often turns out to require too much from the individual volunteer stakeholders and even from the original cultural community if this is a private group. Hence, the collection is in danger of being corrupted, being sold in pieces, or otherwise disappearing. In that case, political or legal bodies (a municipality, a foundation) may take over or may be constructed, and the collection develops into a public museum or is incorporated in an existing one. This seems to be the fate of many important and famous collections. In fact, most museums with collections of cultural heritage found their origin precisely in the mechanism sketched above.

9.3.3 Museums in Trouble

So far so good: Till a few decades ago, in the domains and museum practices we are aware of, there were many thriving examples where societies of friends of a culture supported museum activities (including performances by scholars of the domain attended by amateurs), where private collections were donated or sold for a token price, and where the curator collaborated in a responsible way with scholars who needed to manipulate the artifacts in order to support the living culture (e.g., for making valid replicas). The collections on display were intended for the original stakeholders, and so was the information available. If a member of the general public would enter the space, which was a relatively rare occasion, the visit would often be short since no expectations or needs had explicitly be triggered, though visitors did not experience this as something negative.

However, political and societal situations change, and museums in many cases had to decide for a change in business goals and business models. In the last couple

of decades, we perceive a common view that museums should serve the general public in all its variety (including children or enterprises), should aim for a profit, should advertise the cultural state and vision of the political body that controls them and of the corporate sponsors that are replacing the financial support of cultural communities. Museums, in this situation, should conform to new visions of what is a good balance and dosage of information, entertainment, aesthetics, and variety.

In the domains of historic costumes and of historic musical instruments we have seen striking changes: rather complete costume collections, even if they may keep their fashion gallery, lose visibility due to changing exhibitions in relation to temporary interests triggered by events in other domains. For instance, London's Victoria and Albert Museum celebrated 100 years of Hollywood filmmaking, and staged a film costume exhibition, which was exciting for the general public that discovered a relation to other simultaneous cultural events. At the same time, world famous large and important collections of historical musical instruments in the same London museum and in the "Gemeente Museum" at The Hague completely disappeared: Parts were silently taken over by specialist museums, larger parts are supposed to be in store without a curator being in control and with information unreachable for scholars. These cases include large parts of the collections that originated from donated private collections that once belonged to their original living cultures.

9.3.4 New Venues Bring Traffic Issues

These museums do not have a choice: The management needs to conform to the new political and cultural visions of their authorities. Their new business models require them to provide opportunities for patrons to organize a reception in museum premises that should be exciting and fit for the occasion. They are supposed to provide an appropriate mix of learning and entertainment for families with children, and to provide accommodation for visitors to have a drink and a chat in an amusing environment (Victoria and Albert Museum 2016); all of this for a consumer price that allows a healthy financial profit.

In current museums, different types of visitors will meet quite different types of traffic: In the fashion gallery visitors will not encounter many other visitors, whilst the thematic exhibition on movie costumes may be crowded. The more an (often temporal) exhibit attracts the general public, the more space and routing is an issue, and at the same time, the more the exhibit could be in danger regarding climate conditions and damage.

Historic textiles and historic artifacts with certain types of coloring and dyed decoration may be deteriorating if light is too strong for a long period, but visitors should be able to see what is displayed. With heavy traffic, these conditions are contradicting each other.

9.4 Dealing with Different Stakeholders

In the previous sections, we have seen that in the current situation authorities that are responsible for the business goals and business process are no longer mainly the community of members of a culture. This poses problems with respect to the needs of the main stakeholders of the culture, that are different from the needs of the general public. To find solutions for this, we need to get more insights into these differences and the differences in services a museum might provide. Thus, we analyze how different stakeholders are aiming at different experiences. Subsequently, we propose an approach to provide differentiation in access, information, and services.

Museums and comparable institutes that keep cultural heritage collections need to maintain a long-term survival strategy. This includes a sound financial support model (which may well be based on a mixture of corporate sponsorship, entrance fees and commercial activities, and support from the cultural community as far as it still exists).

Preserving artifacts certainly has always been part of the mission statement of most museums. Keeping cultures alive by keeping cultural heritage available for the participants of the culture, however, may for many modern museums have become a secondary task, often inherited from a different business goal in the past, or from a business model of a previous collection that was adopted.

Consequently, cultural heritage collections disappear without a trace or are explicitly repelled. If this is about to happen, the original culture needs to act, to negotiate with the sponsors, and to find a way to make the authorities accept maintenance and support to allow the members of culture access to whatever they need. For example, when the Gemeentemuseum in The Hague, Netherlands, changed its mission, focused explicitly on art, and stopped exhibiting the large (internationally famous) musical instrument collection, the role of curator for the collection was made redundant. Through pressure from scholars who specialized in historic music performers, the main part of the collection is available for members of the culture. The current website of the museum (Gemeentemuseum 2017) states: "*The music collection was one of the highlights at the opening of the Haags Gemeentemuseum in 1935, but is no longer displayed today. Nowadays, the museum's exhibitions focus on fine art, decorative art and fashion. The music collection is however of a high standard and uniquely valuable in terms of the history of music. It is kept under controlled climate conditions, and musicians, students and other researchers may view the instruments in the reading room on request.*" The related library has been moved to the National Library of the Netherlands, parts of the instruments were moved to the Rijksmuseum in Amsterdam, and volunteers collaborate with the museum to keep the collection in stock available for scholars to analyze, describe, and measure the artifacts.

9.4.1 *Different Stakeholders Need Different Types of Experiences*

Famous museums like the Rijksmuseum Amsterdam offer possibilities for business events. Incentive Europe (2017) publishes: "*A cocktail reception or gala dinner in the Rijksmuseum is a unique experience in a very special environment, one your guests won't forget!*" The Rijksmuseum is considered to be among the major tourist attractions in Amsterdam, where visitors are allowed to film or take photographs of the museum as long as they do not use lights, flash or tripod (Traveldudes 2017). The general public in a museum including families with children, school groups, corporate sponsors and their guests, all expect something amusing and entertaining. This includes the opportunity to get some easy explanation to understand exciting unknown things as well as things that are supposed to be new or interesting; to interact with artifacts, the context, and with people like themselves; to get a scent of emotions that might be appropriate regarding the exhibit and the context, and to have a generally enjoyable time during their stay. In addition, they may well feel the need to build some memory of this occasion: a souvenir, a picture, some easy documentation or even a pointer to what more could be found in this building might be highly appreciated and, if needed, paid for.

Regarding collections of cultural heritage (a museum may well have a variety of these in their premises), the members of the culture will have very different expectations and needs. Scholars (e.g., the musicians specializing in historic practices that study the collection in the Gemeentemuseum, The Hague) will need all of the below:

- Hands-on experiences: measurements, actual use, maintenance, and restoration —all of which should be carefully monitored by a responsible curator, documented, and restricted to the bare minimum. The good news is that there will be a restricted number of scholars who need this, that they may collaborate and cooperate (providing each other with measurements taken, attend a joint session of actual use, and document this on multimedia). E.g., when an instrument has been measured, it is common among scholars to provide drawings, pictures, and measurements to each other or even to publish these (e.g., FoMRHI 2017);
- Access to documentation regarding each artifact as sketched before (e.g., related to Figs. 9.1, 9.2, 9.3 and 9.4)—history, complete description, restoration reports; etc. as well as access within reason regarding the diary information. On the other hand, scholars should understand, and can be requested, to provide any available new insights, findings, recordings, and references;
- Access to the full collection, including whatever is stored in the depot.

Amateurs will expect the true experience of the living culture. This includes at least the opportunity to inspect the original artifacts as well as documentation as far as there are no privacy issues regarding the current owner. They will understand restricting issues regarding climate control, damage prevention, and lighting regulations. This also includes the opportunity of participating, as a knowledgeable

audience, in actual use by scholars—performances where dresses are used in a relevant context (e.g., a staged ceremony) or musical instruments are being played in a concert.

9.4.2 *Split the Venue, Keep the Richness of Multiple Resources*

In various cases that we analyzed, we noticed a need for diverse spaces with functions that match the needs and intended experiences of the various visitors and stakeholders. For example, in several collections of musical instruments that we or our students investigated, the collection was on display for all, including the general public, and some simple descriptions were available that did not require any expertise to understand.

In one case, only the general public was served: an exhibition in the History Museum in Puertollano in 2005 commemorated the musical culture from the time of Don Quijote (a novel written in 1605 by Miguel de Cervantes) by showing historic pictures of period Spanish instruments and rather simple "reconstructions" of the instruments depicted: certainly, interesting for the general public but disappointing for amateurs and scholars. These latter were likely to know quite well that many actual music scores of that time and context existed as well as original instruments, and were well aware of performances and recordings by groups like those led by Jordi Savall based on original manuscripts and performed on original instruments or faithful copies. This exhibition only had a single door: for the general public.

On the other hand, we find the Horniman Museum in London that, next to an easy entrance for the general public that allows access to a selection of the collected items, provides scholars with facilities like clearly described procedures to access the many artifacts in the depots, and even policies and procedures to request a loan —a second, if not physical, door to the collections. For amateurs, there is a 3rd entrance through the internet, where all artifacts in the collections are visible, though only with very small pictures, often randomly categorized (e.g., there are 32 "traverse flutes" and 12 "flutes" that are in fact traverse flutes), featuring descriptions that often lack relevant details and with indications of whether some of them are on display often incorrect.

The curators of some musical instrument collections, based on requests, decided to allow (only known specialist) players to use instruments to play in controlled conditions, separated from the rooms with display cabinets. Professional builders of facsimiles asked for, and were allowed to, take measurements and make pictures of details, again under supervision and in a safe environment. In one case, the measurement and analysis resulted in the expert developing life-size construction drawings to allow amateur builders to study these in their own environment.

Some cultural heritage collections in the domain of music are part of institutes for professional music education, like the Museum of Musical Instruments at the Royal College of Music in London. The museum shows in fact nearly all its cultural heritage artifacts, in a display that clearly aims at the students and staff, an audience that is mostly of the category "amateur". The general public will not find in this display and content too much to be excited about, but for scholars, the curator is most of the time available to provide additional access and information. The same situation is the case for the Musical Instrument Museum in St Cecelia Hall, part of the University of Edinburgh. Amateurs and scholars will find a rich collection with a lot of exemplary documentation, and a helpful curator to provide access whenever needed and at all possible, where the general public will probably never know about it and would not be challenged to enter, browse, and study. This type of specialized museums seems able to survive financially because of their relationship with an educational institute in a related domain, and, consequently, shape their "door" to fit the intended specialized audience.

In the same domain of musical cultural heritage, the musical instrument museum in Markneukirchen, Germany, seems to mainly aim at amateurs, providing over 3000 historical instruments and related artifacts. However, in one of the buildings (in fact with a separate door), there are bizarre exhibits like the largest tuba in the world, the largest accordion in the world and the largest violin (14 feet)—completely irrelevant for amateurs but a favorite background for tourist selfies.

In the case of the historic costume, we learned there are national and international organizations that state annual meetings where original costumes will be shown to experts, and even worn in a safe environment. For the general public, there seems to be only the experience of seeing dancers dressed in copies of original costumes at festivals.

Based on our cases we have identified needs that seem to exist in almost all cases, for a way to safely exhibit to all participants of a culture as well as to the general public, as well special environments for close examination, for manipulation, and under strict conditions even for use:

- A museum shop seems to be relevant for almost any type of visitor. Providing easy to understand and appreciate souvenirs will mainly serve the general public and corporate sponsor guests. Though, once in the shop they can be seduced to browse and may well discover there is more in the collection, and even consider the status of amateur to a culture that seems to be exciting enough (information provided electronically through, for instance, CDs, and well-designed books may be a first step to embracing a culture).
- Food, drink, reception, and meeting facilities, for the general public, for families with children, and for special events organized by corporate sponsors. Museum management might have good reasons to be less nervous if the drinking crowd is not too close to the most well-known painting in the collection.
- For members of a culture, there is a need for entrance to a library of archival material and documentation. Some types of access (related to the state and

possible sensitive content of the documents) may need to be monitored or restricted to certified scholars.
- As far as space can be made available, scholars and amateurs will be able to walk their dedicated galleries, mostly without the need of a guide (whether audio or human). On the other hand, a member of the general public who happens to enter such a specialist room might feel the need and will appreciate a guidance that highlights "specialties" which may be either artifact that look "extreme" or that are related to a well-known story (such as the hat worn by Napoleon at Waterloo, the largest violin in the world).

For offering these types of access, professionals and experts are needed. e.g., for the shop, for the library, as guides or for monitoring the audio guides, for monitoring manipulation by scholars. Maybe not all of them need to be (full time) employed by the museum organization: in the case of cultural heritage collections, the original community may well be able and willing to provide recognized scholars that volunteer or are in other ways working on behalf of the interested community. These volunteers often will be happy to work, both for the benefit of their living culture and for developing appreciation for their culture by the general public.

9.4.3 Different Doors (and Routes) with United Management

One of our student groups came to the course based on their expertise as consultants on the internet of thing. They introduced us to the metaphor of multiple roads through the world of things and of knowledge related to the things, and they suggested that (at least conceptually) a museum could have separate doors:

- The general public may be served best by providing them with a nice and smooth route along exhibits and installations that are easy to appreciate and that are safe for crowds. Obviously, food and drinks, as well as the shop should be strategically located in this tract.
- A separate and appropriately indicated VIP door could lead to special event facilities, designed for the purpose and, at the same time, making specific use of the museum context (some special exhibits, the newest sponsored acquisition).
- Amateurs will often enter especially for "their" section. Make sure they will be able to find it immediately (also on the museum website, for example trying to locate the historic costume collection for the Victoria and Albert Museum). For this group, availability of objects is more important than being provided with a carefully crafted aesthetic experience
- Scholars will sometimes need access to artifacts in store, as well as to the archive and library. Guided by them, this will also be the case for amateurs.

For the display of cultural heritage objects, the main question is what is safe to be responsibly made available, and in which environmental conditions (humidity,

temperature, lighting). Members of the culture will understand the restrictions in this respect.

For amateurs, some examples of cultural heritage objects will often be appreciated, though in their route this could well be copies that show how the objects originally looked: They will be happy to experience what people in the old days had available. Often copies are fine, and for some types of experience they may even be handled: Some museums successfully provide look-alikes of historic costumes for making pictures, or copies of musical instrument mechanics to allow touching and manipulation.

In the same way, new technologies can be applied: even the concept of mummification (whether this is in fact still cultural heritage or just a far cry from a past culture) can now be studied through a video clip (New Scientist 2016) that gradually shows the unpacking of a mummy till the bare bones and beyond, just the metal amulets. And, in the same domains, New Scientist (2016) shows how kids may get a feel of mummification practices or even be practiced by children on a Barbie doll (Kidsactivitiesblog 2016).

Providing access to these technologies in the route that is dedicated for amateurs will certainly support the intended experiences. Moreover, techniques like augmented reality with the use of the omnipresent smartphone will allow visitors to find vivid references to (use of) the exhibits in the past. Museum websites could contain additional information specifically intended for members of cultures related to the cultural heritage collections, as illustrated before. This information could, obviously, be password protected if only qualified scholars should have access.

By designing separate routes and indicating them carefully for the diversity of visitors, both the crowds and the specialists may be served better and with much less frustration. Successful engagement of these groups may also hopefully provide arguments for the various stakeholders (from authorities to cultural communities to sponsors to the general public) to provide more support, financially as well as by explicit opinion, to maintain museums and collections to serve everyone.

9.5 Conclusions

Communities of people united by their living culture, even if they are no longer able to preserve their cultural heritage privately, depend on the availability of access to the artifacts of their culture. Currently, cultural heritage artifact collections often move to museums where these collections become part of a much larger and much more heterogeneous content. Based on our teaching and our collaboration with curators of cultural heritage, and guided by the vision on cultural heritage by UNESCO, we developed an approach aiming at keeping these artifacts available for the participants of the original culture. Consequently, we focus on the participants of the culture, their different roles in the culture and their needs and intended experience of the artifacts.

Obviously, a museum aims at serving many different stakeholders, including sponsors and the general public, with interest, knowledge, and intended experiences that may differ largely from the needs of the stakeholders of the specific culture. Communities of people united by their living culture, and consequently motivated to keep their cultural heritage, need a very different type of services from the museum. We showed how some museums accommodate this goal through specialized websites, others by providing access to knowledge and artifacts that are kept invisible for the general public, whereas other museums currently do not manage to provide adequate service to support the survival of cultures that are dependent on access to their heritage.

In this chapter, we illustrated the types of access, representations, and knowledge that are relevant to keep a culture alive when the artifacts are preserved in a museum. The metaphor of separate doors and dedicated routes through the collection to welcome diverse stakeholders of a culture (amateurs who live and learn the culture, and scholars who actively research and teach the culture) illustrates our current understanding of how museums can actively support the survival of cultures, and, at the same time, support the general public that will have rather different knowledge, interest, and intended experiences for cultural heritage artifacts.

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