ON DESIGNING AN ORAL HISTORY SEARCH SYSTEM

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Abstract

Purpose - The aim of this research was to conduct a U.K. based assessment of oral history technology and to identify the most important features that should be available in any oral history search system.

Design/methodology/approach - A co-design approach involving interviews and focus groups was adopted. The Framework Approach with elements of grounded theory was used to analyse transcripts to identify themes.

Findings - Analysis found that 'ethics, consent and control', 'accessibility and engagement', 'publicity and awareness', and 'innovative technologies' were the four major themes identified. It was also established that there is limited understanding of oral history in the digital age, numerous interests, ethical concerns, lack of publicity and several key attributes that those designing an oral history search system or archive should strive for. Findings also identified that further exploration into sampling selected technologies on different user groups is required in order to develop software that would benefit the field.

Research limitations/implications – Participants were all recruited from one geographic region. The qualitative methodology utilised could be deemed to have elements of subjectivity.

Practical implications – This study has identifying important features of any oral history search system and offered design recommendations for any developer of an oral history search systems.

Originality/value - This research has validated some previous findings for oral history search systems from more limited user studies. New issues for consideration including usability, software development and marketing have also been identified.

Keywords Design, History, Information Retrieval, Information Management, Oral History, User Studies

Paper Type Research paper

Introduction

Oral history can be defined in a multitude of ways and holds a significant place in a variety of libraries, collections, and research. According to Butler (Butler, 2008) "oral history is a recorded interview of an individual or group of individuals by a historian, researcher, or another interested individual doing the interview" (p.34). As an example, there are numerous famous oral history projects from around the world such as the Shoah Foundation which has over 53,000 video interviews of Holocaust survivors (Foundation, 2016); The Ellis Island Oral History Project which shares historical accounts of immigration to the U.S.A. (Service, 2016) and Scotland's Rural Past which explores the live or rural settlements and the people that lived in them (Past, 2016). More recently Andrew Viñales (Press, 2016) highlighted in 'Oral history for youth in the age of #BlackLivesMatter' that "he and his students have used oral history to not only document the lives of people fighting for social justice but also as a tool to inspire young people to act" (p.8). These are just a sample of the substantial number of projects which portray the different uses, relevancy and diversity of oral history and how it can be used a tool for social and political change. Oral history focuses on a variety of people from all walks of life and plays a central role in the representation of local communities, women, ethnic minorities and ordinary people. These groups were largely underrepresented in historiography until the late twentieth century and have recently come into focus. Thus, oral history focuses on social and cultural history that recognises the experiences of a wide range of people or 'history from the bottom up' in which individuals such as workers, women and minorities take centre focus.

Recent technological developments have prompted a shift in the way historical materials are stored, represented and accessed. There are a host of new technologies that offer instant access and engagement with oral histories. Media platforms such as YouTube, SoundCloud, WordPress, Drupal, Omeka and content management systems such as CONTENTdm are some that have emerged in recent decades. These various platforms offer opportunities for users to search collections through transcripts, index, audio, and video. It is evident that the oral history in the digital age is still in the process of transformation. It can be argued that regardless of the

technological developments in the field, people in the process have always remained at the focal point of the recent literature. Therefore, this paper focuses on the development and use of oral history technologies which form "new media". One of the fundamental challenges which has been addressed in recent years is the development of individual interviews into searchable databases. It is the primary aim of this study to conduct research into the current understandings, practices and important features when designing an oral history search system. This research paper offers a qualitative analysis of different UK based user groups in regards to designing an oral history search system. It will do this by exploring the the following research questions:

RQ1: What are the most important features that should be available in any oral history archiving and search system?
RQ2: What are the current understandings of oral history and oral history technologies?
RQ3: What are the different needs of numerous users and stakeholders?
RQ4: What are the major opportunities for new media tools in the near future?

Literature Review

Oral History in the Digital Age

Traditionally interviews have been difficult to access without sufficient documentation. There has been considerable discussion in relation to the place of transcription, indexing, audio, video, and automatic speech recognition. According to Frisch and Lambert (Frisch and Lambert, 2012) oral history can be "mapped around three key axes-cataloguing v. indexing, transcriptions v. recordings and content mapping v. data mapping" (p.26). Arguably, the majority of history collections remain closer to cataloguing, transcriptions and mapping. Furthermore, Frisch and Lambert (Frisch and Lambert, 2012) highlighted that "access to the collection depend more on linear searches than on relational database approaches to navigation and organisation and are more familiar with contentsearching than mapping" (p.26).

Transcription

Transcription has been a central point of debate among professionals. Portelli (Portelli, 2009) stated that "transcripts not only fail to convey the essence of the interview space, but also service to flatten the emotional content of speech" (p.35). Many projects, users and archives now use digital indexing by timed summary instead of transcription due to financial and practical reasons. According to Cleyle et al. (Cleyle et al., 2006) "preparing transcripts for oral history interviews is by far the most expensive and time-consuming part of the whole enterprise" (p.451). Casey and Gordon (Casey and Gordon, 2007) stated that "once transcripts are edited, a minimum of two hours for every hour of streaming audio must be spent time stamping the files" (p.453). Many organisations use digital indexing largely due to the difference in cost and time, it is also quicker to examine than a transcript. This highlights the disadvantages of transcripts and questions why the field should bother preparing and working with transcripts. It is clear that users can search for topics and areas of interviews across collections. However, more work needs to be conducted in regards to the deep listening of interviews. Regardless of the cost benefits of timed summaries, transcriptions are useful and valuable for several purposes such as in depth examination, research purposes and accessibility.

Automatic Transcription

Limited research has been conducted into automatic transcription and speech recognition in relation to oral history. Studies have been conducted into mobile oral histories and innovative equipment for recording but less has been conducted on search and engagement. Oard (Oard, 2012) stated that "building such a highly specialised system would only be cost effective for the largest of oral history collections" (p.3). This the difficulties of automatic transcription to the forefront of oral history and highlights that it takes considerable to establish and train an automatic speech recognition (ASR) system. Both Oard (Oard, 2012) and Boyd (Boyd, 2014) have touched upon the difficulties of automatic transcription and speech recognition having conveyed that transcripts present complex dialogue and language that is not easily transcribed or searched via technology.

Benchmarking and Standard Practice

There are some who have established the importance of a benchmark or standard practice in the field for some components such as Nancy Mackay (MacKay, 2015) who believed that developing standards for collecting and organising information is the best way to handle oral histories in the digital age. Mackay was successful in her establishment of recommendations of practices within the field such as partnering with software firms to develop affordable technologies, a website offering technical support and user's forum for sharing personal experiences. It is evident that there are a vast range of technologies, users and stakeholders who have different motivations and needs in relation to oral histories. Some have placed less emphasis on the development of standards and best practices and others have placed more emphasis on flexibility and meeting individual needs. According to Lambert and Frisch (Lambert and Frisch, 2013) "waiting for the "perfect software" to resolve the complex challenges of oral history practice in the digital age is inadvisable" (p.142). This highlights that if there is a significant emphasis on technology and to make the process more efficient there needs to less focus on finding a balance between technologies and a greater focus on human involvement in relation to technologies. It also exemplifies that the development of a perfect software will not fit the needs of different stakeholder. Thus, it is arguable that there is no standard best practice for oral history in the digital age. This can be attributed to financial constraints, different contexts and different uses.

Video

Video is able to capture dimensions that text cannot portray and represent (Frisch, 2016). According to Peter Kaufman (Kaufman, 2013) "oral history, in a word should quite naturally be video history" (p.2). Moreover, Levin (Levin, 2011) stated that "the near-immediate publication of the uncut video interviews provides immediate content to our viewers" (p.71). There are considerable advantages for those who adopt and implement video. Video has substantial relevance and allows the various elements of the human interview to be experienced by all users (Ritchie et al., 2013). Allowing the user to search and engage with text, image, sound and video enables greater annotation of oral histories and greater public engagement and access on the web. Video technology offers a platform for users more actively engage with the interview and brings oral history further into the public sphere. However, there are those who have identified the limitations of new technologies. According to High (High, 2010) "there has simply been little serious interest in the primary audio or video interviews that literally define the field that the method is organised to produce" (p.101). There may be reluctance and challenges in the development of video to accompany audio. Video also contributes to ethical challenges of oral history in the digital age and puts a strain already stressed resources (MacKay, 2015).

Case Studies

As well as individual issues as highlighted above, some researchers have used case studies to demonstrate both the positive and negative impact of technology within oral history. Douglas Boyd led a team to construct and launch the first version of the Oral History Metadata Synchroniser (OHMS) to enhance access to online oral history. OHMS is an open source web-based application and allows users to search to a specific moment in an interview. Boyd (Boyd, 2013) stated that:

> This system provides users with a word-level search capability and a time correlated transcript or index connecting the textual search term to the corresponding moment in the recorded interview online (p. 96)

In 2015, Latah County utilised (OHMS) and Passehl-Stoddart and Becker (Passehl-Stoddart and Becker, 2015) highlighted that "it presents and connects the text and recording of the oral history on the same web page" (p.6). The synchroniser also allows the user to explore both the audio and video recording of oral history. The OHMS enables the user to customise the system and improve the experience regardless of the repository that is used. However there are several limitations. The OHMS was intended to work with transcribed oral history. Also, there are few historians and professionals that can afford to transcribe on mass scale, presenting a significant challenge (Boyd, 2013). Incorporating searchable text when transcribing an oral history collection has many benefits

for the user including increased efficiency. However, OHMS demonstrates a need to be a compromise to be made in regards to resources, access and transcripts. OHMS is one of many open source web-based tools available, but it is cost effective, user-friendly and can be used for a wide variety of purposes. According to Royles (Royles, 2016) using OHMS to "teach about metadata, markup, and hosting helps students to see the familiar world of the Internet, social media, and mobile devices in new ways" (p.12). OHMS is advantageous in host of environments and is a revolutionary piece of software in the field of oral history. It has exemplified a vast range of possibilities for users and several benefits of recent technological developments.

Metadata is critical for organising, sharing and describing oral history collections and materials. The Southern Oral History Program (SOHP) presented its collection through technologies such as CONTENTd and Omeka. The New Roots Project was successful in developments toward oral history metadata. The project assessed areas of what is needed, what users want. According to Vos (Vos, 2007) "The project encouraged clarity, directness and ease of use in describing oral history and developing new features to reach new audiences" (p.2). Instead of expecting users to search through vast collections, the Omeka website enables users to access materials directly with ease. The Omeka website allows users to create, tag, plot locations using Google Maps, create reports and use controlled vocabularies (University, 2016). SOHP considered different approaches to describing, organising and sharing oral histories. The project also highlighted the practices and developments in regards to multilingual audiences and improving the overall experience for various groups. For example, they developed clear and understandable terms that represent important terms and themes to interviewees such as activism, racism and discrimination (Vos, 2007). SOHP has demonstrated the importance of metadata, keywords, tags and accessibility issues surrounding searching oral histories online, multilingual audiences and representing data via maps and timelines.

The Illinois State Museum's Oral History of Illinois Agriculture (OHIA) project was developed to enhance the digital revolution and develop tools to use on an interactive website called AudioVideo Barn. The aim of the project was to enable users and local communities to be involved in their local history. This study identified that the process of transcription has several limitations such as meaning being lost and it being less engaging and interactive (Warren et al., 2013). The AudioVideo Barn project was advantageous as it advanced on traditional and google type searches. According to (Warren et al., 2013) "google type searches limit the ability to use specific words and combinations in text" (p. 113). The OHIA project was innovative and expanded on this. Instead of searching for words within text, the project resulted in a tool that enables the user to search for audio and video files that contain brief extracts or clips of interview recordings. OHIA successfully conveyed that multidimensional search terms provided users with various options when accessing recordings.

Thomson (Thomson, 2016) demonstrated the advantages of searchability and modern challenges associated with oral history collections exemplified through 'The Australian Generations Oral History Project'. Thomson (Thomson, 2016) highlighted that "The Oral History Project used "the National Library of Australia's ground-breaking online audio delivery system" (p.77). Through the use of XML and text encoding this study enabled the identification of keywords and timed summaries linked to time code information within the sound recordings (Thomson, 2016). The Australian Generations project opted for timed summaries as the primary interview documentation format. The project has conveyed the cost and challenges of transcription in the digital age in regards to larger collections and the use of timed summaries as an alternative. This study identified that transcription provides users with a more detailed platform to analyse the audio in greater detail in comparison to a timed summary. The study used the ZOTERO database. Zotero collects research (including PDFs, images, audio and video files and snapshots of web pages) in a single, searchable interface. This can be text-searched using any word of phrase which results in the ability of a user to search all the materials related to a specific topic. The technology implemented in this project is valuable as it enables users to search for words or phrases that appear in the timed summary and correlating keyword lists and then provides them with the ability to click and listen. However, Thomson (Thomson, 2016) reiterated that the "effectiveness of the search is limited" (p.16) and more work needs to be conducted in relation to searchability of oral history in

the digital age. A relevant selection of case studies addressed have shown that new solutions and platforms exist. The case studies have also conveyed that technologies must be developed and assessed to meet different user expectations and needs. It is clear that if platforms are developed for a variety of different users it will enable people to be more engaged with materials and they will choose to search, listen, read or watch. The case studies assessed support and justify the pressing need for the research presented in this paper and exemplify the various technological features, developments and challenges associated with oral history technologies which need to be considered.

Methodology

The Framework Approach

The methodology used was the Framework Approach with elements of grounded theory. The central idea for using the Framework Approach is for thematic and explanatory analysis which enabled the researcher to look down for a thematic analysis and across for a case analysis. Gale et al. (Gale et al., 2013) stated that "Framework Analysis originated in an independent qualitative research unit in the social community planning institute situated in London, England"(p.1), The central idea for using the Framework Approach is for thematic and explanatory analysis which enabled the researcher conduct a thematic and explanatory analysis. It can be said to be quite similar to grounded theory; however, framework analysis differs in that it is better adapted to research that has specific questions and a limited time frame. This made the Framework Approach an optimum selection for this study as it enabled one to link together the different components of thematic analysis to identify and develop important features and design recommendations. Srivastava and Thomson (Srivastava and Thomson, 2009) highlighted that:

> It can be said to be quite similar to grounded theory; however, framework analysis differs in that it is better adapted to research that has specific questions and a limited time frame (p.73).

The Framework Approach is advantageous as it is used for the thematic analysis of semistructured interviews, the familiarisation of data, developing codes and reviewing themes (Braun and Clarke, 2006). It also allows linkage of different components of thematic analysis and associated patterns to identify and develop important features and design recommendations. The sequential structure of the methodology provides an effective guideline throughout the data analysis process. The Framework Approach is appropriate for thematic analysis of textual data, this was invaluable to this study as it enabled analysis to remain open, stay close to the data, keep codes simple and compare data. The also enabled identification of the criteria on how the focus groups differed from one another (Boeije, 2002).

Research Design

Focus groups were selected for practical reasons as participants were able to bring up the core issues that they deemed to be important and significant. This is an important consideration when conducting qualitative research, since the viewpoints of the participants are an important point of departure (Bryman, 2015). For some of our groups where we were only able to recruit one participant. In these cases as the input from those groups were considered important we conducted interviews using the same questions for consistency. In many fields where access to participants is difficult this procedure is standard, for example in design of healthcare interventions (MacLeod et al., 2016, McGee-Lennon et al., 2012).

Organisation	Acronym	Number of Participants
BBC Scotland	BBC	1
Public	Public	4
The Scottish Oral History Centre	SOHC	1
History Graduates	HG	4
The Scottish Fire and Rescue Service	SFRC	3

Table 1: Focus group participants.

Five sets of focus groups and interviews were conducted involving 1-4 participants each, details of the groups are in Table 1. There was a different rationale for each group. BBC and SOHC were considered experts who deal with oral history transcripts in a professional capacity. SFRS is an organisation who is exploring the creation of an oral history repository, but an organisation who has expertise in libraries and archives but not specifically oral histories. HG were assumed to be more knowledgeable than the general public with respect to this topic, but not as knowledgeable as the more professional organisations. The criteria for selection was based on the different uses and backgrounds; historians, researchers, graduates, organisations and members of the public all have different backgrounds and expertise. Our assumption was that a diverse range of stakeholders would provide a valuable set of results and enable comparison of findings from different groups. Therefore, the criteria used to select the focus groups was derived from both the literature and to ensure a wide range of user groups. For practical reasons all groups were located in Scotland. While this is a constraint, one of the aims of this research was to conduct an initial investigation to open up opportunities for further research. Thus this constraint was considered practical and appropriate for this study. Besides several studies of oral history use have been conducted in other countries e.g. U.S.A. (Passehl-Stoddart and Becker, 2015, Vos, 2007) and Australia (Thomson, 2016), these studies have findings that have universal application within the oral history domain, which we also believe our study has.

A semi-structured interview of general and domain specific questions were selected as the initial activity. The rationale was to pick up on general themes and interesting information that could not have been predicted in advanced. It is important to note that the domain specific questions did not differ greatly but were edited slightly with the stakeholders in mind to ensure a rich set of results. The general questions were:
- What is your current understanding of oral history and oral history technologies?
- What is your main interest in oral history?
- What would be your main use of an oral history archive?

The domain specific questions were dependent on prior knowledge and experience, the nature of the questions was not altered but wording changed wording in order to meet individual needs. For example the SOHC and the public similar were asked the following:
- What features would you consider fundamental to your organisation? (SOHC)
- What search features would you consider fundamental? (Public)

Focus groups also included second activity based on methods conducted in previous usability studies based on McGee-Lennon et al.'s work (McGee-Lennon et al., 2011) where they asked participants to "respond to research questions on 'sticky notes' and organise the design features and technologies into hierarchies of importance to them". A similar approach was whereby participants were presented with post-it notes as a stimulus material which allowed the participants to arrange visual representations of key terminologies related to the research. Key terminology included terms such as 'video', 'transcription', 'audio', 'automatic speech recognition', 'mobile devices' and 'indexing'. This prompted further discussion among the groups and allowed further ideas and developments to emerge.

Data Collection

Data was collected on a dictaphone. All focus groups and interviews were conducted in organisational premises and public places which included the SFRS Headquarters, Edinburgh Central Library and The University of Strathclyde Library. These locations were advantageous as they were reliable, neutral spaces. NVivo 8 was used to manage the transcriptions and implement the framework approach.

Analysis

Transcript analysis was based on the five step process outlined by Srivasta and Thomson (Srivastava and Thomson, 2009). Analysis began with a broad set of results from a range of

stakeholders from which keywords and terminologies were identified. Subsequently, this led to the development of categories and classifications to produce important features and design recommendations. By studying the transcripts and each study repeatedly, different possible meanings and how these fit in with developing themes was considered. Transcriptions were also read "horizontally" which involved grouping segments of text by theme. In order to provide a sequential and logical analysis, the remainder of this section has been divided into the four key themes that emerged from the data analysis.

Accessibility and engagement

Different methods of engagement and issues of accessibility were central to the discussion of designing an oral history search system. Tebeau (Tebeau, 2013) highlighted that "oral history is not just a textual experience but also an oral experience which the field of oral history should embrace" (p. 12). This study has touched upon Tebeau's recognition having identified that oral history is not just a textual experience and making oral history open and accessible is something that every current and future stakeholder should strive for. From data analysis was clear that 'audio', 'metadata', 'keywords', 'accessibility issues', 'transcripts' and 'visual engagement' were all considered to be important elements when designing an oral history search system. There was a debate within each group in relation to the specific features that were considered fundamental. Through observation and engagement across all of the user groups, it was indicated that if oral history is being searched or engaged with in an educational or research setting, then the transcript would be considered the focal point of engagement with each group identifying transcription as a fundamental feature. For example, The Public and the SFRS identified that if an individual was seeking to gain more context at the initial search stage, timed index codes and transcripts would be advantageous in comparison to audio and video. Therefore, textual support at the initial search stages was thought to be of considerable advantage. This is in line with previous studies conducted by Frisch and Lambert (Frisch and Lambert, 2012) and High et al. (High et al., 2012) who identified the advantages and downfalls of transcription but emphasised the overall importance of transcription in an oral history search system or archive. The various stakeholders successfully recognised the pitfalls of traditional methods but also identified the use of transcripts to be highly valuable for online search, accessibility and engagement. For example some of the key references from the respondents highlighted that:

"…Arguably, you lose quite a lot by just have the audio and you lose even more by just having the transcript itself. Again that depends on whether you are just looking at it for information or just looking it to see what it was like in the past. It just all depends on the audience I guess" (HG_4)

"…I think it depends on what you are going to use it for at the end of the day. If I am researching something, I will want a transcript to read at my own pace and print it out when I write about it. Whereas, if I am making it for someone else, I would want to have a video that I could play a clip or some sound that I could play to make it more interesting" (SOHC_P1)

The stakeholders discussed other methods of engagement and search for oral history including audio, video, keywords and metadata. Keywords and tags were considered to be 'user friendly' and make online platforms more searchable to users. The findings indicate that keywords support users in the discovery of specific information in a collection that they may not have found before. Participants from a number of groups including the public and public organisations stressed the importance of keywords and tags as a major benefit to accessibility and engagement. The ability to filter materials in different ways and to identify all possible information were attributed to search functions such as keywords and tags. A selection of examples presented below also conveys the importance of visual and audio engagement which is an area of development. Participants felt that visual and audio engagement is advantageous for engaging younger and wider audiences. Being able to visualise what an individual is saying plays a pivotal role in the engagement of different demographics. However, it was unanimous across all stakeholders that the transcript is the bedrock of oral history and archival collections. This can be supported through a selection of responses in regards transcripts, keywords, audio, and video below:

"…They have started to argue and talk about inter-subjectivity and performativity in oral history. This is where video is really useful. You can not only analyse what someone is saying but also their mannerisms. Arguably, you lose quite a lot by just have the audio and you lose even more by just having the transcript itself" (HG_P4)

"…I was trying to figure out how close these women worked next to each other. During the interview that is great and then I am transcribing it weeks later and I cannot remember if that was what that space was. I think even for little markers like that that is why video is good because you can see what someone is saying when they say "this big" or "her arm" (SOHC_P1)

"However, for us, we might actually want to start using our oral histories to connect with high schools students. We are not going to sit down with massive loads of paper and say read through that. If we send them one minute short videos or links on YouTube, they are more likely to access it because that is what they are comfortable with" (SFRS_P2)

The findings illustrated that there is an increasing shift towards visual and audio representation. However, emphasis was placed on the traditional methods of textual engagement during the initial stages of online searching. Gould and Gradowski (Gould and Gradowski, 2014) highlighted that "the internet is a way to harness some of that empathy and energy and propel students into rigorous academic research" (p.350). The participants of this study identified that video oral history can engage students and wider audiences into conducting personal and professional research which several stakeholders such as the SFRS and the public verified. This study has clarified Boyd's (Boyd, 2014) statement that "analog and textual models are still deeply ingrained and continue to shape the primary modes of oral history expression in the digital age" (p.68). With respect to accessibility and engagement some of the stakeholder responses are portrayed below:

"I think it has a lot with the public trying to see value in it. That's the point in doing things isn't it? You don't want to develop an extensive archive and then have no one look at it. It is key and it is the whole point that people do these kinds of things" (HG_P1).

"if you're going and speaking to people and recording their narratives and testimonies, those should be available to whoever wants them as long as the interviewee has given consent" (SOHC_P1).

"I think it also depends on what kind of learner you are. Some people prefer to learn things by reading and some people prefer listening" (P_P2).

The last key point to emerge from the findings is that there should be a greater awareness of varying literacy needs and disabilities when designing an oral history search system. Rakerd (Rakerd, 2013) offered a series of design recommendations for those with hearing, visual and language impairments and highlighted that "slowing the rate of speech has been shown to improve the accuracy of speech has been shown to markedly increase misunderstanding by non-native language users" (p.72). In addition, multilingual search terms have also been addressed by previous studies e.g. Vos (Vos, 2007) in her assessment of the Southern Oral History Program. As shown in the above examples it is evident that English as a second language, literacy issues and different learning needs were of central concern to a selection of the stakeholders as it was mentioned by the SFRS, HG and the public. Careful consideration and attention should be given to various abilities, multilingual search terms, literacy needs and visual impairments when selecting media platforms for an oral history search system or archive. Overall, the findings related to accessibility and engagement have established that:

- Transcription is fundamental and considered to be advantageous for the initial stages of searching and for finding detailed information.
- Audio and video are effective in the engagement of wider audiences and offer a more authentic and interactive experience.

- Keywords, tags and metadata are fundamental and highly useful for those conducting searches across collections.
- An oral history search system should be easy to access, free, and attempt to avoid bias towards a particular user group or institution.
- Different users, multilingual audiences and users with disabilities should be considered when designing an oral history search system and selecting specific technologies.

Ethics, Consent and Control

Recent technological developments have placed a significant strain on resources and pose a wide range of risks to the narrator and archive (Boyd and Larson, 2014). This study found that ethics, consent and control are of fundamental concern to a diverse range of stakeholders when designing an oral history search system. Irrespective of personal or organisational background different stakeholders discussed similar issues. For example, respondents stated:

"…You cannot just treat them as historical specimens. They are living people. Ethically, you have to make sure that they are fully of what you're doing and why you're doing it" (SOHC_P1)

"…If there was a particular incident where those involved did not agree with an operational command or outcome and provide a strong opinion, this might have legal repercussions for the organisation and portray the organisation in a negative light" (SFRS_P3)

There were concerns in relation to ethics and legal repercussions. The SFRS had several concerns that would affect individuals, families and the organisation as whole. For example, questions in regards to "how to adhere to a code of ethics without censoring?" and "Whether it is morally okay to share sensitive information?" This portrays that organisations have concerns in the sharing and provision of oral history collections. The SOHC expressed concern over the interviewees and HGs were largely concerned about the reliability of the materials and who was responsible for the sharing and policing of collections. This has further added to the importance of ethics within the profession and has highlighted that materials cannot be uploaded and shared in any way that is deemed fit by individuals or organisations.

There needs to be extensive care and sensitivity taken in the provision of materials when designing an oral history search system, as individuals and organisations do not have the clear authority to write and publish what they wish without the necessary measures in place. Both the HGs and the public expressed concerns over the monitoring and control of the information that can be searched. For example, who decides on what is available and how to categorise materials? Who is responsible for controlling and policing the use of collections and published materials? In terms of solutions that emerged from the stakeholders some participants expressed possible options and recommendations such as:

"…Would it not make more sense to make it like Wikipedia which is user generated? For example, you develop a base platform and then you can get people to use it. However, you have get a base of people willing to moderate it and put stuff on" (HG_P2).

"…I think a national depository would be great. I know that you have the Scottish Sound Library but again, are the engaging with the archive here, are the engaging with the project in Bathgate, the
Stirling projects and little projects where have happened down where I am from. How much are they saying what do you have, we want and we are going to archive it?" (SOHC_P1)

This study would recommend the development of a Creative Commons style framework or a move towards more local, organisational or national depositories which focus on laws and consent in relation to oral history collections. The findings have conveyed several fundamental features and considerations that need to be taken when designing an oral history search system or archive. At present, an effective strategy which was identified by Larson (Larson, 2013) is to "have detailed

support online that enables users to identify topics within collections and express interest in a specific interview while keeping interviews offline" (p.15). This study has supported previous research having discovered similar concerns, also it has been effective in the provision of a wider set of perspectives in regards to ethical concerns and limitations. As the internet and digital access expand, stakeholders are faced with significant challenges over the sharing, preservation and accessibility of materials covering a range of cultural topics and sensitive issues. Ultimately through qualitative analysis of the data collected in regards to ethics, consent and control our findings recommend:

- A move towards a local, organisational or national depository of materials.
- Develop a series of policies and copyright rules to attempt and implement a level of control and consistency.
- Ensure that the content that is made available treats the interviewees with respect and not as historical specimens.
- Assess the ethical and legal risks if dealing with sensitive materials when designing an oral history search system or archive.
- Allow access to certain materials or part of selected materials through request.

Publicity, interest and awareness

Findings indicated that publicity, interest and awareness are important features when designing and oral history search system. There was knowledge in regards to the definition of oral history and what oral history was, however, with regards to oral history search systems and archives there was a lack of knowledge irrespective of the group assessed. The public, HG, public bodies and perspective organisations possessed a lack of awareness of what technologies were on offer beyond platforms such as YouTube, Soundcloud, Google and library search based technologies. Participants identified various archives that they have used outside of an oral history domain in university and work. There appear to be a host of collections, materials and technologies available but there is not always widespread awareness of them. This is a major limitation but the findings also presented possible recommendations and solutions. In relation to understanding and knowledge some of the respondents stated:

"…It certainly feels to me that the technology is not very well publicised" (BBC_P1).

"…In terms of technology not really a great understanding of what's out there. I'm quite traditional when it comes to doing oral history. In terms of technology I use a taskcam zone, recorder, express scribe for transcribing and a foot pedal from transcribing. Other than that, I then just print out everything and work from paper" (SOHC_P1).

"…Make it free. I think it also needs to be promoted. For example, if it is the National Library of Scotland I would like to see it very prominently on their website or social media platforms. If they have gone to a lot of effort to do a massive archive" (HG_P3).

The study participants included archivists, historians, teachers and firefighters. The above examples have exemplified that professionals, archivists and members of the public had limited of knowledge of what is available. This could be attributed to a multitude of reasons but provides an insight into the lack of awareness of a diverse range of user groups. However, stakeholders placed emphasis on the importance of publicising an oral history search system or archive and offered some possible solutions and recommendations. Through the examples above it is evident that workshops, outreach activities, social media platforms and educational events could be used to publicise a particular search system or archive. Furthermore, stakeholders highlighted that online guides and video tutorials on how to use a search system or archive might be advantageous for those looking for guidance and support on how to conduct research and find specific materials within collections.

In terms of interest, stakeholders expressed that they used oral history technologies and materials for research, education, work, and personal use. This supports previous research in identifying that

oral history holds different meanings and purposes to different user groups. This also highlights the challenges associated with the implementation and development of a platform that can accommodate equal access and engagement for a multitude of users. For example:

"…I have always wanted to look into family history. I sometimes go to the Mitchell Library to look for my family history. I am interested in using search systems for materials like that" (P_P4).

"..Yes I think it's interesting and it would be nice to find things about real live people that are not written anywhere. People who have said things and you can find them and listen to them" (BBC_P1).

"I suppose that my main interest and area of research is working class history. In order to gain access to working class history, most of the time and the best way is to actually go and speak to people as they haven't archived or documented" (SOHC_P1).

The findings convey that when designing an oral history search system, attention should be given to the way in which materials are represented and marketed. In order to increase use, access and the sharing of materials beyond academic environments there needs to be marketing and guidance in place for users to be able to use a search system or archive. This could be in the form of educational activities or through online tutorials.

The findings have established that even though a multitude of technology exists and is available, there is not a widespread awareness of the technology among a variety of stakeholders in the public, private and wider spheres. Therefore, publicity, interest and awareness are fundamental features of an oral history search system. The findings have identified that:

- Current and perspective organisations should attempt to sustain and market what is available to use in order to promote and increase engagement levels.
- There appeared to be a broad set of interests such as using oral history for leisure, exploring historical events and conducting research.
- Developing platforms in order to share information with the public was considered fundamental.
- The interest of the stakeholders is broad but all of the stakeholders shared and stressed the importance of promoting preservation, engagement and access.

Innovative technologies and future opportunities

The findings of this study demonstrate that stakeholders recognised the increased possibilities of new technology in order to search and engage with materials in an oral history search system or archive. Emphasis was placed on the importance of 'usability' and 'user friendliness'. Each group discussed the issues surrounding automatic speech recognition and transcription, mobile devices and possibilities for the future. Oard (Oard, 2012) highlighted that research has shown that a 25% word error rate from ASR often does not reduce "search quality and that "if we think of ASR as a way of helping find an interview that we might want to listen to, then our experience shows that ASR works" (2012, p.5). However during the second activity of the data collection process it was observed that all of the stakeholders expressed concerns over the use of ASR and transcription in an online search environment. For example some respondents stated that:

"….I'd like it to be operational. For example, I would like it to be fast. I need to know that it is searching a large pool of content like google" (P_P3)

"…from an academic point of view often the value of studying oral history is that these are peoples' voices who often don't get written about in history. So their language is more likely to be nonstandard and therefore, much harder for technology to pick up on. I understand that this is something that is being worked on but it imposes an even greater technological barrier for voice recognition to recognise things like dialects or strong accents" (SOHC_P1)

"Yeah, and also when you have speech recognition there is always the problem that people have different accents and people don't recognised, it doesn't understand people and people get frustrated. For example, I have tried to use speech recognition on my phone and get very frustrated with it" (BBC_P1)

It was clear to say that ASR and transcription are seen to be valuable but there were serious concerns surrounding their reliability and accuracy across all of the stakeholders. Part of the value of studying oral history is that these are peoples' voices who often do not get written about in history. Therefore, language is more likely to be non-standard and harder for technology to pick up on. Another concern raised was that disadvantaged groups may not have the means to engage with collections and materials in particular ways. For example, recent studies such as the 'Community-Generated Media for the Next Billion' placed focus on issue of accessibility around the world and that access to collections, databases and technologies are not universal (Robinson et al., 2012). Moreover, within the UK context 5.9 million adults have never used the internet and 27% of disabled adults (3.3 million) have never used the internet (Society, 2016). The stakeholders expressed concerns in relation to access and technological developments. Furthermore, there was concern among the various stakeholders that a lot of technology has surpassed and developed at a rate that a portion of people do not have the means to use or do not know how to use. For example the SOHC expressed that if an organisational or professional body was able to develop automatic transcription that was accurate and reliable, this would greatly reduce the financial cost of transcription and human hours. However, issues of dialects, accents, language and accessibility were identified as potential weaknesses and downfalls. Moreover, public, HG and SOHC stakeholders established that podcasts, mobile devices and mobile applications have significant advantages when attempting to engage and involve younger audiences and wider demographics. For example:

"I think a mobile application would be massively useful. If you could just speak in and say "i want to know this" and hold it up to something like Shazam that would revolutionise what we do" (SOHC_P1)

"If there was something more easily accessible for maybe for younger people to access online or on an app would be more accessible to younger ones coming up that were maybe doing it for a school project rather than tracking down a particular book" (SFRS_P2)
.
"If you were trying to find something. For example, if you were trying to find a song from the 1900s and you have a small clip of it. You play the clip like in Shazam and it searches the database and tell you what the name of the song is and when it is from"(P_P4)

The above examples illustrate the vast opportunities that could be developed or considered when designing an oral history search system or archive. For example, there was an interest in the development of mobile applications and different mediums such as podcasts and use of speech recognition to find search for specific materials. The SFRS highlighted that mobile technologies might be more engaging for younger people to engage and search with for educational purposes instead of traditional technology. In addition, it was clear from the above examples that participants from the public, BBC and the SOHC all expressed that creating apps would enable quick and efficient searching which would be an advantageous opportunity for those designing an oral history search system. Three out of five groups expressed interest in mobile applications and there possible opportunities. Podcasts, music and video segments were all highlighted as important and possible features for future explorations when designing an oral history search system. Ultimately, an analysis of innovative technologies and future opportunities has highlighted the following important features when designing an oral history search system:

- Participants identified clear limitations in relation ASR and mobile technologies and the ability to recognise dialect and speech.
- Stakeholders did express the advantageous possibilities of innovative technologies such as a mobile app and podcasts but this raised concerns over 'accessibility', 'usability' and 'user friendliness'.

- Mobile devices are an innovate way to engage students and younger audiences in oral history materials as the smartphone and mobile applications play a pivotal role in everyday life

Discussion

This study has been successful in two key areas. First, it has validated previous research in relation to oral history search systems. Second, it has expanded on previous studies and offered a set of valuable design recommendations. The research extended beyond the realms of education to organisational bodies and members of the general public which makes this study original and valuable in its contributions. This study has demonstrated that technology has advanced rapidly in the last decade and the ability to design numerous search systems and techniques across multiple platforms exists. However, it has also identified that there is room for further exploration and work to be conducted in the field of study.

RQ1-What are the most important features that should be available in any oral history archiving and search system?

Through a diverse assessment of stakeholders this study has identified several important features that should be available in any oral history search system. Transcripts are considered to be valuable for research purposes and are supportive during the initial search stages. Keywords and metadata were considered to be fundamental with emphasis having been placed on tags, filtering, metadata and multilingual search terms. Moreover, consent policies, online guides, video segments, and mobile applications were of high importance among the participants. These are a selection of fundamental features that should be available in any system in order to increase engagement, address issues of accessibility, tackle legal and ethical concerns, and to appeal to a wider range of users.

RQ2- What are the current understandings of oral history and oral history technologies?

The current understanding of oral history and associated technologies were limited across all of the stakeholders. The various participants had an understanding of the importance of preservation, access and engagement of historical materials with some stakeholders such as the SOHC having an advanced understanding best practices in the field. However, in regards to oral history technologies and search systems there was limited knowledge and awareness across all of the participants involved. The majority of stakeholders used and were aware of platforms such as YouTube, Soundcloud, library databases and google style platforms for conducting online searches. However, there was limited publicity and awareness in relation to what is available.

RQ3- What are the different needs of numerous users and stakeholders?

There are a variety of different needs of numerous stakeholders. The majority of participants expressed that the use of a transcript was the best method for conducting research and searching oral history archives. The transcript was recommended for research purposes whilst audio and visual engagement were considered to be useful for engaging younger demographics and wider members of the public. The findings established that the performativity of video, the orality of audio and the ease of indexing over transcription should be given careful consideration when attempting to promote access. Critically, the various stakeholders highlighted that oral history needs to reach out to the wider public that it wishes to serve and should take more interactive platforms into consideration. Furthermore, literacy issues, multilingual audiences and those with visual impairments must be considered when designing an oral history search system or archive. Nevertheless, the results have effectively highlighted there a host of different needs amongst numerous stakeholders.

RQ4- What are the major opportunities for new media tools in the near future?

There was recognition among the stakeholders in both public organisations and the public sphere that the development of new modes of online searching and engagement could open up

engagement to a wide range of audiences. Stakeholders such as the SFRS, the public and the SOHC emphasised the importance of mobile technologies and applications as a tool to engage with younger audiences and wider demographics. However, this was also seen to be problematic as not all users have the means to access new and innovative technologies. Automatic speech recognition and transcription were seen to be valuable but all of the stakeholders assessed conveyed concern and limitations surrounding regarding accuracy and user friendliness. The findings confirmed findings by High (High et al., 2012), Boyd (Boyd, 2014) and Oard (Oard, 2012) that there are major opportunities for new media tools in the near future but there are major concerns over accessibility, accuracy and user friendliness.

Design Recommendations

The recommendations offered by this study come with significant challenges. However, irrespective of financial or other restrictions these are areas that should be considered by those seeking to design an oral history search system:

- Implement several platforms of engagement and ensure that consideration has been given to how different user groups such as researchers, the public, younger audiences and those with additional needs will be able to navigate the search system or archive.
- Publicise the technology and collections that are provided through workshops, online guides, tutorials, institutional partnerships and outreach activities to promote wider engagement. This could be in the form of school visits, university workshops and community outreach programmes.
- Develop clear ethical and consent policies in order to ensure the protection of interviewees and organisations. Organisations should also strive to create central repositories of materials which can be controlled and managed effectively in order to monitor and share materials, this could include as an example providing global access to information, limited access to portions options to limit access for selected periods of time etc.
- Develop mobile applications, podcasts and video segments for the search system in order to increase engagement and appeal to a wider demographic.
- Make keyword searches, tags and metadata a priority to ensure that users from different backgrounds can find specific information or terms that they are looking for within collections.

Conclusion

Overall, this study has conducted effective qualitative research with a diverse range of stakeholders to determine the most important features that should be available in any oral history search system. This study has been successful in the identification of important features and has offered a set of design recommendations. It has also established areas for future research for those interested in conducting further analysis of designing an oral history search system. This research has been particular successful in two fundamental areas. It has been effective in building and validating previous findings in relation to the discussion surrounding 'accessibility and engagement', 'ethical and legal considerations', 'public, interest and awareness' and 'innovative technologies and future opportunities' from a U.K based perspective. It has also opened up exploration for future research in several key areas such as usability, software development and marketing. Ultimately, the potential audience will continue to grow to the seven billion living in the networked planet (Cohen, 2013). Therefore, it is appropriate to conclude by quoting Gluck (Gluck et al., 1999) who stated that the "human element will always remain fundamental to the field" which this research has effectively illuminated (p.25).

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