Participatory heritage
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DIGITIZATION OF HERITAGE materials is an important subject within the GLAM (galleries, libraries, archives and museums) sector and as a part of digital humanities (Tanner and Deegan, 2013). Over the past decades many funding opportunities have supported the digitization of heritage materials, understood here in the widest sense as any material related to cultural heritage, from census lists or photos to archaeological finds or first-person accounts. However, questions do occur about the overall impact of digital heritage material and its usefulness to the general public.

As a part of this digitization process we are moving from vast amounts of material in large storage units which are practically ‘lost’ to the public and towards terabytes and petabytes of digital heritage material stored as data. This data can take on different formats, from tabular lists of archaeological finds, to photosets from the 1860s, to a set of co-ordinates illustrating the geographical spread of bygone cultures. Everything has analogue counterparts and the main difference between the analogue and the digital material is the ease with which the latter can be copied and shared across large distances.

To use an analogy from my own experience as a genealogist, it is clear that if I had started family history ten years earlier I would not have had the same successful experience of this hobby that I did. When I began researching my own family history in 2003, in Denmark this still included many trips to local and regional archives. Going to the regional archives usually had to be planned as a day trip and involved standing in line (although more often than not people brought fold-out chairs, coffee and breakfast) until the doors opened. Then there was the rush to get in and get a desk in the reading room. Next you had to hurry to get your orders in for the parish records and special
collections. Once this was done you had some waiting time in which you could use the census data available on open shelves.

I went back to the same regional archive in 2015 with a group of students and found it to be a very different experience. No standing in line and no rush to get a desk. Now the only reason to visit the archive is to access special collections, as well as for socializing and getting help from other family historians. In the meantime, many of the more basic collections such as the parish records and censuses have been digitized. Denmark is quite unique in the sense that this material is also made available free of charge online. In many other countries, however, although this type of material has also been digitized, it is typically available only at a cost. This ease of access to historical sources has meant a large growth in interest in family history as a hobby (Friday, 2014). It has also meant that I have been able to develop my own family tree considerably, despite living in a different country, all through the internet.

So, large parts of our heritage material have been digitized, with much more on the way, and heritage institutions are now asking themselves the questions who uses this material and was it worth it? Is a mass digitization of our cultural heritage worth it? Some researchers are attempting to answer this question in different ways, while also examining how it may have impacted on society (Tanner and Deegan, 2013). Others use the argument of the long tail to argue for mass digitization of heritage material (Sanderhoff, 2014).

The long tail refers to the observation that the popularity of a piece of content never seems to reach zero, meaning that there is always someone who wants to find, access, view or use even the most obscure content or information, if it is made available (Figure 19.1). The long tail (Anderson, 2006) as a concept is built on examining internet platforms such as Amazon and Netflix, where it would seem that there was always someone who wanted to buy even the most specialized book or watch even the least popular film. In the same way, you could argue that if we digitize and put all our heritage material online someone will potentially be interested in even the most obscure and unknown part of it. A counter-argument is that only highly enthusiastic geeks and researchers will ever take an interest in the material in the long tail and therefore we should not put too many resources into this mass digitization (Visser, 2014).

Nevertheless, I would say that the community of highly enthusiastic geeks as well as humanities researchers interested in this material is rapidly growing world-wide, and for many people digital access may be the only access available. Whether you are studying history at the University of Cape Town or a genealogist from Iowa, you are unlikely to visit the British Library to view historical documents, however interesting they may be to you, but
having access to the library’s massive online collection can have a real impact on your ability to study the historical subject you are interested in.¹

Instead of debating whether or not it is worthwhile to digitize our heritage, I believe we should focus on another critical aspect of our ongoing and very expensive mass digitization of heritage material. This is the question of what we do with our digitized material. If we ‘only’ put it online in a format that allows users to search through the material and view it, then it really is a question of whether we are getting our money’s worth from the digitization. Those who would potentially like to use this material (Visser is probably right in imagining that they are mainly highly enthusiastic geeks and researchers) also often need to export and save it into their own collections. Using family researchers again as an example, they typically have their own database of some sort (hosted on their own platform or one of the many family history platforms available). When they find information about their family the first thing they need to do is transfer it into their own database as a source. With much of the digitized material available online the only option is to copy/paste the search results.

We can compare this to library systems where options to export search results into one’s own reference database have been available for a while. Through this we can see that librarians have recognized that users not only want to be able to search and find the data they need, they also need to reuse this data in their own contexts. As such, the possibility of reusing heritage data in different contexts is just as important. This could in theory be solved by something as simple as heritage datasets having an export to CSV or plain-text function (or other domain-specific file types, such as GEDCOM for family historians). This would make it possible for individuals to reuse heritage data for their own research purposes.
However, technology allows for a potentially much larger and wider reuse of this costly begotten digital heritage material. Through web services or APIs (Application Programming Interfaces)\(^2\) this data can be reused on a much larger scale than I have just described. Again we can look to librarians and libraries who in the 1970s began using the Z39.50 communication protocol to share their data (A Very Brief History of Z39.50, n.d.). Library holdings traditionally consist of published materials for which many libraries may each have a copy. Each library database needs to contain the metadata (e.g. title, author, published, format, etc.) for each piece of material in the library catalogue. Furthermore, libraries have a long history of sharing their material through interlibrary loan (Miguel, 2007). Thus sharing each library’s digital catalogue with other libraries in an automated manner makes good sense. Before such technology existed, librarians would have to search in other library catalogues in order to find the material they needed. By automating the search through a communication protocol, code can be written that automatically searches all other library databases for any material through their web service, letting the librarian know which other libraries have a particular material at the click of a button, instead of searching each catalogue individually. This technology is widely used in libraries today, connecting data about published material between publishers, distributors, libraries and world-wide catalogues.

Most web services or APIs are currently built on either the Simple Object Access Protocol (SOAP) or representational state transfer (REST).\(^3\) The difference is not what is important here but, rather, what they have in common. Both prescribe methods for accessing and searching external datasets by sending a request over the internet and receiving the specified dataset in a reusable format (e.g. JSON or XML). The main advantage of this is that, unlike the previous export example, using a web service does not return a copy of the original dataset. It returns the actual dataset, or the part of the actual dataset that was requested.

**Case: Europeana APIs**

The beginning of the European Digital Library can be traced back to a letter from six European heads of state and government who, in 2005, advocated for the 'creation of a virtual European library, aiming to make Europe's cultural and scientific record accessible for all' (European Commission, 2014). In 2008 the first version of Europeana was online, with an interface that enabled anyone to search and find metadata about digitized cultural material in many of Europe's heritage institutions. In 2016 a new version of Europeana Collections was launched and now allows you to explore approximately 53 million (on 9 May 2016) artworks, artefacts, books, videos and sounds from across Europe. The
actual heritage data (i.e. the digital versions of the images, texts, videos, audio, maps) is not stored at Europeana but the metadata contains links to them. If I were to search for ‘Karen Blixen’ I would get 458 results (on 9 May 2016), mostly of images, with a few texts, videos and sounds. The results are gathered from the databases of different institutions, mainly in Denmark, with a few from 12 other European countries including Italy and Iceland. The Italian material, for example, consists of book covers and pictures of a rose named after her, as well as some newspaper articles.

However, the most innovative aspect of Europeana is, in my view, not the 53 million posts of heritage material metadata that can be searched but, rather, the policy of openness that can be seen in the Europeana Foundation’s eagerness for the material to be shared and reused. This reuse is encouraged for the content as well as the metadata collectively. The former is usually done through 2D and 3D reworking of the content material into everything from phone-covers to fashion. The latter is done by using Europeana’s API to extract a live version of a part of the dataset in a data format that is programmable. This has to date resulted in different applications such as alternative search engines for Europeana data like ‘On this day’, where you can enter any date from 1800 to 1990 and items relating to that date will appear or ‘Culture Collage’, which allows you to create and download scrapbooks of material found in Europeana.

What this means is that it is possible to build many applications on top of the same dataset. This is an important angle if we want to get our money’s worth from our mass digitization of heritage material. I would even go so far as to say that it is not economically sustainable to digitize large amounts of heritage material if it is going to be used in only one application that facilitates a very narrow audience; whereas, if we could build many different applications tapping into and using the same material, we would allow for a much wider and varied use of this material.

**Case: Vindolanda Tablets Online II**

Vindolanda Tablets Online II is a search interface that enables different access points to the texts excavated from the Roman fort at Vindolanda in northern England. It was developed by the author, not as a replacement for but as an addition to and new approach to the original website, Vindolanda Tablets Online. The foundation of this new version is the web service APPELLO, developed in order to access the tablets encoded in EPIDOC. Every feature on the website is built on top of this web service, which is, furthermore, available for others to use. Search features are focused on the content of the texts and less on the metadata.
This means that it is possible, both on the website and through the web service, to search for a particular word, date, person or place and find the texts in which these are mentioned. The index search relies on a live-search\textsuperscript{11} feature that brings up new suggestions every time the search phrase changes. In other words, every time the search phrase changes, the interface sends a new search request to the web service. Because the database is not bound to the interface as it is on the original website, the next time someone wants to make a new search engine for the Vindolanda Tablets they can easily do so.

This is an example of how developing a search interface on top of a web service and thus separating the interface from the dataset can be beneficial both for the primary website as well as for future versions.

Who will build these different applications to encourage use and reuse of heritage materials? Heritage institutions could build their own applications, but should they be expected to build applications for every possible use? Here I would argue that heritage institutions are required to build only the applications that they believe would be valuable to the largest part of their audience as they know it. In other words, they are only required to cater to the head of the long tail model, by imagining the next blockbuster – just as in the non-digital world heritage institutions display only the material they believe will interest their audience, leaving the rest in storage. The good news is that there is an ever-growing group of people who are able and willing to use material from the tail to build other types of applications. For them, the motivation may be altruistic or based on a personal or scholarly wish to access the information in a different way. It may also be part of a business model, building applications to sell to heritage institutions, their users, tourists, schools etc.

In some countries heritage institutions are hosting hackathons, where programmers, designers, historians and other interested parties get together to mashup and remix heritage data, under the remit of hacking. This is not the kind of illicit hacking that we usually hear about on the news but, rather, is meant to signify a group of people who enjoy playing around with computer technology.

**Case: Hack4DK in Denmark**

Hack4DK is described as a hackathon (an event where programmers, designers and other groups come together for software and hardware development). It has been hosted annually since autumn 2012 at different Danish cultural institutions (mainly in Copenhagen). It was events such as the now-abandoned History Hackday or the more successful Science Hackday (Jensen 2010) which inspired this type of event. Hack4DK was initiated by Lone Stefansen and Jacob...
Larsen from the Royal Library and Jacob Wang from the National Museum as a way to promote the idea of open data amongst heritage institutions. By showing heritage institutions how hackers can use their datasets in new and innovative ways they hoped to lobby through evidence.\textsuperscript{12} 

The idea is simple: heritage institutions make datasets available (preferably as a web service but other formats are welcomed too), invite those interested to a weekend of designing and coding, provide sustenance and motivation and see what happens. In 2015 a dataset consisting of the oldest portrait photos taken in Denmark, with named and located persons, was provided by Kolding City Archive.\textsuperscript{13} It was used in seven different projects, ranging from a battle card game\textsuperscript{14} to a digital mashup of the images with 18th-century swear words and modern-day rap texts. One of the most important and perhaps surprising things for heritage institutions to remember when they provide datasets is that they have absolutely no say in how these datasets are used. Usually, these projects do not go any further than a prototype, but once in a while participants may take the products into production, as happened with the Society game, or they may already be working on an ongoing project like the City Stories app.\textsuperscript{15} While practically any data format can be brought to the event, it is, however, only datasets available through existing APIs that stand much chance of being used in the development of digital applications.

Digitization of heritage material plays an important role in preserving it for the future. However, in order to enable participation with heritage and heritage material it is important to not just digitize this material, put it on the web and add a search interface for it (Fouseki and Vacharopoulou, 2013). It is just as important to make these datasets available so that they can be used and reused in whatever new and innovative digital or analogue manner may be possible in the future. By separating the database (including data objects and metadata) from the interface built to search and access them, we are rejecting the notion that it is even possible to build the perfect, future-proof interface that will be useful for all of humanity. Instead we are rightly recognizing that both software and hardware development progresses at great speed, and we are digitizing our heritage in such a manner that it can be useful and relevant in the future.

Notes

2. While there is a technical difference between APIs and web services this goes beyond the scope of the context here, where they are used interchangeably.
3. There are other methods of open data sharing such as OAI-PMH (Open Archives Initiative Protocol for Metadata Harvesting).
http://www.openarchives.org) and Linked Open Data.

4. Karen Blixen (1885–1962), Danish Author, also wrote under the pseudonym Isak Dinesen.


6. http://culturepics.org/on-this-day, the code is open licensed and developed by James Morley (@jamesinealing).


12. Personal correspondence with Jacob Wang, 10 May 2016.


References


A Very Brief History of Z39.50 (n.d.)

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