**Crowdsourcing for Heritage: The Changing Role of the UK Heritage Sector**

**Krista Ann Godfrey**

**Royal Holloway, University of London**

**Submitted for the degree of PhD**

**Declaration of Authorship**

I, Krista Ann Godfrey, hereby declare that this thesis and the work presented in it is entirely my own. Where I have consulted the work of others, this is always clearly stated.

Signed: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Abstract

This research is an interpretive, comparative case study comprising of three UK Armed Forces museums. It explores the engagement and knowledge sharing capabilities between museum personnel and members of the public over social media, specifically illustrating the evolving understanding of crowdsourcing as perceived by museum participants. Analysis of semi-structured interviews was undertaken using Grounded Theory Methodology (Glaser & Strauss 1967).

Substantive empirical research has been undertaken on the crowdsourcing phenomenon primarily focusing on the motivations of businesses to engage in crowdsourcing and similarly, why the crowd themselves become involved. I would argue that there is a gap in extant literature that illustrates there is little understanding of the impact of crowdsourcing from the perspective of those within a heritage organisation. In particular, how museum personnel are developing their involvement with the collaborative platforms afforded by social media, and whether such involvement requires them to assume a different model of working.

Employing the conceptual framework of Networks of Practice (Brown & Duguid 1998) to gain insight into how museum personnel employ, instigate, and respond to the activity of crowdsourcing as a means of social media interaction and engagement with the public, my thesis attempts to enhance and extend current interpretations of electronic networks of practice from the perspective of those heritage stakeholders who perceive crowdsourcing as a means of developing communities of interest around their organisations. Understanding the way in which public engagement has developed through contemporary uses of social media, will allow heritage management to better recognise the challenges involved with protecting and promoting their collections, along with enabling heritage stakeholders to benefit from the experience of others within their field in proactively engaging the public.

My findings illustrate that a new form of network has emerged in the museum context: a network of crowd.

# Table of Contents

[Abstract 3](#_Toc469562887)

[Table of Contents 4](#_Toc469562888)

[List of Figures 8](#_Toc469562889)

[List of Tables 9](#_Toc469562890)

[Acknowledgements 10](#_Toc469562891)

[Chapter 1. Introduction 11](#_Toc469562892)

[1.2 The research setting 11](#_Toc469562893)

[1.3 Research methodology 12](#_Toc469562894)

[1.4 Heritage definitions and debates 13](#_Toc469562895)

[1.5 Research focus 19](#_Toc469562896)

[1.3 The research gap and the research question 21](#_Toc469562897)

[1.4 Thesis outline 22](#_Toc469562898)

[1.5 Summary 24](#_Toc469562899)

[Chapter 2. Literature Review 25](#_Toc469562900)

[2.1 Introduction 25](#_Toc469562901)

[2.2 Evolving Technology 26](#_Toc469562902)

[2.3 Collaboration 28](#_Toc469562903)

[2.4 Crowdsourcing 31](#_Toc469562904)

[2.4.1 Crowdsourcing Adoption in heritage organisations 47](#_Toc469562905)

[2.4.1.1 Loss of Control 48](#_Toc469562906)

[2.4.1.2 Trust 50](#_Toc469562907)

[2.4.1.3 Quality of Ideas 53](#_Toc469562908)

[2.4.1.4 Managing Submissions 54](#_Toc469562909)

[2.4.1.5 Incentive Mechanisms 55](#_Toc469562910)

[2.5 Engaging the Crowd in Curation 58](#_Toc469562911)

[2.6 Knowledge Transfer 68](#_Toc469562912)

[2.6.1 Tacit Knowledge and Explicit Knowledge 68](#_Toc469562913)

[2.6.2 Knowledge Management 72](#_Toc469562914)

[2.6.3 Knowledge Communities 74](#_Toc469562915)

[2.7 Community of Practice 79](#_Toc469562916)

[2.8 Networks of Practice 82](#_Toc469562917)

[2.9 Social Networks and Heritage: Blending the Virtual and Physical 85](#_Toc469562918)

[2.10 Summary 91](#_Toc469562919)

[Chapter 3. Methodology - Literature 95](#_Toc469562920)

[3.1 Chapter Overview 95](#_Toc469562921)

[3.2 Introduction 95](#_Toc469562922)

[3.3 Research Approaches 96](#_Toc469562923)

[3.3.1 The Qualitative versus Quantitative Debate 99](#_Toc469562924)

[3.3.2 Mixed Method Approach 104](#_Toc469562925)

[3.3.3 Qualitative Research Approaches 105](#_Toc469562926)

[3.3.3.1 Critical/Advocacy/Participatory Research 107](#_Toc469562927)

[3.3.3.2 Positivist Research 109](#_Toc469562928)

[3.3.3.3 Post-Positivism 111](#_Toc469562929)

[3.3.3.4 Pragmatic Research 112](#_Toc469562930)

[3.3.3.5 Interpretive/Constructivist/Social Constructivist Research 114](#_Toc469562931)

[3.3.4 The Interpretive Approach in Detail 115](#_Toc469562932)

[3.3.5 Summary of Research Approaches 117](#_Toc469562933)

[3.4 Case Studies 118](#_Toc469562934)

[3.5 Instrumentation 121](#_Toc469562935)

[3.5.1 Participant Interviews 121](#_Toc469562936)

[3.5.2 Documentation 127](#_Toc469562937)

[3.6 Ethical Considerations 127](#_Toc469562938)

[3.7 Privacy and Informed Consent 130](#_Toc469562939)

[3.8 Confidentiality 131](#_Toc469562940)

[3.9 Appropriation of Other People’s Personal Accounts 132](#_Toc469562941)

[3.10 Validity 132](#_Toc469562942)

[3.10.1 Research Credibility (Internal Validity) 133](#_Toc469562943)

[3.10.2 Transferability (External Validity) 139](#_Toc469562944)

[3.10.3 Implications for the researcher 140](#_Toc469562945)

[3.11 Summary 141](#_Toc469562946)

[Chapter 4. Methodology – Research Process 143](#_Toc469562947)

[4.1 Chapter Overview 143](#_Toc469562948)

[4.2. Introduction 143](#_Toc469562949)

[4.3 Pilot Study 144](#_Toc469562950)

[4.4 The Primary Organisations 147](#_Toc469562951)

[4.5 Method of Analysis 156](#_Toc469562952)

[4.5.1 Grounded Theory Method 157](#_Toc469562953)

[4.5.1.1 Sensitising Concepts 166](#_Toc469562954)

[4.5.1.2 Grounded Theory Variations 168](#_Toc469562955)

[4.5.1.3 Rationale for Grounded Theory Method Adoption 168](#_Toc469562956)

[4.5.1.4 Study Process using Grounded Theory Method 172](#_Toc469562957)

[4.5.1.5 Coding Procedure 172](#_Toc469562958)

[4.6 The Coding Process 175](#_Toc469562959)

[4.6.1 Coding - Open and Selective 177](#_Toc469562960)

[4.6.2 Coding - Theoretical 181](#_Toc469562961)

[4.7 Summary 186](#_Toc469562962)

[Chapter 5. Cross-Case Findings 188](#_Toc469562963)

[5.1 Chapter Overview 188](#_Toc469562964)

[5.2 Large museum (M1) 188](#_Toc469562965)

[5.3 Medium museum (M2) 197](#_Toc469562966)

[5.4 Small museum (M3) 200](#_Toc469562967)

[5.5 Cross-case comparison 203](#_Toc469562968)

[5.5 Summary 206](#_Toc469562969)

[Chapter 6. Findings 208](#_Toc469562970)

[6.1 Chapter Overview 208](#_Toc469562971)

[6.2 Evolving engagement with the public 208](#_Toc469562972)

[6.3 Crowdsourcing in the museum 210](#_Toc469562973)

[6.4 Building a museum community 215](#_Toc469562974)

[6.5 Inter-departmental collaboration within museums 229](#_Toc469562975)

[6.6 Museum networks of crowd 231](#_Toc469562976)

[6.7 The evolving museum 236](#_Toc469562977)

[6.8 Overview of findings 240](#_Toc469562978)

[6.9 Summary 242](#_Toc469562979)

[Chapter 7. Discussion 244](#_Toc469562980)

[7.1 Chapter Overview 244](#_Toc469562981)

[7.2 Social media engagement and the museum 244](#_Toc469562982)

[7.3 Communities of practice within museums 246](#_Toc469562983)

[7.4 Engaging a global public community and promoting an interest 250](#_Toc469562984)

[7.5 Networks of crowd 251](#_Toc469562985)

[7.5.1 Sharing knowledge 257](#_Toc469562986)

[7.5.2 The public taking action 259](#_Toc469562987)

[7.5.3 Sense of urgency 261](#_Toc469562988)

[7.5.4 Fragmented awareness 262](#_Toc469562989)

[7.5.5 Knowledge broker 263](#_Toc469562990)

[7.5.6 Knowledge portal 264](#_Toc469562991)

[7.6 Contributions of the study 268](#_Toc469562992)

[7.7 Summary 271](#_Toc469562993)

[Chapter 8. Conclusion 273](#_Toc469562994)

[8.1 Chapter Overview 273](#_Toc469562995)

[8.2 Summary of findings 273](#_Toc469562996)

[8.3 Contribution to knowledge 274](#_Toc469562997)

[8.4 Observations 276](#_Toc469562998)

[8.5 Limitations of research 277](#_Toc469562999)

[8.6 Further research 278](#_Toc469563000)

[8.7 Personal reflections 279](#_Toc469563001)

[References 280](#_Toc469563002)

[Appendix A - Letter of introduction 332](#_Toc469563003)

[Appendix B - Consent form 333](#_Toc469563004)

[Appendix C - Royal Holloway Simplified Ethical Approval Form 335](#_Toc469563005)

[Appendix D - Interview question prompts 337](#_Toc469563006)

[Appendix E - Transcript example (anonymous) 338](#_Toc469563007)

[Appendix F - Open coding example 339](#_Toc469563008)

# List of Figures

[Figure 1 Theoretical Foundations 37](#_Toc469563009)

[Figure 2 Crowdsourcing vs. Opensourcing 42](#_Toc469563010)

[Figure 3 Crowdsourcing Absorption Capabilities 55](#_Toc469563011)

[Figure 4 Operation War Diary page with tagging 66](#_Toc469563012)

[Figure 5 Two main axes of relevant traditions 80](#_Toc469563013)

[Figure 6 Museums and the Internet 87](#_Toc469563014)

[Figure 7 A Framework for Design - The Interconnection of Worldviews, Strategies of Inquiry, and Research Methods 97](#_Toc469563015)

[Figure 8 The Inductive Logic of Research in Qualitative Study 103](#_Toc469563016)

[Figure 9 Adapted from the Expanded Lehmann's Research Model (2004) 175](#_Toc469563017)

[Figure 10 Relating Selective Codes 183](#_Toc469563018)

[Figure 11 Illustration of a Structural Hole 265](#_Toc469563019)

# List of Tables

[Table 1 Crowdsourcing Definitions 39](#_Toc469563020)

[Table 2 Motivation Classes 42](#_Toc469563021)

[Table 3 Crowdcuration Summary Table 59](#_Toc469563022)

[Table 4 Philosophical Worldviews by Author 107](#_Toc469563023)

[Table 5 Heritage Organisation Study Population 147](#_Toc469563024)

[Table 6 Research Sample - Unique Participants 153](#_Toc469563025)

[Table 7 Advantages and Disadvantages of Grounded Theory 162](#_Toc469563026)

[Table 8 Open and Possible Selective Coding 179](#_Toc469563027)

[Table 9 Category Refinement 184](#_Toc469563028)

[Table 10 Museum 1 Crowdsourcing Overview 189](#_Toc469563029)

[Table 11 Museum 2 Crowdsourcing Overview 198](#_Toc469563030)

[Table 12 Museum 3 Crowdsourcing Overview 201](#_Toc469563031)

[Table 13 Museum Crowdsourcing Comparison 203](#_Toc469563032)

[Table 14 Comparison between an emergent Network of Crowd and a Network of Practice 267](#_Toc469563033)

# Acknowledgements

I would like to thank all the academics at Royal Holloway School of Management who have provided invaluable feedback on my research as it has evolved year on year.

I particularly want to thank Dr Simon Foley for acting as my supervisor, guiding me clearly through the academic research process. For also allowing me to indulge in wandering down dead ends and going off on tangents, then spending many hours talking to me about my research and findings and helping me stay on track.

I also would like to thank Professor Suprateek Sarker for acting as my first advisor, providing guidance and a differing perspective on my study in order to advance my thinking.

Huge thanks must go to Professor Niki Panteli for stepping in to act as my advisor during my final year, spending many hours talking to me over Skype and helping guide my thought processes in the final stages of writing up my thesis. She has been my rock over the last few months of writing up due to the illness of my supervisor. I also want to thank her for giving me the nudge needed to submit papers to conferences in order to expand my academic network and present my findings to a new audience.

Finally, I would like to thank my husband for his unwavering support, working hard so that I didn't have to and could concentrate on achieving my dream of doing this research. Also to my three daughters for their patience and understanding when I was rooted to my laptop at all times of day, when all they really wanted was for me to be out playing in the garden with them. I love you all. I could not have done this without you!

Finally, I would like to thank all the museum personnel who were so kind and generous with giving me their time and viewpoints in order to make this research happen.

# Chapter 1. Introduction

“*The important thing is not to stop questioning*.”

Albert Einstein

Heritage organisations, such as museums and galleries, are under increasing pressure to utilise collaborative technologies to engage with the public. Technologies using Web 2.0 features can enhance both the understanding and sharing of knowledge between the public and the organisation. The notion of sharing encapsulates not only specific knowledge but also life experiences, emotions, opinions and differing perspectives. This collaborative manner of capturing knowledge is commonly referred to as crowdsourcing. Howe (2008, p.8) introduced the term “crowdsourcing” to conceptualise the Web-based out-sourcing phenomena which has become prevalent since the increase in more powerful computer technology and the emergence of tools such as social media. To clarify further, crowdsourcing is a method for organisations to capture the “wisdom of crowds” (Surowiecki 2005, p.xiv) - individuals most commonly connected online - and harnessing their collective intelligence to solve issues or elicit responses to problems or large-scale tasks. However, crowdsourcing is not only related to projects with specific outcomes, it is an “umbrella term” (Howe 2008, p.280) to encompass any number of activities that rely on the crowd, or public, providing some form of engagement and involvement.

## 1.2 The research setting

My research focuses on the impact of knowledge transfer between museum participants such as curators, historians and digital media personnel, and the public, through existing social media technologies. The study was conducted by undertaking semi-structured interviews with museum personnel from three different sized Armed Forces museums situated in the UK. Two were located in London and the third on the South Coast of England.

## 1.3 Research methodology

With the variety of social media currently available to heritage organisations, and the different methods of interaction and evaluating data from each, my aim was to investigate how social media are being utilised, and the impact on internal museum stakeholders involved in such collaborative projects. Using the conceptual framework of networks of practice (Brown & Duguid 2000), this study seeks to understand how such electronic networks have expanded to produce knowledge through both direct and indirect interactions between the parties. I selected a case study approach which allows for a holistic account of interactions between heritage stakeholders and the public, and provides a deeper understanding of how those roles might have evolved through the intervention of Web 2.0 technologies and the affordances offered by current social media.

The museums were selected as they met the academic criteria for my research focus, and also they were already known to me as a researcher through personal experience. From all three museums, thirty-one semi-structured interviews were recorded and transcribed over an eighteen-month period. Transcripts were then coded using grounded theory methodology (Glaser & Strauss 1967).

I began my research by reviewing extant literature around the development of social media and the crowdsourcing phenomena, to understand how or if they are connected. I also sought to understand the impact that crowdsourcing through social media has on collaboration and knowledge transfer surrounding museums. Finally, Howe (2008, p.280) himself acknowledged that "crowdsourcing isn't a single strategy. It's an umbrella term for a highly varied group of approaches that share one obvious attribute in common: they all depend on some contribution from the crowd". Through this research, I sought to understand what crowdsourcing means from the perspective of those museum participants engaged with this study. Do they consider it to be dedicated projects asking for help on specific tasks, such as transcription, or is it now deemed to encompass everyday interactions with the public over social media?

Prior to examining extant literature, in the first instance it is important that I gain an understanding of the concept of heritage. I present a view to illustrate how heritage and history differ, the impact heritage has on our culture, and its effect on those individuals that engage with cultural institutions.

## 1.4 Heritage definitions and debates

To understand how heritage organisations utilise social media technologies, I must first understand what heritage actually means and why it is of value to so many cultures. In its traditional sense, heritage is a form of inheritance, passed down through the generations (Nuryanti 1996) which encompasses the protection of archaeological sites and architecture. However, in 2003 UNESCO expanded its definition and stated

*Cultural heritage does not end at monuments and collections of objects. It also includes traditions or living expressions inherited from our ancestors and passed on to our descendants, such as oral traditions, performing arts, social arts, social practices, rituals, festive events, knowledge and practices concerning nature and the universe or the knowledge and skills to produce traditional crafts* (UNESCO 2003).

A further definition of heritage could be viewed as “everything that people want to save, from clean air to morris dancing” (Howard 2003, p.1). Heritage is therefore not simply buildings and monuments but can be extended to describe cultural elements such as philosophy, art and life events (coronations, wars, influential people and even atrocities), as well as natural elements including caves, deserts and botanical gardens.

The impact of heritage in action, that is new heritage being recognised, is often illustrated on the Internet or in newspapers; the conservation of an area of wetland, a new Site of Special Scientific Interest, a campaign to preserve a former public house that was a prominent live music venue from demolition; the list is almost endless. In fact, “heritage is not rare” (Howard 2003, p.193). While often used interchangeably, heritage conservation and preservation are two distinct areas:

*Preservation is meant to protect and/or retard the natural disintegrative properties of artifacts, and the act of conservation is intended to stabilize and restore artifacts in so far as that is possible* (Freeman 2013, p.31).

But why is heritage so important? Heritage protects our history in the many forms that takes, from plant species and monuments, through to living traditions and customs. For example, museums in particular have collections that range from electronic media through to artwork and artefacts. Documents fade or become fragile to handle, paint becomes brittle, technologies obsolesce and recordings degrade. Becoming “active preservers of (often vanishing) cultures, not just passive collectors of cultural artifacts” (Hein 1998, p.11) ensures that cultural components that are becoming scarce are collected or acknowledged. Capturing the flavour of a region through commemorations, festivals, and local historical events (Falk & Sheppard 2006) are something that heritage organisations are commonly involved with. Without ensuring the preservation and conservation of such items, part of history is lost. Consequently, organisations have emerged to carefully catalogue and handle heritage artefacts. They range from museums and galleries through to historic building trusts and national parks. Howard (2003, p.19) adds to the argument for the importance of heritage when stating “many of the objects and the ideas with which it deals come from the past, but heritage issues are always about what we do with them now.” Howes (2007) identifies museums as accumulators and evaluators of facts, whether they are cultural, historical or scientific. Retaining objects and data that form part of our history therefore becomes our heritage.

Although the terms heritage and history are often interchanged and the lines between them blurred, they have quite different interpretations. As we have seen, heritage is effectively inheritance (Nuryanti 1996; Howard 2003) whereas history is “a corpus of ascertained facts. The facts are available to the historian in documents, inscriptions, and so on” (Carr 1990, p.6) and as such are duly interpreted by the historian, most usually in chronological order. Swain (1923) argued that to accept any event as being historical required careful scrutiny of the original sources. However, the definition of history very much depends upon who the audience is (Kitchens et al. 2002). The concept of history is very much in the mind of the person to whom it is being related. We may consider the Wars at the beginning of the 20th Century as historical and yet our grandparents may view them as no more than a rather daunting part of their childhood. Often we refer to an historical building or historical monument but it can be seen that these objects can often form part of our heritage, thus further demonstrating that the “distinction between heritage and history is that a very considerable number of heritage items are of little or no interest to historians” (Howard 2003, p.21). Graham (2002, p.1003) suggests that "heritage itself is conceptualised as the meanings attached in the present to the past and is regarded as a knowledge defined within social, political and cultural contexts."

While it can be understood that heritage is often considered as something that needs saving, Howard (2003, p.4) acknowledges that “heritage benefits someone, and usually disadvantages someone else”, illustrating that not all heritage is positive. Howard’s theory is supported by Gamboni (2011) who states that “claiming for certain objects a special attention and protection has the simultaneous and sometimes more real effect of abandoning other objects to environmental, economic, or political hazards. This character can be minimized, but it is inevitable to the extent that preservation and destruction are two sides of the same coin.” Viewing preservation and destruction simultaneously, heritage organisations need to make the decision as to when to intervene. This alone is a complex issue taking into account many factors and thus beyond the scope of this thesis, but it does raise the question of whether only positive heritage (that which evokes joyful reactions from the audience) be saved?

Negative heritage must also be incorporated for us to have a fully rounded view. Howard (2003) illustrates that not all heritage is ‘enjoyable’ and qualifies this by providing the example of the World Heritage Site, Auschwitz. It would be hard to consider that as ‘good’ or ‘pleasant’ heritage but it certainly is a location that people seem not to want to forget for a variety of reasons. Survivors of the Holocaust are rapidly disappearing so collecting and preserving memories and documents is becoming more imperative. Auschwitz and similar Holocaust monuments could be portrayed as negative heritage. “Negative heritage is defined as sites that may be interpreted by a group as commemorating conflict, trauma and disaster” (Rico 2008). Auschwitz is a form of ‘memorial museum’, one that is “dedicated to historic events commemorating mass suffering of some kind” (Williams 2007, p.8) and is, it seems, a category that is on the increase. Not everybody is in favour of such memorial museums or trauma sites. “Trauma sites exist factually as material testimonies of the violence and horror that took place there” (Violi 2012, p.37). Ground Zero in New York is another prominent example of negative heritage where soon after the act of terrorism there emerged both a public and political need for the site to be ‘memorialised’ in some way. Meskell (2002, p.560) felt “there is something inherently disturbing about the incipient musealization of Ground Zero.” It is easy then to see how Tunbridge and Ashworth (1996) conclude that all heritage is dissonant and subject to various arguments. This can be seen in the reinterpretation of displays and collections through changes in modern society, which have meant that many aspects of heritage have been broadened to take on differing views, examples being the representation of the Enola Gay, the aircraft that dropped the first atomic bomb on Hiroshima at the Smithsonian Air and Space Museum, and an exhibition on the slave trade at the Liverpool Museum illustrating the growth of the city (Hein 1998).

Heritage, whether positive or negative, is also about education. In 1998, the Council of Europe issued a Recommendation (Anon 1998) to Member States for a more interdisciplinary attitude towards heritage education, including such objectives as heritage education adoption in schools and universities incorporating the participation of appropriate professionals in the heritage arena, and training for heritage professionals in dealing with young visitors. Howard (2003, p.18) supports this stating that all ages can engage with heritage education and elaborates that heritage “at sites and museums everywhere, is a vital ingredient in the modern favourite, lifelong learning.” In essence, much of what the visitor absorbs during a physical or virtual journey to a heritage site could be considered as an informal learning activity. Livingston (1999, p.4) described informal learning as “any activity involving the pursuit of understanding, knowledge or skill which occurs outside the curricula of institutions providing educational programs, courses or workshops.”

Lalage Brown, Chair of the Scottish Museums Council positions that “it is hard to imagine anyone visiting a museum for more than a few minutes without learning something new, whatever their age and whatever their formal educational background” (Mitchell 1996). Previously seen as the realm of the academic elite, museums and galleries have reached out to the masses ensuring that anyone can continue to explore, be captivated and learn. Russo et al. (2009, p.161) consider that “informal learning environments such as museums are well-positioned to draw young people into their cultural collections by designing interactive experiences which take advantage of the opportunities of social media while introducing them to curatorial knowledge.” However, Hein (1998) feels that despite all the positive attitudes to such erudition our general knowledge about learning within heritage environments is surprisingly deficient. This is an area that is still being acknowledged as lacking substantive theory and cohesive frameworks.

The Internet and its associated technologies have allowed individuals to find new and unique opportunities for informal learning through museum interaction (Sarraf 1999). Michael Cassin, Head of Education at the National Galleries of Scotland commented that “Education in museums and galleries can involve imparting facts, figures and information...[*but more importantly*] the potential all gallery and museum collections have for exciting the capacity for wonder” (Mitchell 1996, p.80). Heritage is education. Whether we are actively and consciously educating ourselves or whether it is a subconscious act through our interaction with objects and locations, the opportunities to continue learning are vast.

Howard (2003) asserts that heritage is about people ranging in competence from owners of artefacts to governments or local communities conserving something they care about. It can be suggested then that “the nature of culture is to be dynamic and ever changing” (Cuno 2012, p.28). As we evolve, our culture evolves with us and new components will be deemed to become part of our heritage. Howard (2003, p.122) recognises that some heritage attracts a specific type of person – the tourist – but this is not the reason for heritage itself and he goes on to support this by stating “no-one supposes that if tourists stopped visiting the Tower of London we would demolish it.” Heritage was not created for tourists. The origins of heritage lay with cultural or spiritual needs, diversifying out to the slightly less tenable area of financial gain or status in owning particular objects.

In summary, the literature illustrates that heritage is about the preservation and promotion of culture, be that tangible or intangible in nature. It can be argued that heritage is also primarily about people, as purveyors or visitors of heritage, along with their on-going education from the variety of combined facets that make up the past.

Heritage is also about communicating to the audience. Whether this is in person or through the use of technology, it is an essential element to consider in developing understanding, awareness, and education. Successful heritage management depends upon good public communications and relations (Howard 2003). The expectations of the information aware museum audience, whether physical or virtual, are now higher and thus the institutions themselves need to consider their target market, along with the very interpretation of heritage (Marty 2007b; Kunda & Anderson-Wilk 2011; Moura et al. 2012). This raises the question of how museums communicate with their audience for collaboration and social learning in physical, online and mobile spaces (Kelly 2013; Kidd 2011; Hargrave & Mistry 2013; Grinter et al. 2002; Russo et al. 2008).

How to tap into the talent of the amateur and utilise the potential knowledge pool outside of their organisation, is a challenge that heritage organisations are beginning to recognise, opening up new collaborative approaches. The use of emergent tools such as Web 2.0 and social media, have aided heritage organisations to begin the communication process and engage in collaborations with their audience.

## 1.5 Research focus

With my research focused on UK Armed Forces museums in particular, it was important to understand how museums, and their communication with the public, evolved. Early museums were no more than private collections held by wealthy individuals or families, with little public access available to view the artefacts. This changed when the first national museum was opened to the public in 1753. The British Museum was formed from objects collected over the lifetime of Sir Hans Sloane. Upon his death, the items were bequeathed to King George II for the nation, in return for a £20,000 payment to his heirs (Anon n.d.). During the 19th Century, visitor interest in museums increased and further appeal was generated through hosting lectures and offering guides. More museums began to open throughout the world during the remainder of the 19th and 20th Centuries.

Prior to the invention of the Web, heritage institutions such as museums would advertise their exhibitions and collections to the public through bill boards and other signage, most usually placed around their locality. With the invention of the World Wide Web in 1991 by Tim Berners-Lee, the way in which heritage institutions would disseminate information was about to change. It wasn’t until the mid-1990’s that websites began to appear for a variety of organisations, but these sites offered one-way communication between the organisation and its audience. Only static data was available to the viewer. Although interactive media existed within museums prior to the launch of the Web, the advent of Web 2.0 (O’Reilly 2005) technologies lead to new, two-way interactions forming. The way in which museums and galleries began to communicate with their audience evolved to a more mutual, interactive style.

Espousing this new collaborative Web has meant a change in museum operations with emergent technologies challenging even the most basic assumptions surrounding museums – those of audience, collections and missions (Thomas 2007). Din & Hecht (2007, pp.11–12) state that “with the introduction of technology into the museum, staff at every level and department confront new challenges” and continue to suggest that having examined job postings for a variety of museum roles, significant changes to traditional positions are required “for an assortment of competencies related to technology”. The dilemma is how museum personnel are coping with the changing demands on their time and experience initiated by the growing phenomenon of crowdsourcing.

Embracing changing social media technologies, and developing co-curation opportunities, is something that non-technologist roles may be struggling to adapt to. Traditional museum positions - such as that of curator - may find engaging in collaborations with the public over social media a daunting task, fearing that their authority may be disputed, and ultimately facing the deprofessionalisation of their position. Conversely, they may enjoy the challenge of discussing object origins and having existing understandings questioned, or exploring the personal stories behind artefacts. However, McLean (2011, p.70) argues that whilst museums wish to elicit visitor interactions "they mostly preserve the usual novice-expert construct: the museum pushes content toward the visitor, and the visitor reacts". My research aims to understand how the relationship between museum stakeholders and their public is developing and whether this is evolving into a more mutually beneficial proposition.

New roles of Social Media Manager or Digital Media Coordinator often provide a level between the public and the curator, but what happens when only curatorial knowledge is required and digital personnel do not know the answers or, indeed, even understand the question? Does balancing the intrinsic knowledge of the curator with the accumulated general insight of the crowd (the public/audience) require a different perspective to be given to internal heritage roles? These dilemmas led me to investigate the impact and challenges arising from crowdsourcing through examination of research designs, extant literature, theoretical overviews and methodology, ultimately selecting the most effective and appropriate for my study.

## 1.3 The research gap and the research question

Having reviewed extant literature and existing theories, the impact on internal heritage stakeholders of engaging with the public through online platforms such as social media appears not to have been significantly researched. This provides a gap in understanding. My focus on UK Armed Forces museums allows an insight into the sharing of contemporary historical events to be explored. As such, I focused on the perspective of museum stakeholders and their engagement with the public to extend knowledge through the use of social media tools. I investigated the perceptions of public engagement from the viewpoint of cultural heritage personnel, as their collaborations and interactions with their audience develop.

The study of the use, and definition, of crowdsourcing by those internal museum participants, will contribute to the understanding of how heritage professionals are leveraging existing collaborations and developing communities of interest with heritage audiences over periods of time. The formation of these knowledge exchanges, or networks of practice (Brown & Duguid 2000), centre around the notion that significant levels of knowledge can be exchanged over social media. This extends current understanding of the impact of electronic networks of practice (Wasko et al. 2009) in the engagement and sharing of knowledge between parties, and ultimately illustrates that a new form of network has evolved within the museum context: the network of crowd. The main research question was therefore formed from the gap in existing literature and understanding:

*What theories emerge when heritage professionals engage with crowdsourcing in order to protect, preserve and promote National heritage?*

This primary question encompasses a number of sub-layers. The suggestion that crowdsourcing is indeed changing the role of internal heritage stakeholders is examined from the perspective of:

* Changes to traditional museum roles,
* Understanding the definition and impact of crowdsourcing from the perspective of those personnel within a heritage organisation,
* Investigating the manner in which knowledge is managed and transferred through a network of crowd surrounding the study organisations, and finally,
* The extent that social media technologies driven by the crowd, permit knowledge transfer initiatives to take place.

My unique contribution to knowledge has emerged through enhancing and extending the understanding of electronic networks, through the nascent network of crowd. The contribution focuses on the perspective of those heritage personnel who perceive crowdsourcing as a means of everyday collaborations and developing a form of interest community around their organisations. The development of such communities appears to lead to increased knowledge exchanges that are open and non-project specific.

## 1.4 Thesis outline

This section provides an overview of the structure of my thesis, by chapter, providing detail on each specific one.

**Chapter 1**: presents an overview of the research and discusses the importance of the preservation and promotion of heritage.

**Chapter 2**: provides a literature review. The chapter begins by presenting an overview of collaboration and crowdsourcing. Particular attention is given to classification of, and theories around, the crowdsourcing phenomena. It provides a view of challenges that heritage organisations must overcome to successfully collaborate with the public. It discusses the variety of crowdsourcing initiatives including crowd-curation. It also provides an overview of the meaning of knowledge, presenting the differences between tacit and explicit knowledge, before moving on to knowledge management. Finally, there is a discussion of the development of communities surrounding heritage organisations, focusing on communities of practice and networks of practice.

**Chapter 3**: presents the choice of research paradigm, methodology selected and research methods. It also discusses ethical considerations, and validity. Given the context of the research question, the methodology chosen was a qualitative, comparative case study approach. How the approach was selected is explained to provide a rich, highly descriptive understanding of complex social interactions bounded by context. A discussion of the instrumentation of semi-structured interviews with participants is also presented.

**Chapter 4**: discusses the research process and the pilot study. It then presents the main organisations featured in the study and the reason for their selection. With the study focusing on a relatively complex social situation in the field, but within the confines of a selective set of case studies, it provides a rationale for the use of grounded theory methodology (GTM) for analysis of the interviews. It also discusses variations of grounded theory, and conflicting views of the process. It presents the notion of using sensitising concepts to help form a conceptual framework. Finally, the coding processes and codes that emerged from the data are detailed.

**Chapter 5**: presents a cross-case analysis of the differences that were highlighted between the three UK Armed Forces museums by the participants. It focuses on specific findings applicable to each museum in relation to the view of crowdsourcing by the participants.

**Chapter 6**: presents the study findings through the analysis of the codes generated. This chapter focuses on the similarities between the three UK Armed Forces museums. It examines what crowdsourcing means to museum participants and the building of communities around the institutions. It presents inter-departmental collaborations before moving to the emergent phenomenon of networks of crowd.

**Chapter 7**: provides the discussion, illustrating how participants perceive the building of communities around their organisations. It illustrates that there is a community of practice within the museums themselves before moving on to discuss the emergent phenomenon of networks of crowd. The manner in which a network of crowd extends and enhances networks of practice are then presented, before finishing with the contributions of the study.

**Chapter 8**: focuses once more on the academic contribution of this research, its limitations and finally, provides concepts that could be investigated in future research.

## 1.5 Summary

This chapter introduced an understanding of the importance of heritage. It examined the potential gap in literature that has provided the context for my study. My research uses a case study approach to examine the perspectives of participants within three different sized UK Armed Forces museums. The aim of the research is to comprehend the social interactions between the participants and the public through their use of social media to facilitate knowledge exchanges, and their understanding of crowdsourcing within their institutions.

The following chapter provides a review of extant literature surrounding crowdsourcing, knowledge exchange, and internal and external communities.

# Chapter 2. Literature Review

“*Information is not knowledge.*”   
Albert Einstein

## 2.1 Introduction

In this chapter I have provided an overview of scholarly literature to understand the technological changes that are allowing heritage organisations to increase their audience reach and engagement. I explored a range of perspectives covering the impact of new forms of collaboration between organisation and audience, and gain an understanding of how traditional museum roles have evolved as social media tools provide a new platform for greater interaction between professional and amateur.

Focusing on the crowdsourcing phenomenon and what it means to those heritage stakeholders engaged with it, I drew on existing literature to understand how a number of its forms, such as co- and crowd-curation, are developing and potentially impacting heritage stakeholders. I also examined how heritage professionals are building communities with their audience, along with the concept of networks of practice that allow large-scale knowledge exchange collaborations to take place between heritage professionals and the public.

By exploring previous research on the subject of crowdsourcing and networks of practice, I identified potential gaps in the existing literature. I have also examined some of the theories previously proposed in order to better understand crowdsourcing, and consider an appropriate set of sensitising concepts used to aid my analysis. The terms social network and social media are used interchangeably throughout this thesis.

## 2.2 Evolving Technology

During the 1980s to mid-1990s computer systems technology evolved at a rapid pace but one of the prominent advancements of this era was “large scale computer networking, over both private and public networks” (Hirschheim & Klein 2012, p.209). This was the beginning of a technology shift whereby static web pages were produced for personal and business use, but in general were simply a one-way informational resource, telling the audience something but allowing no interaction or feedback. This type of website could be described as Web 1.0. It was not until the late 1990s that a significant change in IT technology took place with the commercialisation of the Internet. Hirschheim and Klein (2012) comment that this ‘opening up’ enabled a wealth of new communication methods for global knowledge dissemination. Along with this came the notion of being constantly connected, eliminating the physical boundaries that had existed before. Now businesses arguably had the potential to reach out to their customers, and vice-versa, twenty-four hours a day.

As technological advancements pushed boundaries ever further, the development of wireless technology enabled both the public and business to be connected ‘on-the-go’, fuelling further communication opportunities. Around the same time social media/networks, a set of computer-mediated communication (CMC) tools (Majchrzak, Faraj, et al. 2013), began to appear, embracing the emergent technologies. Social media are collectively referred to as Web 2.0, a term “officially coined in 2004 by Dale Dougherty, a vice-president of O’Reilly Media Inc.”, (Anderson 2007, p.5) to bring together a variety of web based technologies and services, these technologies began the revolution of interaction between individuals and organisations that enable new ways of sharing knowledge (Boyd & Ellison 2008). Social media tools have been instrumental in connecting individuals “across physical, political, and cultural distances” (Procter et al. 2013, p.80). Kaplan and Haenlein (2010, p.61) refer to social media as "a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of User Generated Content." Effectively “Web 2.0 is about connection, collaboration, community” (Eveleigh 2014), allowing users to connect to one another or organisations, and build online communities based upon their shared interests.

Web 2.0 technologies have consequently been instrumental in changing purely documented (read-only) content to that which Cameron (2001, p.310) describes as “a framework where the user can create new organisations of information and contribute to the development of the knowledge environment”. Besaleva and Weaver (2013, p.213) argue that “social media websites are quickly becoming one of the largest identity and reputation management systems in the world.” A website alone is no longer enough, but a social media presence is now almost essential in order to move forward and reach an expanding audience base.

Digital technologies such as social media are transforming the ways in which organisations and individuals function within society and this has been particularly applicable to heritage organisations such as museums and galleries (Bautista 2014). Social media is a form of digital communication. Littlejohn and Foss (2008) explain that communication is "central to human life" (2008, p.2) as it allows us to "understand how people behave in creating, exchanging, and interpreting messages" (2008, p.9). Ott and Pozzi (2011, p.1365) agree adding that heritage organisations such as museums and galleries, must use information and communications technologies to provide a “better spread of knowledge about cultural heritage artifacts”. Bautista (2014, p.219) states that “even the smallest, locally based institutions have some Web presence...expanding the global reach of their audiences”. Indeed, Honeysett (2007) argues that as institutions, museums must recognise that they are here for public good and the public no longer is limited to physical visitors but is increasingly online.

Downes (2005) considers that the emergence of Web 2.0 turned the original Web into a new “platform, in which content was created, shared, remixed, repurposed, and passed along”. Benkler (2006) concurs, detailing the societal shift brought on by the new information environment whereby individuals can share, reprocess and remix information, and therefore become more decisive and spontaneous as a society. Organisations now call upon the anonymous crowd to help with a variety of tasks, often moving away from closed processes such as outsourcing (Lebraty & Lobre-Lebraty 2013) and on to a form of "open externalization" (Lebraty 2009), capturing the spirit of open source by utilising a crowd of individuals connected via the Internet. Professional social networks have also increased their level of importance both within the workplace and externally (Zhang et al. 2007; Nardi et al. 2002; McDonald & Ackerman 2000).

The impact of new technologies upon organisations is still somewhat unclear and "identifying the theoretical implications of social media technologies for organizational research is challenging" (Kane et al. 2014, p.276). Projects involving collaborative production, through the use of social media tools, are increasing the ability to produce shared resources according to Ott & Pozzi (2011). Common tools that most web users will know of and understand are Facebook, Twitter, Wikis, blogs and multimedia sharing sites such as Flickr and YouTube. However, it is the way in which these social media tools are used, combined and re-worked that has captured the interest of scholars (Leonardi 2015; Moskaliuk et al. 2011; Budzise-Weaver et al. 2012; Rogstadius et al. 2013; Lewis et al. 2010). The following sections consider two specific areas that have emerged from Web 2.0 technologies: collaboration and crowdsourcing.

## 2.3 Collaboration

Egghe (1991, p.177) proposes that collaboration “relates in general to the cooperation or relations between individuals in social groups”. Poelhuber et al. (2011, p.104) agree and suggest that “social software...tools offer new interaction affordances as well as new forms of collaboration”. This cooperative approach has been adopted by both commercial and non-profit organisations to leverage both internal and external knowledge acquisition and dissemination, through the medium of social media interactions with the public. Levina and Vaast (2008, p.308) refer to this process as “multiparty collaboration”. Gray (1989) proposes that collaboration unites stakeholders to share visions or resolve conflicts. Such sharing and unity can build strong community links between the organisation and its audience. However, Ryall (2014, p.82) counters that collaborative projects can be “messy, uncomfortable, awkward, critical , emotional” and a certain amount of acceptance of this fact is required to achieve successful collaborations.

Maruping and Magni (2015, p.1) note that “information technology (IT) investments continue to account for a significant proportion of spending in organisations, and collaboration technologies, in particular, have experienced a sharp increase in such investment”. This poses and interesting question. With so many social media tools freely available to both internal organisational stakeholders and external members of the public, why do organisations still need to implement costly collaborative technologies? Brown et al. (2010) answer by stating that the nature of collaboration technologies is social, extending beyond any specific individual. Therefore, for many large collaborative projects, the scale of interactions between the team members would be beyond the capabilities of individuals to handle and thus collaborative IT is required to accommodate the submissions and subsequent dissemination of information. Gerson (2008, p.194) refers to bringing together diverse, virtual teams, “across organisational, spatial and temporal boundaries” as increased “reach”. The notion of this reach is emphasised further when considering collaborative projects which may involve many thousands of individuals spread across the globe. For such large scale endeavours, whether the collaborative IT is designed and managed in-house or contracted out to a third party very much depends upon the organisation itself and the resources available to it.

Maruping and Magni (2015, p.14) propose that promoting collaboration technology to teams, who are “tight-knit social collectives”, promotes empowerment and positive motivational behaviours within the team, subsequently increasing each individual’s desire to engage with the technologies and feel a sense of ownership over them. This helps collaborative ventures where “the boundaries of cooperative work networks are defined by actual cooperative behaviour and are not necessarily congruent with the boundaries of formal organizations” (Schmidt & Bannon 1992, p.16). In the case of virtual collaborations, as investigated in my research, the collaboration “is both spatially and temporally distributed as opposed to, for example, collaboration between two colleagues in a confined workplace” (Borchorst et al. 2012, p.564). The idea of gaining access to the resources offered by a distributed group, or crowd, is not a new development. Gupta and Sharma (2013, p.14) note that “the practice of tapping a crowd has long been used worldwide in every sector of society”. However, the emergent phenomena surrounding such globally distributed collaborations over IS technologies – referred to as crowdsourcing – is still a relatively new area within academic research. Geiger et al. (2011) concur stating that “albeit a fairly new topic in scientific research, crowdsourcing systems have been used in practice since the emergence of Web 2.0 and in a multitude of different contexts”. However, Vukovic (2009) argues that despite the variety of research on crowdsourcing systems, most do not amalgamate globally distributed members in dynamic knowledge sharing endeavours.

Thus crowdsourcing itself is not a new idea, but its utilisation through emergent Web 2.0 technologies is. Undertaking “collective action on such a grand scale has led to the public’s ability to complete tasks of greater duration, scope and complexity than any one individual could complete alone” (Phillips 2014, p.253). The use of crowdsourcing has become particularly prevalent within cultural heritage (Owens 2014; Oomen & Aroyo 2011; Eveleigh 2014; Blaser 2014; Ridge 2014a), with museums and galleries now employing the knowledge and expertise of non-professionals, engaged through social media or dedicated technology platforms, to assist with collections data, transcriptions, and interpretation of contemporary artefacts.

## 2.4 Crowdsourcing

Howe (2008, p.8) introduced the term “crowdsourcing” to conceptualise the Web-based out-sourcing phenomena which has become prevalent since the increase in more powerful computer technology and the emergence of tools such as social media. As Ridge (2014a) states “technology has enabled crowdsourcing as we know it, but models for public participation in collection, research and observation pre-date it”. To clarify further, crowdsourcing is a method for organisations to capture the “wisdom of crowds” (Surowiecki 2005, p.xiv) - individuals most commonly connected online - and harnessing their collective intelligence to solve issues or elicit responses to problems or large-scale tasks. Howe (2006b, p.1) states:

*Just as distributed computing projects like UC Berkeley’s SETI@home have tapped the unused processing power of millions of individual computers, so distributed labor networks are using the Internet to exploit the spare processing power of millions of human brains. The open source software [OSS] movement proved that a network of passionate, geeky volunteers could write code just as well as the highly paid developers at Microsoft or Sun Microsystems.*

Geiger et al. (2011) suggest that “crowdsourcing means tapping into inputs from outside conventional boundaries” of organisations. In other words, businesses now have the ability to utilise the knowledge and resources of a labour force whose diversity can be both globally and intellectually different to that of their own employees. However, organisations often still often feel uncomfortable with the notion of the crowd and consider that they need to know their identity in order to understand them better; but it is the diversity and independence of these individuals that provides the value in crowdsourcing (Lebraty & Lobre-Lebraty 2013).

As Mazzola and Distefano (2010) state, after Howe’s pioneering definition of crowdsourcing, the awareness that businesses could outsource employee functions to undefined crowds was enhanced. A range of roles from large scale projects to microtasks could be outsourced to “crowd workers” (Deng et al. 2016, p.279). Indeed, Brophy and de Peuter (2007, p.177) comment that terms such as “net-worker, flex-timer, permatemp, crowdsourcing” are applied to the variety of ways businesses now think about diversified labour. Doherty et al. (2012, p.525) assert that such diversity emerges due to work “increasingly being done across organisational boundaries...[*impacting*]...the way work is carried out and distributed between individuals”. These individuals are commonly referred to as ‘knowledge workers’ (Drucker 1973). Knowledge workers provide publically visible knowledge using collaborative engagement tools such as social media, to not only communicate to known individuals both internally and externally to the organisation, but also, more importantly, to those anonymous individuals, globally located, also seeking further knowledge (Majchrzak, Wagner, et al. 2013). Their work may not necessarily produce a tangible product but the output may be equally important, albeit intangible, such as a service or information. Hardt & Negri (2000, p.290) concur stating that:

*The service sectors of the economy present a richer model of productive communication. Most services indeed are based on the continual exchange of information and knowledges. Since the production of services results in no material and durable goods, we define the labor involved in this production as immaterial labor – that is, labor that produces an immaterial good, such as a service, a cultural product, knowledge, or communication.*

Therefore labour not only refers to processes but also “to the product of human endeavour...from services to ideas” (Mosco & McKercher 2007, p.vii). Indeed, Kidd (1994) suggests that knowledge workers’ value lies in the diverse manner in which they respond to phenomena, continually being changed by the information that they process through their connections and interactions with those around them. The use of social media to increase information sharing within organisations "is proliferating at an incredible pace" (Treem & Leonardi 2012, p.143). Knowledge workers have become a common phenomenon linked to collaborative projects. Not only do they use social media tools, but are also in a position to create a range of content tailored to their organisation, along with engaging with external content on collaborative sites (Majchrzak, Faraj, et al. 2013) on the Internet, often now labelled as crowdsourcing.

Crowdsourcing assumes having to engage with and process a multitude of contributions from varying sources (Blohm et al. 2013). As Hammon and Hippner (2012) assert, collaboration over Web 2.0 allows groups of individuals to communicate and cooperate with one another in a decentralised way, regardless of group size. Clearly physical teams running to hundreds, if not thousands, of members would be impossible to manage both from a logistical and workflow perspective by any organisation. This is where crowdsourcing emerges as a form of “intelligence in groups” (Leimeister 2010, p.245). The most common academic view of crowdsourcing involves the crowdsourcer (the organisation) requesting assistance from the crowd (individual contributors or communities of interest around the organisation or subject matter) to assist in a crowdsourced project (a specific task). The notion of group intelligence through crowdsourcing has attracted the interest of scholars and practitioners equally (Zhao & Zhu 2012) resulting in many studies of crowdsourcing having taken place (Brabham 2008; Gupta & Sharma 2013; Blohm et al. 2013; Archak & Sundararajan 2009; Leimeister et al. 2009). Crowdsourcing has been referred to as ‘citizen science’ in areas outside of commercial business (Jackson & Østerlund 2015; Qaurooni et al. 2016) with Lukyanenko et al. (2016) referring to online citizen science as “a major type of crowdsourcing” (2016, p.2). Ellis (2014, p.3) suggests that “crowdsourcing is only different from ‘collaboration’, ‘peer production/participation’, ‘citizen science’ by virtue of an online format”. Greenhill et al. (2014, p.16) concur stating that crowdsourcing is “enabled through the networked capacity of digitized human interaction”, whereas See et al. (2016) suggest that crowdsourcing is significantly different to citizen science as it can be restricted through digital and educational barriers, along with the collected data being used for purposes other than those originally intended in the project, although they do concede that “despite their differences, these terms are often used interchangeably to capture the same basic idea of citizen involvement” (2016, p.2). Indeed, Law and von Ahn (2011) propose that it is only the manner in which the open call is disseminated that has changed with the advent of technology. Indeed, access to the Internet seems to be one of the few existing requirements in order to participate in any number of citizen science projects (Masters et al. 2016).

Gao et al. (2016) consider that crowdsourcing consists of two distinct modes; passive crowdsourcing, where information is exchanged through everyday social media, forums and apps, and active crowdsourcing, where dedicated platforms are used in order to capture specific data from the public. However, even in passive crowdsourcing, levels of specific data can be extracted. An example would be traffic data, showing where congestion is building, or where routes are closed. Subsequently different notions of what crowdsourcing is, and its cross-disciplinary nature, have evolved. Estelles-Arolas and Gonzalez-Ladron-de-Guevara (2012, p.198) consider "that the term crowdsourcing is a term in its infancy, which, as new applications appear, is undergoing constant evolution”. Howe (2008, p.280) himself acknowledges that "crowdsourcing isn't a single strategy. It's an umbrella term for a highly varied group of approaches that share one obvious attribute in common: they all depend on some contribution from the crowd". Thus crowdsourcing does not necessarily mean a specific project or task undertaken by the public. It can simply be the sharing of knowledge and information openly across social media platforms.

Web 2.0 technologies, such as social media, allow a range of interactions between incongruent parties, and this is the fundamental base of modern crowdsourcing. However, must Web 2.0 tools be accompanied by underlying IS (Information Systems) technologies in order to manage such collaborations? Geiger et al. (2011) state:

*Dedicated information systems that integrate human and computational agents facilitate the process of sourcing and aggregating contributions from the crowd. These systems are called crowdsourcing systems and form a significant boundary-spanning object between an organisation and its environment.*

IS technologies coupled with the current crowdsourcing phenomena that has emerged through collaborations over Web 2.0 technology, provide a method for gathering and dissemination information from large-scale interactions. Blohm et al. suggest that “effectively exploiting crowdsourcing data remains a challenge...[and] the volume and variety of crowdsourced data inhibit the ability of companies to evaluate, disseminate and assimilate it”. Zhao and Zhu (2012) consider that the IS discipline and its identity have “been tightly bound with the notion of the IT artifact because IS research has been traditionally situated around people, organisations and technology”. However, IS research is extending into the virtual environment through Web 2.0 and is no longer contained within traditional organisational boundaries (Zhang et al. 2011; Agarwal & Lucas 2005). Therefore, many new social phenomena are formed through evolving IT artifacts, described by Orlikowski and Iacono (2001, p.121) as “those bundles of material and cultural properties packaged in some socially recognizable form such as hardware and/or software”, crowdsourcing being an example. Zhao & Zhu (2012) propose that:

*Web 2.0 is a connective and collaborative technological environment that enables individuals to get involved in Internet-mediated social participation, communication and collaboration. Thus, we believe, that crowdsourcing is an emerging IT artifact and a new frontier for IS research.*

Zhang et al. (2011) consider the IT artefact as an object or bundle that was engineered for one purpose, but has subsequently been adapted or modified for another. Faraj and Azad (2012) present the lens of affordances as the "bridging concept that conceptually links between design and use of technology". In other words, the technology may have been designed with one specific use in mind, but once users have access to those technologies, often they will find new and unique ways to use them that the developers had not considered. The use of Web 2.0 technologies and emergent collaborative methods of engagement that use them, such as social media platforms including Facebook and Twitter, illustrate that this does indeed seem to be a valid proposition.

Crowdsourcing typically happens over a variety of IS platforms ranging from dedicated websites and social media channels, through to verification of the data using either the organisation’s internal IS systems and processes, or an external provider (such as Zooniverse[[1]](#footnote-1)). Zhao and Zhu (2012) position that they are artificial systems that consist of multiple views and can be examined as a bounded transformation processes – processes that convert inputs into outputs. The literature therefore illustrates that a variety of IS, and in particular Web 2.0 technology, are pivotal to crowdsourcing as a means to stimulate dialogue and build a level of participation between an organisation and its audience, despite the challenge of managing such interactions. Whilst crowdsourcing has attracted scholarly interest, Zhao and Zhu (2014, p.418) note that the lack of theoretical grounding within academic articles “is an indication that the crowdsourcing area is still emerging and evolving, with less established progress”. Pettigew and McKechnie (2001) suggest the use of theory, and more particularly one that originates from within, are a mark of a discipline’s maturity and independence within the field of scientific inquiry. Hjørland (1998) argues that IS as a discipline itself lacks theories but a contra-argument is set forth by Straub (2012) who indicates that native theories do indeed exist and they are predominantly technology acceptance method (TAM) and IS success models. Zhao and Zhu (2012) evaluated fifty-five articles on crowdsourcing to examine underlying theories but their analysis established that only nine articles (16%) showed any theoretical basis. In order to examine the theories in more depth, the lens of theory type was adopted from a structuring approach to the outsourcing of information systems (Cheon et al. 1995) and the lens of theory roles by Gregor (2006) that suggested roles of "analysing, explaining, predicting, explaining and predicting, and design"(Bélanger & Crossler 2011, p.1023) was also used. The theoretical foundations are illustrated in Figure 1.

|  |  |  |  |
| --- | --- | --- | --- |
| **Theory** | **Type of theory** | **Role of theory** | **Referred article** |
| Value Chain Theory | Strategic | Analysis | Lane (2010) |
| Auction Theory | Economic | Explanation & Predication | DiPalantino and Vojnovic (2009); Archak and Sundararajan (2009) |
| Motivation Crowding Theory | Economic | Explanation | Bayus (2010) |
| Organizational Learning Theory | Social/Organizational | Explanation | Bayus (2010) |
| Cognitive Evaluation Theory | Others | Explanation | Bayus (2010) |
| SCOUT Model | Others | Explanation & Prediction | Stewart et al. (2010) |
| Game Theory | Economic | Prediction | Horton and Chilton (2010) |
| Transaction Cost Theory | Economic | Explanation & Prediction | Horton and Chilton (2010) |
| Strategic Management Theory | Strategic | Explanation | Mazzola and Distefano (2010) |
| Innovation Theory | Social/Organization | Explanation | Trompette (2008) |
| MIAB Model | Others | Design | Leimeiser et al. (2009) |

Figure 1 Theoretical Foundations

(Zhao & Zhu 2012)

The table shows that as well as limited theoretical underpinnings, the number of authors using any theoretical foundation is even less, with some authors using more than one theory within their articles. Another significant result of Zhao and Zhu’s (2012) study was that the theories represented were primarily organisational or economic, as opposed to social. This illustrates that the articles appeared to be concerned with the overall impact to the crowdsourcing organisation or members of the public involved with the project, as opposed to any underlying social implications for the organisation or intrinsic motivations for its employees. From a research perspective Zhao and Zhu (2012) assert that “crowdsourcing is far from being established...[*and*] the lack of theoretical orientation is an indication of the immaturity of the research area”. Could it therefore be argued that the deficit in extant literature on crowdsourcing illustrates that an academic understanding of the phenomena is still evolving? It would appear that defining crowdsourcing is not quite as simple as first supposed. In order to understand the academic view of crowdsourcing, it is useful to consider its various taxonomies and how the term itself is evolving through its perceived uses. Beyond Howe's (2006a) seminal definition of crowdsourcing, which appears to be the most popular academic definition, agreed consensus of a crowdsourcing definition is proving problematical. The definition and explanation of what crowdsourcing involves is largely dependent upon the perspective of the academic examining the phenomenon (Brabham 2008; Chanal & Caron-Fasan 2010; Yang et al. 2008; DiPalantino & Vojnovic 2009; Vukovic 2009; Mazzola & Distefano 2010; Alonso 2010; Wexler 2011). Further, new types of engagements are emerging that also define themselves as forms of crowdsourcing, including spatial crowdsourcing, where users can only complete a task in a specified physical location (Zhao & Han 2016), and microtasking (Vakharia & Lease 2013).

It is interesting to observe that whilst in general the number of academic articles on crowdsourcing is still relatively small, news articles, blogs and announcements on the process are increasing. A simple Google search illustrates that businesses offering crowdsourcing solutions are on the rise. Organisations such as Kickstarter, Brightidea, DesignCrowd, Lithium, indiegogo and Crowdsourcing.org are all advertising their skills in this area. It is important to note that although crowdsourcing started in the commercial arena, its applications have extended to benefit cultural heritage, environment and disaster handling (Brabham 2008). The question remains of how to classify crowdsourcing when it appears to encompass so many varying types of interaction and collaborative engagements.

Defining crowdsourcing, as opposed to co-creation or user innovation, was investigated by Estelles-Arolas and Gonzalez-Ladron-de-Guevara (2012) who analysed existing definitions of crowdsourcing to produce three elements and eight characteristics of a crowdsourced project. I have provided the definitions in Table 1.

Table 1 Crowdsourcing Definitions

(Estelles-Arolas & Gonzalez-Ladron-de-Guevara 2012)

|  |  |  |
| --- | --- | --- |
| **CROWD** | **CROWDSOURCER** | **PROCESS** |
| Who forms it? | Who is it? | Type (distributed/problem solving/online) |
| Task (what it has to do) | Requirement | Call (open/closed) |
| Reward (intrinsic/extrinsic) |  | Medium (Internet) |

Projects that fit well with the definition provided above include Amazon Mechanical Turk (a platform for crowdsourcers to offer tasks in return for financial recompense); iStockPhoto (a platform for selling images); and Lives of the First World War (the Imperial War Museums project to document all those persons who fought/worked through that conflict). Perhaps most surprisingly, Estelles-Arolas and Gonzalez-Ladron-de-Guevara (2012) argue that Wikipedia does not to fit into the definition as neither the crowsourcer nor the type of call are clearly represented. However, Dunn and Hedges (2014, p.234) suggest that this highly defined structure adopted by Estelles-Arolas and Gonzalez-Ladron-de-Guevara is flawed in that it “largely disregards diversity in the type of material being crowdsourced, and also assumes a straightforward relationship with the outcome”.

Wiggins and Crowston (2011) suggested a more task-oriented approach to defining crowdsourcing, focusing their typology on the organisational and structural aspects of citizen science, providing five broad areas of application: "Action, Conservation, Investigation, Virtual, and Education" (2011, p.1). Conversely, Rouse (2010) proposed a taxonomy of crowdsourcing drawing on a variety of literature as well as her own qualitative research in the field of outsourcing which led to the classifications of “the task crowdsourced and the supplier capabilities”, “distribution of benefits” and “motivation to participate*”* (2010, p.4). Understanding the first area of classifications of task/supplier capabilities, outsourced tasks can be broken down into three primary complexities:

1. Simple – low complexity: ideas for new products, rating products (Amazon, eBay), book reading and community research projects.
2. Moderate – medium complexity: selecting a colour scheme (Royal Holloway rebranding), designing a logo, photography or a shared scientific effort.
3. Sophisticated – high complexity: highly skilled, complex, strong business acumen required. Deep knowledge and experience of area to be investigated such as software design, intellectual consulting or the development of business plans.

The above classification illustrates that most crowdsourcing activities would fall into either the simple or moderate complexity level tasks. Maioline and Naggi (2011) advocate that for commercial business SMEs (Small to Medium Enterprise), adoption of crowdsourcing would allow them to build new competencies that could not normally be developed due to lack of personnel or investment.

The second classification of distribution of benefits builds on the understanding of who gains the benefit for being involved in a crowdsourcing project. Grams (2010) differentiates between crowdsourcing and ‘opensourcing’ (Figure 2), showing that tasks involving crowdsourcing primarily have few beneficiaries (the crowdsourcer alone in many cases), whereas opensourcing has many beneficiaries; whole communities in fact.

Howison and Crowston (2014, p.31) "argue that collaboration through open superposition is at the core of success of community-based FLOSS [free and open-source software] projects”. Byrd Phillips (2014) explains that from its roots in OSS development, the benefits of peer production has been broadened out into the information and cultural heritage domains in the form of crowdsourcing. OSS projects which allowed users access to the underlying source code in order for the software to be developed, updated and shared in a collaborative manner were instrumental in allowing Web 2.0 technologies to emerge and diversify through a variety of iterations. Therefore “the open-source community has already established a solid foundation upon which to build collaborative spaces” (Phillips 2014, p.250). Continued free distribution of OSS and the transparent nature of the underlying code are why it has become so popular but also illustrate how it is different from crowdsourcing. Howe (2006a) proposes that a definition of crowdsourcing is using the OSS principals in areas outside of software, but a fundamental issue of this definition is that the rights to the content that has been crowdsourced will become the property of the crowdsourcer. Malone et al. (2009) argue that a further difference is that the OSS community create something that has important dependencies on work provided by other contributors whereas in the crowdsourcing environment, contributions can be totally separate and provided by individuals or groups. Therefore, whereas OSS is focused on developing and improving a range of software for others to use and develop as they see fit, and repopulating the OSS community with such enhancements, crowdsourcing can often be perceived as benefitting just one organisation or even individual, dependent upon the type of open call made.

# of

Beneficiaries

**Many**

Typical projects done the

open source way

# of **Few** **Few**

Contributors

Typical projects done the

crowdsourcing way

**Many**

Figure 2 Crowdsourcing vs. Opensourcing

(Grams 2010)

Moving on to the final classification of motivation to participate, it can be seen that the benefits of participation in collaborative projects are often understood as perceived values such as self-image, contribution to collective knowledge and recognition within the community (Wasko & Faraj 2005; Lesser & Prusak 1999). Ke and Zhang (2009) combined self-determination theory and affective emotion theory to understand motivational models for collaboration between volunteers in open-source projects. These models could also be used to understand motivations in crowdsourcing. Leimeister et al. (2009) offered four classes of motivation; learning, compensation (financial), self-marketing and social. These motivations are illustrated in Table 2.

Table 2 Motivation Classes

(based on Leimeister et al. 2009)

|  |  |
| --- | --- |
| Learning | From experts sharing knowledge, mentors assisting contributors or peers (other contributors themselves). |
| Compensation (Financial) | Cash prizes, job opportunities, gifts |
| Self-Marketing | Presenting skills, knowledge, ability |
| Social | Positive response to input from engaged community, whether that is an organisation or other contributors |

The classes can also be broken down further to intrinsic (personal achievement) or extrinsic (some form of financial gain) which are areas “fundamental to several psychological theories of motivation” (Rouse 2010). Whilst financial compensation for crowdsourcing on platforms (Horton & Chilton 2010) is considered an extrinsic motivation, Table 2 illustrates that three out of four of the motivations suggested by Leimeister et al. (2009) are intrinsic in nature. Hars and Ou (2002) researched open-source project participation and discovered that many participants found it an effective manner in which to demonstrate their skills and knowledge in the programming field, thus concluding that self-marketing was a suitable motivation for engaging in collaborative projects.

An example of social motivation was provided by Huberman et al.'s (2009) study of crowdsourcing from the perspective of contributors uploading content to the YouTube site. They concluded "that the productivity exhibited in crowdsourcing exhibits a strong positive dependence on attention, measured by the number of downloads. Conversely, a lack of attention leads to a decrease in the number of videos uploaded and the consequent drop in productivity, which in many case asymptotes to no uploads whatsoever" (2009, p.8). Lampel and Bhalla (2007) concur stating that when dealing with online communities, there is a very close link between status and reputation as motivators to contribute.

Learning (Lakhani & von Hippel 2003; Lakhani & Wolf 2003; Lerner & Tirole 2002) was another motivation often associated with collaborative engagement in open-source projects. Participants were keen to expand their skill base through the knowledge acquired by engaging with their peers and experts in the field. Indeed, it could therefore be concluded that the respect of one’s peers is high also in the social participatory level. In the paper on ICT design and use, Zhang (2008) considers that motivation theory provides the framework for strong ICT design as it represents the unification of a variety of approaches including cognitive, usability and emotional, which could aid in understanding the crowd’s motivation for engaging in crowdsourcing projects and the best tools to employ for such through recognising their intrinsic motivations.

Whilst many scholarly articles have explored the motivation of the crowd in collaborative enterprises (Li & Hongjuan 2011; Olson & Rosacker 2012; Kaufmann et al. 2011; Brabham 2010), there are very few that look at the motivations of internal organisational personnel when faced with the challenge of collaborating with the public over Web 2.0 technologies. Examining the motivations of internal employees can be understood through a branch of motivation theory – Self-Determination Theory (SDT). Vroom (1994) originally produced an expectancy-valence theory of motivation in 1964 which was built on by Porter (1968) to produce a “model of intrinsic and extrinsic work motivation” (Gagné & Deci 2005). In this case, the intrinsic motivation is through enjoying the activity one is engaged in and the extrinsic motivation would be higher pay or promotions. However, whilst Deci (1971) argued that extrinsic rewards can ultimately undermine intrinsic motivations and subsequently proposed cognitive evaluation theory (CET) (1975) to explain the effects of intrinsic and extrinsic motivations, Fisher (1978) disagreed and felt that even when quite controlling reward schemes were in situ, intrinsic motivations were still high when employees felt personal control and competence in their role. Danner and Lonky (1981) also suggested that challenging activities produced high levels of intrinsic motivation, although their study involved children as opposed to working adults. Contrary to Fisher’s findings, many authors still argued that a variety of external factors including deadlines, evaluations and surveillance (Amabile et al. 1976; Lepper & Greene 1975; Smith 1975; Boggiano & Ruble 1979) did have an impact on intrinsic motivation.

Gagne and Deci (2005) therefore proposed that to maximise intrinsic motivation “people need to feel autonomous and competent, so social-contextual factors that promote feelings of autonomy and competence enhance intrinsic motivation, whereas factors that diminish these feelings undermine intrinsic motivation, leaving people either controlled by contingencies or amotivated.” Debate around CET and any perceived undermining effect continued (Calder & Staw 1975; Deci 1976; Boal & Cummings 1981; Foster & Hamner 1974; Arnold 1976) and even recent theories of work motivation still dispute the meta-analysis by Deci et al. (1999) that tangible rewards do indeed undermine motivation. However, Gagne and Deci (2005, p.333) raise a problem with CET in that “most studies that tested CET were laboratory experiments rather than organizational studies...[and] many activities in work organizations are not intrinsically interesting and the use of strategies such as participation to enhance intrinsic motivation is not always feasible”. Whilst receiving attention in literature in the 1970s and early 1980s, the interest in CET soon waned. However, consideration of CET could be applied to those individuals engaged in crowdsourcing within an organisation to ascertain whether such forms of engagement with the crowd were proving to be intrinsically motivating.

Using concepts of internalisation, autonomous extrinsically motivated behaviour and "understanding of individual differences in causality orientations" (Deci & Ryan 1985b, p.340), led to the formation of self-determination theory. Gagne and Deci’s (2005) article on SDT discusses the manner in which controlled and autonomous motivation can impact individuals. Intrinsic motivation is typically autonomous - people engage in a pursuit because they find it interesting or simply like doing it. However, Gagne and Deci (2005, p.334) state that “extrinsic motivation can vary in the degree to which it is autonomous versus controlled”. Reis et al. (2000) suggest that satisfaction in people’s lives involves autonomy, competence and relatedness. Gagne and Deci (2005, p.337) position that within organisations, meeting these three psychological needs will yield workplace "outcomes of:

1. persistence and maintained behaviour change;
2. effective performance, particularly on tasks requiring creativity, cognitive flexibility, and conceptual understanding;
3. job satisfaction;
4. positive work-related attitudes;
5. organizational citizenship behaviours; and
6. psychological adjustment and well-being.”

Organisational studies (Baard et al. 2004; Gagné et al. 2000; Ilardi et al. 1993; Kasser et al. 1992) have shown that when employees feel that their perspectives and choices are acknowledged, there is an increased level of trust in the organisation, willingness to accept organisational change, and more job satisfaction. Gagne and Deci (2005, p.346) maintain that:

*autonomy-supportive (rather than controlling) work environments and managerial methods promote basic need satisfaction, intrinsic motivation, and full internalization of extrinsic motivation, and that these in turn lead to persistence, effective performance, job satisfaction, positive work attitudes, organizational commitment, and psychological well-being*.

Thus allowing employees some level of autonomy in their roles leads to more engaged individuals who are motivated to perform tasks well, and provides a level of loyalty to the organisation. Therefore, an understanding of SDT may be useful when considering engagement through crowdsourcing. Zhao et al. (2016) consider “self-directed and other-directed” (2016, p.1617) motivations to engage with online communities. Whereas self-directed focuses on the fun and personal kudos of engaging, other-directed considers altruistic motivations. It is interesting to understand whether the enjoyment of engaging with the public, answering questions, and seeking out additional knowledge on collections or artefacts, may be all the motivation that heritage stakeholders require to become involved in crowdsourcing activities.

Having explored a range of taxonomies and motivations in order to gain a more cohesive understanding of crowdsourcing, it could be considered that the challenge for heritage organisations today is how to incorporate crowdsourcing into their existing role in society. Research on the adoption of crowdsourcing is relatively scarce (Zhao & Zhu 2012) but literature has shown that museums, galleries and heritage agencies have turned to Web 2.0 tools to commence many-to-many communication and subsequently began to utilise crowdsourcing as a method of exploring and managing artefacts. Proctor (2010, p.41) advocates that “curators can best serve and preserve the artifacts they love by ensuring that audiences understand objects’ pertinence and value to our lives”. However, despite the increase in crowdsourcing initiatives, the number of academic articles written about crowdsourcing is still comparatively small compared to news articles and reports (Zhao & Zhu 2012), and theories deficient. Whilst change management theories could prospectively be of interest in investigating crowdsourcing, a critical review article from By (2005) illustrates that they fall short of allowing an understanding of individual feelings to changes, due to their often “lacking in empirical evidence” (2005, p.369) and tendency to converge at the higher organisational level. Indeed, while most crowdsourcing literature is inclined to focus either on the technology itself, why the crowd become engaged, or the organisational perspective (Russo et al. 2009; Schenk & Guittard 2009; Blohm et al. 2013; Geiger et al. 2011; Steelman et al. 2014; Thuan et al. 2013), none that I have found has any specific focus on the changes and adaptations that heritage personnel are required to implement to engage with crowdsourcing activities and technologies. Proctor (2010, p.36) argues that the increase in ideas and conversations between the audience and museums “is happening whether or not the museum chooses to be part of the conversation”.

### 2.4.1 Crowdsourcing Adoption in heritage organisations

Within cultural heritage, crowdsourcing is primarily undertaken in the format of collaborative and cooperative endeavours, with individuals engaged to work for the ‘greater good’ (Ridge 2014a), as opposed to competitive, reward based models that are often seen in the commercial sector. Ryall (2014, p.81) outlines that “collaboration is seen as a crucial part of heritage...organisations do see its value and are keen to look outside their usual sphere in order to improve their engagement with their audiences”. However, in order for collaborative projects such as crowdsourcing to be successful, museums need to relinquish their hold on certain processes. Jain (2010) proposes five challenges that crowdsourcing needs to overcome for adoption within organisations including loss of control, trust, quality of ideas, managing submissions and incentive mechanisms and I now look at these within the scope of heritage.

#### 2.4.1.1 Loss of Control

Whilst the collaborative structure afforded by crowdsourcing is increasingly of interest to heritage organisations and their visitors to add deeper value and understanding of artefacts, one can understand that it would be difficult for an employee such as a curator to relinquish their hold over those artefacts and other objects of a museum, for which they will have trained many years, to allow a more mutual fact finding initiative utilising social networks. Nina Simon, Executive Director, Santa Cruz Museum of Art & History, concurs and states “Participatory projects are threatening to institutions because they involve a partial ceding of control” (2010, p.324). Falk & Shepherd (2006) agree stating that relinquishing authority is one of the most challenging and threatening processes when searching for new cooperative methods. As places of authority established through long scholarly histories, museums and heritage organisations are perceived as authoritative bodies and thus the difficulties to relinquish such to communities of non-professionals for collaborative endeavours are increased. Ridge (2014a) concurs stating that there are unresolved tensions around the role of expert and amateur within the definitions of cultural heritage crowdsourcing. It would seem then, that that very definition of expert and expertise needs to be expanded to not only include those within the heritage organisation, but also to recognise the domains of experience (Mclean 2011) that are available through the extended reach afforded by social media.

In order for heritage institutions to benefit fully from crowdsourcing, they will need to be open to ideas that depart from their expectations and relax their influence over content (Freeman 2013) in order to stimulate the synergy between themselves and their audience, but at what cost? This loss of control is something that Leimeister (2010, p.247) considers proposing that “the outcome of the activities may be unpredictable, and the accountability and responsibility remain unclear – especially in the case of bad effects.” Human nature allows for positive feelings associated with good results, so by definition, bad results would raise questions on the validity of any crowdsourcing project. However, Proctor (2010, p.41) suggests that heritage organisations “need passionate, creative, generous champions to curate the expanding fields of knowledge now on offer, thanks largely to the social media and other digital tools that make knowledge generation and publication faster and easier for everyone, experts and enthusiastic amateurs alike”. Perhaps there should be less focus on whether the experience is positive or negative, and accept that all results from crowdsourcing could potentially provide a new level of understanding for the heritage community.

The balance between the transformational power of crowdsourcing and the loss of control over the behaviour of the crowd is something that needs to be considered carefully by heritage organisations. Understanding that the crowd could indeed change the scope of the project and the primary goals put in place by the organisation is something that heritage organisations would need to work to minimise by putting appropriate governance mechanisms in place “to steer the crowd toward completing the designated task without losing focus” (Zhao & Zhu 2012). Using grounded theory (Strauss & Corbin 1990) open coding techniques to analyse three case studies (Netflix, A Million Penguins, and UK Department for Work and Pensions), Jain (2010) developed an analysis framework by drawing on governance mechanisms in OSS literature to illustrate how they would impact the outcome of crowdsourcing projects. The common governance mechanisms were: membership management, rules and institution, monitoring and sanction, leadership, coordination, task decomposition, and decision making. This is something that heritage organisations could investigate to maintain a facet of control when implementing crowdsourcing initiatives.

#### 2.4.1.2 Trust

The ability for the crowd to produce work that individuals alone could not easily accomplish has grown in relevance over recent years and many papers and books have been written detailing its benefits and pitfalls (Besaleva & Weaver 2013; Leimeister 2010; Howe 2008; Hammon & Hippner 2012; Surowiecki 2005; Tapscott & Williams 2008). Suroweicki (2005) examines three specific problems, namely co-operation, co-ordination and cognition, and provides demonstrations of how problems falling into these categories can be solved more effectively by a collective – or crowd – than by a single, intelligent individual group member. Any time an organisation is engaged with individuals, a relationship is formed. This relationship is based on a number of factors including its intensity, duration and anonymity. But one of the most important factors is trust (Lebraty & Lobre-Lebraty 2013). Trust is increased over a period of time, and knowledge-based trust (KBT) develops through repeated interactions between individuals as they nurture a deeper understanding of one another (Panteli & Sockalingam 2005). When individuals involved in online collaborative engagements are unknown, anonymous entities and are "at the heart of knowledge exchange" (Davenport & Prusak 2000, p.35), developing this trust mechanism is particularly important.

Already established users of volunteers and inherently public facing (Dunn & Hedges 2014), the idea of heritage organisations stepping into the virtual world, as it were, to harness the power of the engaged crowd must be appealing. “Well designed crowdsourcing projects can help the core missions [*of museums*]” (Ridge 2013, p.12) and heritage organisations by bringing together people, collections, understanding, learning, enjoyment and access (Poole 2013). Schweitzer et al. (2012) conclude that to achieve innovation one must collaborate effectively with amateur users and external enterprises. Proctor (2010, p.37) suggests that enhancing understanding of the museum collection through crowdsourcing leads to “new ways that curators and subject experts can collaborate in using social media”. Hammon & Hippner (2012) concur and concede that utilising the potential of the crowd allows for far broader quality and quantity than could be achieved when approaching the problem from an internal perspective. However, Ryall (2014, p.81) explains that “tales of conflict are common, as are accounts of the lengthy, difficult and inexact processes of building trust”. Keen (2007a, p.30), on the other hand, simply states that “finding and nurturing true talent in a sea of amateurs may be the real challenge in today’s Web 2.0 world.” An understandable dilemma, but he goes one step further suggesting that “the idea of the noble amateur…lies at the heart of Web 2.0’s cultural revolution and threatens to turn our intellectual traditions and institutions upside down” (2007a, p.36). What he appears to propose by this is that no amount of amateur knowledge can be as valuable as that of a person trained in their field, such as a curator. Hardt and Negri (2000, p.190) call this “immaterial labor – that is, labor that produces an immaterial good, such as a service, a cultural product, knowledge, or communication” which as Brophy and de Peuter (2007, p.179) point out, the subsequent “extraction of value...is not a friction-free matter”. In other words, unverified knowledge can be complicated to capture and transfer.

There are certainly disadvantages to utilising non-professionals. Edward Lengel from the University of Virginia called crowdsourcing “an unproven concept” that can have “significant issues” including “cost-effectiveness, speed and viability” (Parry 2012). Wikipedia, an online encyclopaedia run on donations, provides “access to a quantitatively and qualitatively steadily growing pool of knowledge” (Hammon & Hippner 2012, p.163) and is often described as a “prototypical open, collaborative community” (Phillips 2014). While Giles (2005) considers the example of Wikipedia’s entries to be extremely close in accuracy and quality of the published tome of the Encyclopaedia Britannica, viewing a selection of random articles illustrates that at best this crowdsourcing initiative provides exceedingly detailed information with verified links and, at worst, unadulterated fiction.

It therefore appears that trust and collective engagement within social media can be considered a double-edged sword. On the one hand it is seen by many as a revolutionary tool to enable “user-led, two-way, many-to-many, communication rather than mass mediated, one-way, one-to-many, communication” (Drotner & Schroder 2013, p.2) and on the other it has been condemned as virtual spaces where “ignorance meets egoism meets bad taste meets mob rule” (Keen 2007a, p.9) and “especially fertile ground for narcissists” (Buffardi & Campbell 2008, p.1304), those digital users who are more interested in self-promotion and attention seeking than genuine information sharing. Page (2014) recognised patterns in online audiences that revealed a number of disconcerting traits such as deception, impersonation and masked identity. Panteli and Sockalingam (2005, p.604) also identify that offering trust can expose an organisation to "opportunistic behavior" from those engaging with it. Clearly this is not applicable to all individuals engaged with social media, but it is something that needs to be carefully considered by any organisation when eliciting opinions or seeking collaborations. A contrary view was put forward by Kelly (2013) who noted that Twitter in particular has been instrumental in communities of learning in universities by bringing those rather more shy individuals, who are less likely to speak up in a face-to-face crowd situation, into the discussion beyond the classroom. Kelly's observations of communities of learning could be migrated to the heritage field. There is the potential benefit that those members of the public who would not normally ‘get involved’ in cultural heritage discussions, may in fact do so through a virtual medium such as social media, and this should be weighed up carefully against the possible problem of ‘time wasters’.

Kelly (2013, p.64) recognises that despite the issues surrounding it “social networking will increasingly be the way citizens will come together under a participatory framework to find innovative solutions on a mass scale utilizing the opportunities for collaboration provided by social media”. Understanding the crowd’s behaviour and the impact that will have on quantity and quality of contributions is an area of research that would allow better targeting strategies to capture the ‘right’ crowd and provide appropriate incentives - whether they are through professional recognition or financial reward (Zhao & Zhu 2012).

Howard (2003) raises another consideration of trust between heritage organisations and their audience explaining that many of the larger institutions “carry immense authority, and hence not only an enormous potential to inform, but also considerable power to deceive, if only unintentionally” (2003, p.247). He continues to clarify that “only telling one story can stultify knowledge” (2003, p.247). This is easily understood, particularly through his example of battlefield interpretations where the ability to positively avoid taking sides is extremely difficult to achieve (Howard 2003). Every interpretation of heritage will come from a single persons or organisations’ perspective and thus can easily be seen as biased in favour of one element or party. Again, it is down to the visitor or virtual audience to form their own interpretation and conclusion of what is being represented. This notion of authority, that brings with it an acceptance of expertise and knowledge, can cause immense problems to heritage organisations in extending open invitations to the public to engage with conversations and knowledge sharing (Mclean 2011).

#### 2.4.1.3 Quality of Ideas

While the notion of engaging the heritage audience on crowdsourcing initiatives is appealing, one of the obstacles for using such a tool alone for corroborating data, artefacts or transcription, is that the data must then be checked and verified by appropriate qualified personnel within the organisation. It cannot be assumed that, for example, a transcribed document from WWII is accurate and thus placed into the circulation or exhibition without checks being performed. Validating contributions from the public for inclusion into collections is problem that is not just faced by contemporary users of crowdsourcing (Ridge 2014a). Parry (2012) documents an appropriate case: This very issue was raised by Philip Schofield of the Bentham Project in London. Funding could not be obtained for personnel to be employed purely transcribing the documents and thus the crowd were engaged, with some 1,700 people having signed up by 2012. Volunteers did the bulk of the transcribing but it still fell upon the University College team to verify every document that was completed. Had they been allowed to solely transcribe, they could have completed over double the amount of work. Having said this, Philip Schofield considers the use of crowdsourcing overall as a success in raising the profile of the project and ensuring that transcription of the philosopher’s manuscripts is taking place.

The quality of crowdsourced projects can be variable and many scholars and businesses still question its relevance, particularly in the sciences or areas of innovation. There are mechanisms available to validate crowdsourced data but often they create heavy workloads and biased judgments (Zhao & Zhu 2012). Simple ratings systems may be suitable (thumbs up/down, stars, etc.) for uncomplicated projects, and third party organisations are also emerging to assist with crowdsourcing evaluations, although of course there will be a cost associated with these which may counter the reason for crowdsourcing in the first place. However, one solution to verifying both data and authority over the Internet may be achieved through the context of web links or other appropriate forms of citation (Phillips 2014).

#### 2.4.1.4 Managing Submissions

One area of concern for crowdsourcers is that the sheer amount of data involved in any such projects could be substantial to evaluate, disseminate and assimilate. Blohm et al. (2013) investigated the nature of crowdsourcing and noted that often crowdsourcers themselves struggled to understand how to assess the data that they have amassed. Time and cost restraints are a consideration that organisations need to evaluate when commencing a crowdsourcing project as often there are limits on these to usefully assess all contributions. They coin the term “absorptive capacity” (Blohm et al. 2013, p.203) to illustrate that the ability to turn crowdsourced data into knowledge or value to the business is often a skill that is lacking within the crowdsourcer organisation. To manage this, they suggest that five distinct capabilities are developed to assist absorption, show in Figure 3.

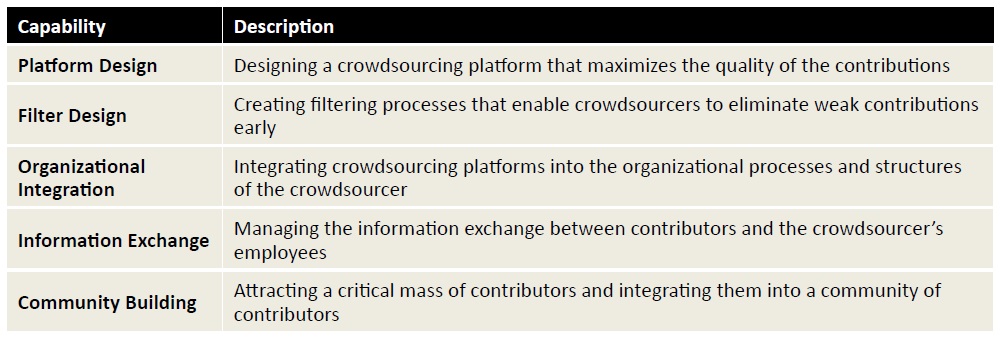


Figure 3 Crowdsourcing Absorption Capabilities

(Blohm et al. 2012, p.204)

This need may be less prevalent in the heritage arena where crowdsourced projects tend to stem around a particular artefact or exhibition, but even in such specific projects, the data received could be sizeable but to have the components of absorption in place would be indispensable in evaluating data.

According to Blohm et al. (2013), all five elements must be combined to afford a quality crowdsourcing experience. Having a platform design such as a Wiki would allow the crowd to add, edit and comment on data that is entered which allows the organisation to see the building of ideas and locate those that contributors agree on as well as those that are left without any further contributions (perhaps due to lack of quality). Smart filtering is required for substantive evaluations of contributions by the crowdsourcing community themselves as this allows for more relevant idea rankings. Integrating the crowdsourcing platform into the organisational process and structures, ensuring employees are engaged with the content and recognising new insights could prove essential for successful information exchange using the subject familiarity of the employee (such as a curator) along with the crowds’ collective knowledge and new perspectives.

#### 2.4.1.5 Incentive Mechanisms

Howe (2008) investigates how crowds are being utilised more frequently by business to drive tasks and information forward by harnessing their collective, intellectual abilities. By capturing the talents of others, the crowdsourcing framework can potentially aid with resource-intensive tasks while reducing or eliminating the costs of employing an outsourcing company or consultant. Indeed, Noordegraaf et al. (2014) concur that in times of austerity, the notion of the public creating or improving heritage collections has clear appeal to organisations. Many participants of crowdsourcing initiatives are not compensated in any way for their work, whilst others can reap rewards directly from the organisations themselves (Shepherd 2012), and much of this will depend upon whether the project is for a non-profit organisation or commercial business.

Blohm (2013) proposes two varieties of crowdsourcing – collaboration and tournament. Collaboration allows contributors to create a common solution as a collective of smaller ideas and pieces of knowledge exchanged through the crowdsourced project whereas tournament crowdsourcing involves a more structured submission of collective solutions that the crowdsourcer then selects in exchange for financial or non-financial (recognition) awards (Blohm et al. 2013). Hammond & Hippner (2012, p.164) offer that “Internet users are driven by two basic sources of motivation…intrinsic motives, thus the attempt to doing something for its own sake, or for extrinsic motives, where the activity itself is merely a means to an end.” The literature would appear to suggest most crowdsourcing projects are extrinsic in nature.

Contradictory to this idea of the crowd providing a mass collaboration in communities of interest for a feel-good factor, Thorne (2008) proposes a view of fluid, digitally associated, communities of narcissists fixating on a mutual interest. One can imagine that being obsessive about a topic could surely be a potential asset. Wouldn’t those persons be among the keenest to communicate their knowledge and assist with crowdsourcing efforts? Certainly Leimeister (2010, p.247) argues that “the more participants are involved the higher is the probability of misconduct or malicious behaviour.” But one must consider the benefit that those genuine respondents bring to the project against the potential for misinformation. Sandell (2002, p.7) however offers a conflicting view to that of Thorne and Leimeister and recognises that:

*Cultural initiatives are inclusive, and have an unsurpassed capacity to open dialogue between people and engage their enthusiasm and commitment to a shared redevelopment process*

Andermann et al. (2012) consider that having a community involved with facilitating the museum experience revolutionises the relationship between the museum itself (exhibitor), the visitor (spectator) and the artefact (object), opening up the notion of the crowd being part of a well-meaning, interactive community, not a self-serving one. However, the question is whether that acquiescent community who are engaged at the beginning of a crowdsourcing project continue to remain so or do they increase their demands as they become conscious of their importance to the crowdsourcer (Wexler 2011).

Blohm et al. (2013, p.205) comment that “crowdsourcing platforms must motivate contributors...[promoting] a sense of competition among contributors striving for the best solution”, regardless of whether the competition cumulates in extrinsic or intrinsic rewards. The phenomena of crowdsourcing can therefore be described as:

*A competitive/collaborative workflow or group decision support system, [that] provides user-generated content, human intelligence and/or other kinds of information artifacts as a solution or feedback to mediate, support, or facilitate the problem-solving process* (Zhao & Zhu 2012)*.*

However, Ridge (2014a) identifies that within cultural heritage organisations there is very little competitive crowdsourcing, with most projects being completed by willing participants who simply want to help and require no reward for doing so. Thus adoption of crowdsourcing has begun to take place within the heritage industry as can be seen in the literature. While often still on smaller scales than traditional outsourcing projects found in commercial business, leveraging the heritage community to produce new visions and enhance knowledge is an area that is being explored more by museums and galleries.

Gathering knowledge from the crowd in order to co-create is another common use of crowdsourcing. Crowdsourced knowledge sharing has achieved results ranging from disaster management systems such as CrowdHelp (Besaleva & Weaver 2013) and Haiti OpenStreetMap (Richmond 2010), through to facial recognition during game playing (Tan et al. 2014), investigative journalism Aitamurto (2016) and document transcription (Moyle 2011). A form of collaboration specific to heritage organisations – co-curation - is an area I shall now explore further, assessing both its benefits and difficulties.

## 2.5 Engaging the Crowd in Curation

In the 1939, Lynd (1939) wrote that increasingly people need to rebuild organisations so that knowledge can flow freely, opportunities can be created and problems solved. This view of knowledge being the key that organisations need to capture, cultivate and control in order to gain a strategic advantage is as prominent today as it was back in the 1930s; perhaps even more so with people and businesses now being constantly connected through the Internet, regardless of their physical locations. Vermeeren et al. (2016, p.3348) propose that museums are moving "from being collection-centered to being community-centered and for the public." This means that more frequently, museums are reaching out to their audience to ask for help or support.

Whilst curation has predominantly been an ‘expert based’ task, the notion of “crowd-curation” (Ridge 2014a) has arisen through both the means to reach out to a wider audience through the Internet, and the growth of content aggregators such a Digg, where an algorithmic from of crowd-curation is used to rank articles (Askalidis & Stoddard 2013). Crowd-curation is often regarded as a method for the public to generate and sort information into subject groups. Crowdsourcing within such open, online communities is most successful when the crowd is empowered by the organisation through socialisation, forming a sense of partnership between the audience and the organisation, in order for them to identify with, and contribute to, the organisation itself (Jarvenpaa & Tuunainen 2013). Naturally, the expertise of the curator should not be replaced by public exchanges over social media, but the ability to share the process of inquiry and differing perspectives is extremely valuable in order for the emergence of new ideas and knowledge (Mclean 2011). Indeed, curators should be able to supplement public knowledge using their expertise at engaging with, and interpreting, such knowledge, thus relinquishing the assumption that the museum itself has the ultimate control over the interpretation of collections (Adair et al. 2011). Lebraty and Lobre-Lebraty (2013) consider crowd-curation as one specific form of crowdsourcing and illustrate their definition in a summary table, shown in Table 3.

Table 3 Crowdcuration Summary Table

(Lebraty & Lobre-Lebraty 2013, p.88)

|  |  |
| --- | --- |
| Outsourced Activity | Classification of data, information, and knowledge. |
| Characteristics of outsourced activity | Requires the general theme to be attractive. |
| Secondary effects | Employees responsible for this task; certain companies selling publicity materials or surveys on a theme; journalists. |
| Some examples | The film "Life in day" on YouTube  Wikipedia |

Whilst they acknowledge that this form of crowdsourcing tends to work due to both human recognition being substantially greater than that of machines, and the "certain human inclination to arrange, classify, and box up the things around us" (2013, p.91), they also acknowledge that a limitation of crowd-curation is the interest factor. Niche tasks can be difficult to crowd-curate and thus it is best used when the subject matter is of interest to a large sub-section of the population.

Thus crowd-curation, or co-curation, is the use of inspirational or expertise of non-professional curators to produce both virtual and physical exhibits or exhibitions (Oomen & Aroyo 2011), as well as adding knowledge to specific artefacts within collections (Ridge 2014a). Many museum theorists and researchers (Hooper-Greenhill 1999; Cameron & Robinson 2010; Gurian 1999; Wallace 2001; Srinivasan, Boast, Becvar, et al. 2009; Eschenfelder & Caswell 2010) have considered collections as the main area that cultural heritage institutions such as museums need to consider for collective improvement and building community engagement around the interpretation of artefacts. Ridge (2014a) illustrates that the use of crowdsourcing projects within the heritage sector enables the audience to engage with specific goals, “even if that goal is as broadly defined as ‘gather information from the public about our collections’”. It should be noted though that the term ‘crowdsourcing’ within the heritage domain has become more commonly associated with the augmentation of metadata, transcription and archival improvements to gain contributions from the public which will enhance collections (Eveleigh 2014). Dunn and Hedges (2014) consider co-curation particularly interesting as the implication is that new knowledge or perspectives are gained, rather than simply adding energy or passion to an existing project. Harnessing this flow of information has allowed museums to develop exhibitions through collaborative efforts facilitating an exchange of ideas and knowledge (Moussouri 2012), although many museums still adopt a rather ‘romantic’ view of altruistic, transformational collaborations (Ryall 2014), with many still facing internal tensions between professionals as to who is the expert and creator of knowledge, and who the novice (Mclean 2011).

Co-curation is increasingly being undertaken by cultural and educational institutions (Carletti et al. 2014). Kelly (2013, p.54) noted that “Australian research has found that audiences want to interact with museums in a two-way relationship that encourages learning and exchange.” This can be achieved by heritage organisations engaging with their audience over Web 2.0 technologies such as social media allowing the audience to “contribute their thoughts to the knowledge base of the institution” (Marty & Kazmer 2011, p.563) and become “cocreators of communication processes” (Drotner & Schroder 2013, p.4). Engaging the audience in collaborative processes helps build a sense of trust, loyalty and belonging surrounding the institution. Whilst Oomen and Aroyo (2011) and Alam and Campbell (2012) consider co-curation a form of crowdsourcing, Estelles-Arolas & Gonzalez-Ladron-de-Guevara (2012) argue that it is not as it does not meet the criteria that they present as a requirement for tasks to be considered as crowdsourced (refer to Table 1), although they do concede that crowdsourcing can encompass many practices and its limits can “be identified virtually with any type of internet-based collaborative activity, such as co-creation or user-innovation” (2012, p.189).

With the advent of social networks, the global location and number of potential visitors to the heritage web resources (website, social networks, Wiki or blog) has increased exponentially. Input to cultural offerings now comes from all corners of the globe and are no longer restricted to the physical location of the organisation. The move from a physical forum to that of a virtual platform, a place for global conversations and knowledge sharing, facilitated by museum professionals (Phillips 2014), is vital in this digital age. Russo et al. (2009) state that social media provide technologies to capture the wealth of knowledge and experiences that visitors bring to museums whether through physical or virtual visits. However, co-curation/cocreation/crowd-curation/collaboration all have different meanings to different people. Often there are many terms that heritage organisations themselves use to describe internal working practices, so the problem is how these will relate to those outside of the organisation? Simon (2010) provides a useful distinction between collaboration and contributory projects, or co-curation: “if contributory projects are casual flings between participants and institutions, collaborative projects are committed relationships”.

So whilst social media are “giving rise to new forms of user interaction and cocreation their implications for business strategy have yet to be fully elucidated” (Oestreicher-singer & Zalmanson 2013, p.592). If we were to argue that social media positively encourages communication and sharing and are thus transforming the relationship between audience and heritage institution (Kelly 2013) as well as providing technologies and tools to enable two heritage institutions to work together to develop exhibitions through collaborative engagement (Moussouri 2012), then we could argue that to “understand a museum in the digital age is to understand how its online (global) community is related to its physical (local) community and to all the points and flows of interaction within its distributed network” (Bautista 2014, p.xxii). Still, the notion of collaboration between institutions is relatively new within the heritage sector. As Falk & Shepherd (2006, p.158) note:

*If competition was at the heart of the old business paradigm, then the concepts of cooperation and cocreation must now be at the heart of the new paradigm. Both of the latter concepts emphasize doing something together, building on mutual strengths either in parallel activities or in fused, singular approaches. Both relate to new concepts of systems thinking, evoking images of wholeness and interconnectedness.*

Din & Hecht (2007, p.11) concur stating that collaboration “involves the cooperation of more than one individual, more than one department and perhaps more than one institution.” Therefore the increase of social network use has led to a reciprocal partnership between heritage institutions themselves and their audience, whereby the need has arisen to interpret themes and collections in order to diversify knowledge to different user groups (Powell & Kokkranikal 2014) from physical visitors to those in the virtual realm.

Co-curation is evidently not just the dominion of internal heritage professionals versus external audience participants. The ability for multiple departments to now work together in parallel has meant that developing both marketing and exhibition information for online resources has become faster and more easily included into the daily routines of staff. Jeff Gates, Lead Producer, New Media Initiatives at the Smithsonian American Art Museum (2010) agrees stating that social media not only change the way visitors to museums engage but also the internal professionals themselves, including curators, new media managers, marketing departments, educators and exhibition designers.

The fact that the heritage audience are already part of an elective community, sharing a common interest in the subject matter and a shared desire to achieve objectives, certainly helps with crowdsourcing opportunities. This allows the audience to engage with the organisation in a very personal way, providing their own contribution to knowledge. However, as Ridge (2014b) states “museums can be intimidating places. When we ask for help with things like tagging or describing our collections, people want to help but they worry about getting it wrong and looking stupid or about harming the museum”. Museums must therefore promote a level of confidence that the crowdsourcing participants are not going to be judged on their contributions or will ‘damage’ to the institution when taking part in such projects.

Actively working together or building ‘tiers of participation’ for managing the structure of the community and contribution evaluation, helps individuals cultivate social ties to each other and the heritage organisations they all follow. Howe (2008, p.6) describes the crowd as “communities of like-minded enthusiasts”, with Drotner & Schroder (2013) observing that at times museum researchers have reached out to specialist online communities to aid them with data collection. It should also be noted that providing contributors with feedback on their suggestions would present a variety of advantages including reinforcing the sense of community with the organisation as well as the efforts of the contributor in disseminating information (Blohm et al. 2013). Shepherd (2012) also takes into consideration the emotional aspect of participation concluding that amateurs enjoy the challenge of crowdsourcing as it enables them to interact with professionals, show off their skills and practice aspects of their interests. Anderson (2009) identifies this as the “extraordinary Internet-enabled phenomenon of mass volunteerism and amateurism” (2009, p.73) where “barriers to participation are relatively low: the core tasks are straightforward, self-contained and relatively easily learned” (Dunn & Hedges 2014, p.232).

The move towards public collaboration for creation or co-curation of museum content has been well documented (Hargrave & Mistry 2013; Oomen & Aroyo 2011; Freeman 2013; Ridge 2014a) and it could therefore be suggested that such collaboration effectively would allow the museum’s audience to become a form of virtual curator which constitutes a considerable shift from previous thinking. A version of such collaboration was produced by the BBC on their WW2 People’s War website.[[2]](#footnote-2) The audience collaborated on providing WW2 related memories to upload to the website, at the same time often linking and cross-referencing to other similar stories to produce a selection of inter-related personal accounts.

For heritage organisations to get their audience involved with helping to transcribe data or seeking knowledge on artefacts is hugely beneficial. To begin with, the audience are appropriately enthused about the subject matter which is what prompts the ‘sign-up’ to such a project. Something that may not be the case if a consultant is hired to do the work. Anderson (2009) explains that the audience are often enthusiastic and highly motivated through their enjoyment of a particular subject area and willing to work to add understanding of such to other members of the public. This engagement and desire to be a part of the community drives the notion of ‘crowd-working’ forward (Howe 2008; Brabham 2013). Freeman (2013, p.7) comments that:

*More and more, museums are integrating emerging technologies and approaches such as social media, open content, and crowdsourcing as a means of engaging their communities both internally and externally on a deeper level*.

Russo et al. (2008) explain that curation has changed from a one-to-many (expert-to-audience) model to a many-to-many model (where curation is a hub of community participation) and thus heritage organisations need to move from an information paradigm to a user-centred paradigm aiding more contemporary participation, as can be achieved through social media with the “potential to engage the thoughts, emotions, and actions of audiences” (Kunda & Anderson-Wilk 2011, p.899).

The increase in co-curation or ‘crowdsourcing’ is something that museums in particular, and heritage organisations in general, are beginning to consider as a serious option to aiding the investigative process to ascertain artefact information or build transcribed libraries of documents. As Freeman (2013, p.15) states “crowdsourcing is compelling museums and individuals alike; people can engage around ideas and content with others to produce work that none of them alone would have been able to accomplish.” An example of a recent (2014) heritage artefact crowdsourcing project referred to earlier in this document is Operation War Diary[[3]](#footnote-3) in association with the Imperial War Museums (IWM), National Archives and Zooniverse (the crowdsourcing platform). The Imperial War Museums wished to understand the movements and activities of the British Army on the Western Front during the First World War through over 1.5 million pages of War diaries. The crowd use tagging along with free-text to note dates, names of regiments, places, etc. (see Figure 4). The Blog relating to the site announced that over 10,000 ‘citizen historians’ had signed up in the first eight weeks since the project launched and up to March 2014 the effort put in by the crowdsourcing community equated to one person working forty hours per week for four years.



Figure 4 Operation War Diary page with tagging

Clearly tagging so much data would be an extremely large task and time consuming for the Imperial War Museums so it would appear crowdsourcing offers a sound solution. However, Russo et al. (2009, p.160) propose that “there is an implicit notion that when museums enable audiences to participate in knowledge exchange, they challenge the expert research and development work undertaken by curators and other professionals.” Byrd Phillips (2014) concurs that this new interconnectedness has led to fears that the traditional authority and expertise espoused by museums and other cultural heritage organisations may erode, and with the abundance of information on the Internet, museum professionals may feel that they are the last remaining credible sources of information (Phillips 2013). There is little extant literature to support that this is the case and thus the area of perceived ‘deprofessionalisation’ forms part of the research undertaken in this thesis. It may be considered that whether the individual is an amateur or expert, a desire to share the knowledge pertaining to an area that holds a passion for them, is something that should be encouraged. Meecham (2013) concurs explaining that museums are learning from outside of their sector by utilising crowdsourcing for co-curation opportunities with audiences who are readily enabled by Web 2.0 tools.

Co-curation appears to harnesses the talents of the crowd to assist heritage organisations to gather further detail on specific artefacts or build entire exhibitions, using the free resources available to them. As Lebraty and Lobre-Lebraty (2013, p.91) point out "crowdcuration works because humans have the innate ability and motivation to put things away". However, Drotner & Schroder (2013) acknowledge that a means to manage, monitor and balance public and professional collaborations will be a challenge for any heritage institution. Finding the equilibrium between the diversity of responses from the myriad of individuals engaged on the project and the collective expertise presented must be weighed up. Keen (2007b, p.36) puts forward an argument against such crowdsourcing initiatives maintaining that the notion of the “noble amateur” or hobbyist, is threatening intellectual institutions and traditions by becoming involved in matters for which they have no qualifications or proven expertise.

A challenge that heritage organisations have is ensuring that co-curation, or collaborations, between the physical and virtual realms are represented clearly and that traditional roles, such as that of the curator, can be transferred into the digital space. This very notion means that curators must now embrace the technologies surrounding the digital environment and become semi-efficient information technologists at the very least in order to accumulate and disseminate the variety of knowledge that they now have access to. Byrd Phillips (2014, p.257) concurs stating that the ‘new curator’ has a role that “should be augmented with that of a platform provider, gathering and dispersing information in addition to creating it”. This is frequently achieved through the creation of a ‘commons’ area on either the institution’s website or on an external platform such a Flickr or Facebook, allowing a flow of knowledge between the professional (curator) and amateur (public). Social media has therefore allowed a shift in the manner in which knowledge is shared, with Majchrzak et al. (2013, p.40) explaining that it is moving from “online knowledge sharing to continuous online communal knowledge conversations…[which are] dynamic, decentralised, and emergent”.

It is no longer a case of whether museums should provide opportunities for their audience to engage with collections, but how such collaborations should be embraced to capture the differing ranges of expert knowledge available (Mclean 2011).

## 2.6 Knowledge Transfer

Knowledge is a term used in a wide range of disciplines but is particularly prevalent in a branch of philosophy - epistemology. Knowledge is a complex, ambiguous concept and the notion of what it is has been argued throughout history. Plato (427-347 B.C.) was “the first philosopher in the Western World to think seriously about the nature of knowledge” (Wellbourne 2001, p.1). Knowledge is interpreted content with meanings that can vary dependent upon the context in which it is used (Norris et al. 2003). In other words, knowledge means different things to different people, dependent upon their circumstances and point of view (Kluge et al. 2001). Dunn and Hedges (2014, p.233) suggest crowdsourcing is simply another “means of creating and exploring knowledge”.

With knowledge acquisition and dissemination being at the centre of most crowdsourcing projects, this next section will examine current research around knowledge sharing.

### 2.6.1 Tacit Knowledge and Explicit Knowledge

Theory of knowledge is a branch of philosophy that provides an interpretation to the nature of cognition (Woozley 1949) in order to link knowledge and understanding. It also “challenge[*s*] us to state explicitly what knowledge is: how it is distinguished from ignorance, error, and lucky guessing” (Williams 2001, p.244). One of the most significant knowledge theories has been attributed to Polanyi (1966, p.4) who states “we can know more than we can tell”. He was one of the first philosophers to define the differences between tacit and explicit knowledge:

*If, as it would seem, the meaning of all our utterances is determined to an important extent by a skilful act of our own - the act of knowing - then the acceptance of any of our own utterances as true involves our approval of our own skill. To affirm anything implies, then, to this extent an appraisal of our own art of knowing, and the establishment of truth becomes decisively dependent on a set of personal criteria of our own which cannot be formally defined.* (Polanyi 1958, pp.70–71)

According to Polanyi, tacit knowledge is something that individuals simply know unconsciously and are therefore often unaware of its existence. It is best communicated through experience or practice, and is based on personal knowledge including attitudes, beliefs and pure intuition. It “exists in the heads of people” (Hedesstrom & Whitley 2000) and cannot be formalised. Jarvenpaa and Tuunainen (2013, p.125) note that the ability to co-create information comes from “an iterative process; the customer is engaged and tacit knowledge is exchanged reciprocally between the firm and the customer”.

Explicit knowledge however “is precise and codifiable” (Sallis & Jones 2012, p.10). It deals with rationality and objectivity and can be “expressed in words and numbers, and easily communicated and shared in the form of hard data, scientific formulae, codified procedures, or universal principles” (Nonaka & Takeuchi 1995).

Based upon Japanese companies’ understanding of how knowledge is presented in the workplace, Nonaka and Takeuchi (1995) proposed a SECI model of knowledge creation theory. They presented tacit and explicit knowledge as two main forms of human knowledge, with four modes of knowledge conversion between them. The modes are Socialisation: tacit to tacit knowledge transfer; Externalisation: tacit to explicit knowledge transfer; Combination: explicit to explicit knowledge transfer; and Internalisation: explicit to tacit knowledge transfer. Thus they illustrate how knowledge transfer can move from tacit to explicit and then return to tacit once more. This supports Al-Hawamdeh’s (2003) proposal that all knowledge is rooted in tacit knowledge. However, Stenmark (2000, p.8) warns that “trying to externalise tacit knowledge can then lead to serious problems since the nuances and details that are exchanged in physical interactions are lost”. Further, Polanyi (1966) claimed that tacit knowledge can only be accumulated through experience in a given field. By contrast, Nonaka and Tekeuchi (1995) argue that it can be shared through the spiralling interactions between tacit and explicit knowledge. Cowan and Foray (1997, p.595) agree stating that whilst tacit knowledge may initially be no more than an idea, “as the new knowledge ages, it goes through a process whereby it becomes more codified”, or explicit. However, in a critical review of Nonaka and Tekeuchi’s model, Li and Gao (2003) suggest it only works due to the implicitness of the Japanese context, which is often significantly different from that of the Western world. Tsoukas (2002, p.15) also argues that Nonaka and Tekeuchi’s view of tacit knowledge being transferred to explicit knowledge “is erroneous [because] it ignores the essential ineffability of tacit knowledge, thus reducing it to what can be articulated”.

Baumard (2001) notes that two differing perspectives on tacit knowledge have emerged. The first views it as ambiguous and part of the unconscious human mind (Polanyi 1966; Tsoukas 2002; Szulanski 2003); that which cannot be expressed or captured and translated. The second view is that such knowledge can be withheld when applicable to increase the individual’s power (Stenmark 2000; Martz Jr & Shepherd 2003); the well-known phrase “knowledge is power” (Brown 1989, p.3) would therefore be remarkably apt here. Indeed, links between knowledge and power are often close as Nagel (2014, p.5) states “power typically delivers advantages that can help a person gain knowledge, and knowledge can often help a person gain power”.

It must be noted, however, that knowledge sharing can be problematical. Sallis and Jones (2012, p.4) commented that:

*Knowledge is after all not a tangible product, or a material thing like land, labour and physical capital. Neither is it all of a kind. Some knowledge is very easy to access and cheap to harness, while other knowledge is locked away in people’s minds and harder to use effectively. An organization may not even be aware that it has some kinds of knowledge – this may become clear only when key individuals leave or when a competitor highlights it.*

This raises the issue that tacit knowledge itself, that which is within an individual as ‘known’, has no clear foundation and thus sharing tacit knowledge can cause confusion as individuals often do not know exactly what to share. There can also be a concern that sharing too much endangers their own position (Al-Hawamdeh 2003).

Social barriers may also restrict knowledge sharing. These can include perception, language, time (Haldin-Herrgard 2000), hierarchy and bureaucracy, along with incoherent paradigms (Engström 2003). Thus the sharing of knowledge provides many difficulties because the information “is about relationships rather than data” (Kluge et al. 2001, p.191).

Increasingly literature on knowledge management features the phrase ‘tacit knowledge’ as a way to sustain competitive and economic advantages. However, much research in the knowledge management field is at organisational level (Sharma 2013; Hildreth et al. 1999; Moussouri 2012; Nonaka & Takeuchi 1995), not at an individual level. Baumard’s (2001) research on organisational learning illustrated that tacit knowledge can be presented to, and shared in, communities of practice (see section 2.7) but is also embedded within the organisations culture where it is less easily articulated and even less easily managed.

In terms of engaging the public, museum personnel would primarily deal with tacit knowledge, in the form of external expertise and living memory understanding and stories. Often the tacit knowledge would relate to stories that have been passed down a generation or more, e.g. World War II experiences from father, who took part in the conflict, to son, who gained an understanding of the experience from the father's story. Tacit knowledge would appear to be the primary form of knowledge in crowdsourcing projects - knowledge that is 'known' to the provider. Zheng et al. (2011) argue that in the case of tacit knowledge, the cost of knowledge transfer increases due to the difficulty of transferring this form of knowledge, although they recognise that through collective experiences and social exchanges, tacit knowledge can be transferred. However, explicit knowledge, that which is 'verified', an example being World War II documentation such as service records and Red Cross reports on prisoner of war (PoW) camps, can also be shared. The challenge for heritage organisations such as museums, is how to manage the wealth of knowledge received through general social media exchanges and also dedicated crowdsourcing projects.

### 2.6.2 Knowledge Management

Sallis and Jones (2012, p.2) note that whilst “knowledge as a discipline is as old as recorded history, knowledge management is a relatively new discipline.” Since the early 1990s a focus on knowledge management and knowledge workers has been extolled by a growing number of consultants and researchers all encouraging businesses to consider the knowledge within their organisation as a form of competitive advantage (von Krogh et al. 2000). As such, organisations have begun to realise that knowledge is a valuable resource and needs to be managed, both internally to the organisation (Hansen et al. 1999) and externally through interactions with other businesses and the public. The field of knowledge management therefore adopts an interdisciplinary approach. It covers the technologies themselves in the form of information systems (Laudon & Laudon 2006; Mertins et al. 2003; Alavi & Leidner 1999a; Alavi & Leidner 1999b), management strategies (Sanchez & Heene 1997; Cross & Israelit 2000; Hedlund 1994; Klein 1998; Khuong et al. 2014), human resource management (Soliman & Spooner 2000; Hislop 2003; Chen & Huang 2009), and even competitive advantage (Cepeda-Carrion 2006) confirming the statement from Mertins et al (2003, p.1) that “the importance of knowledge for the competitiveness of companies, organizations and even economies is widely accepted nowadays”.

The ability to capture, share and use knowledge in order to enhance understanding, performance and learning within organisations (Scarbrough et al. 1999) is at the heart of knowledge management through technological tools such as the Internet, Intranets and email. Organisations recognise that distributing knowledge beyond co-workers and projects is central to developing enterprise-wide content creation, collaborations and innovative thought processes (Majchrzak, Wagner, et al. 2013). However, there is still a significant gap in literature on people management issues (Scarbrough & Swan 1999), and how people internal to organisations manage knowledge acquisition and dissemination, particularly around crowdsourcing.

Using knowledge sourced through crowdsourcing by non-profit organisations such as heritage institutions, allows such knowledge to be freely available to others. Referring back to a previous example would be Lives of the First World War[[4]](#footnote-4) where the Imperial War Museum (IWM), other associated businesses, and members of the public can all contribute to life stories to build knowledge and understanding of an individuals’ involvement during WWI. This means that as well as being a source of the initial knowledge in many instances, the IWM is also a recipient of knowledge through the interactions associated with the website.

Knowledge management gives rise to a number of potential problems. Individuals will often censor knowledge and expertise as this forms part of their value to a business or community. As Wilson (2002) states “If getting a promotion, or holding your job...is based on the knowledge you possess – what incentive is there to reveal that knowledge and share it?” However, within many organisations, managers deem themselves to be the primary holders of knowledge, but how can they extract it from employees who are guarded about giving away their own creativity or professional understanding? As Allee (1997, p.72) states “knowledge is a social process. That means no one person can take responsibility for collective knowledge”.

Majchrzak et al. (2013) argue that the manner in which individuals within an organisation are engaged in knowledge sharing over social media technologies is still relatively unknown. Kane et al. (2014, p.275) concur stating that "despite the popular adoption of social media, their application for organizational purposes, including marketing and knowledge management, has only just begun".

Knowledge management approaches themselves are shifting from the cognitive perspective of knowledge being possessed by individuals to that of knowledge communities, sharing information and ideas through social interactions and learning (Newell et al. 2009; Amin & Cohendet 2004; Bhatt 2001). Communities, however, are often beyond the control of the organisation so a current dilemma is how heritage organisations can capture the wealth of knowledge that can be found within such external communities. Knowledge transfer is most applicable between communities of individuals with specific interests in common.

### 2.6.3 Knowledge Communities

Heritage organisations no longer have total control of the dialogue being presented by their audience. As well as communities set up by heritage organisations themselves on media such as Twitter, Facebook and Flickr, many communities are hosted on sites owned by organisations external to the heritage institution itself as can be evidenced from a simple Google search. These can be dedicated groups or areas contained within generic forums or specific pages aligned with a particular heritage organisation. These ‘knowledge exchanges’ allow the audience to develop discourses around heritage engagements (whether physical or virtual) outside of those technologies developed by the heritage organisations themselves, developing “meanings” to the audience experience (Russo et al. 2009, p.162). However, one significant difficulty with knowledge acquisition by an organisation on the outside of a knowledge exchange, is that ephemeral knowledge - ideas or opinions - are complex to obtain due to the fact that they are dynamic in nature, constantly being created or improved (Brzozowski 2009).

Nagel (2014, p.1) determines that “the hunt for knowledge has never been easier. Hard questions can be answered with a few keystrokes” and innovative knowledge diffusion is leveraged through Web based communication technologies (van Baalen et al. 2005). Adamic et al. (2008, p.665) concur stating that “every day, there is an enormous amount of knowledge and expertise sharing occurring online”. Utilising Internet technologies to seek and assimilate knowledge is now common practice. Van Baalen et al. (2005) comment that this “diffusion of innovative knowledge has become one of the major research interests in management science and economics.”

Powell and Kikkranikal (2014, p.36) note that “museums are a key part of cultural industries” and their ability to create “knowledge-sharing networks in which participants share images, information, and experiences in ways that enable them to become co-creators of digital culture” (Liu et al. 2010), often via the use of tagging systems. This is an area that needs to be explored through the medium of Web 2.0 and social media. Tagging is the process of adding “metadata to a community-shared content, in order to organize documents for future navigation, inspection, filtering, or search” (Malizia et al. 2010, p.1374). Effectively, the main purpose of tagging is to allow users to find information which is pivotal to developing knowledge exchange between collaborators. Collaborative tagging generally requires either a level of prior knowledge and/or a degree of cognitive judgement (Dunn & Hedges 2014). As the audience become adept at tagging, they become active contributors to web content classification (Malizia et al. 2010). The term ‘folksonomy’ was coined for this process by Vender Wal (2007) in 2004 to describe the ‘folk taxonomy’, although he now argues that it has been widely misused. Tagging of content can happen both within the bounds of the heritage organisation’s website or externally to such on a knowledge exchange site such as Flickr, YouTube or Facebook.

Analysing tags using information retrieval algorithms can provide detailed insights into the knowledge and opinions of users of web content, a useful tool for heritage organisations. However, finding ways to capture the information contained within knowledge exchanges requires a range of strategies. Both individuals and organisations “know what they don’t know...[but] they know somebody else might know” (van Baalen et al. 2005, p.306) and thus capturing and understanding this fragmented information is a significant task. Organisations are therefore not just dealing with the wealth of data available and the diverse range of platforms it is contained upon, but the demands of defining and retrieving relevant data could prove to be an extremely time consuming data mining experience.

Whilst Web 2.0 alone will not produce valid knowledge exchanges, the relationship between the socio-technical features of the tools themselves and the way in which the audience engage with it through participation in communities and information sharing allows it to become a valuable resource (Marchi 2010) whereby content can be manipulated and meshed together generating new solutions or decision making tools in order to share knowledge (Mills 2010). Faraj and Azad (2012) present the lens of affordances as the "bridging concept that conceptually links between design and use of technology". This seems particularly true of social media, where the design of technology such as Twitter - originally intended as a micro-blogging site - has extended to one that now offers collaboration, knowledge exchange, marketing, and many more varying narratives available to its users. While this is certainly beneficial to the technology audience, it can cause problems for organisations trying to understand knowledge exchanges within the inclusivity frame due to the types of audience that heritage organisations attract. When considering the visitor further, heritage organisations need to understand the purpose of each visit, how often those visits occur and whether virtual or physical. Even those considered ‘regular’ visitors (in the physical sense) may only actually visit three or four times per year but could potentially contribute their experiences of those visits to knowledge exchange sites on a regular basis via comments on forums or images.

Recognition by museums of the importance of “community as reflective of sociocultural changes” (Bautista 2014, p.13) has increased in the Western world. Weil (2002, p.200) discusses the matter of museums and community:

*The museum of the near future, as thus envisioned...will in essence be one of a range of organizations – instruments, really – available to the supporting community to be used in pursuit of its communal goal. As an intricate and potentially powerful instrument of communication, it will make available to the community, and for the community’s purpose, its profound expertise at telling stories, eliciting emotion, triggering memories, stirring imagination, and prompting discovery – its expertise in stimulating those object-based responses.*

The concept of community empowers its members as it is dependent upon public establishment and involvement (Bautista 2014). Whether the community is borne through a desire by museums to engage with their public on certain subjects, or by those public themselves to share experiences, participants must be active for the community to thrive. Active participation is required to maintain online knowledge exchanges as the performance of Web 2.0 resources is built on their continued use through a variety of inscribed relations but should that content or context be abandoned, the experience that made it significant terminates (Marchi 2010). Van Baalen et al agree stating that “if active knowledge producers withdraw from the online network, the network will cease to exist.” Bautista (2014) also concurs stating that active members of a community, whilst not necessarily always agreeing on subject matter will, at the minimum, engage in dialogue through social interaction. It is also worth noting that often only a small percentage of participants produce the majority of the work, and many participants become dormant after only a limited number of submissions (Zhao & Zhu 2012; Alexander et al. 2008). It would be interesting to see how the crowd selects tasks and works alone or within the community. The sense of being involved (collaborating) and respected within the community (recognition) can play a dominant role. Reputation within knowledge exchanges is built upon the perceived value of the contribution from peers within the community.

*A community’s recognition of the initial status it has conferred on a participant is replaced by a constant redefinition of participation and forms of interaction based on the rules governing the ‘approval/acceptance’ that participants attain in the context of one or more communities (which correspond to social circles that can be very wide in scope and size)* (Marchi 2010, p.1635)*.*

Most commonly knowledge sharing is accomplished over the Internet utilising virtual communities, whom Rheingold (2000) defines as a “group of people who may or may not meet one another face-to-face and who exchange words and ideas through [*computer*] networks”. Increasingly such knowledge exchange takes place through blogs and social networks with Web 2.0 being incremental in allowing users to reformulate their knowledge and the contexts within which they are exposed to it. Technology both maintains an individual’s identity whilst concomitantly providing the support to larger communities through communication on both a one-to-one and one-to-many basis (Bautista 2014).

The literature suggests that a community of contributors with self-organising collective structures is required for crowdsourcing (Blohm et al. 2013). Continuous acquisition of new contributors provides the basis for a growing community that can then work together to evaluate ideas and seek further contributions.

The following section looks at both professional communities, known as a community of practice, and those more commonly associated with anonymous, globally dispersed individuals, the network of practice.

## 2.7 Community of Practice

Most collaboratively engaged individuals move to become members of a form of community of practice which is built on social capital theory to enable knowledge creation, sharing and use (Lesser & Prusak 1999). A brief definition of community of practice by Wenger (2006) is:

*Communities of Practice are groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly.*

The distinctive characteristics of communities of practice are the commitment to the *domain* of interest, building relationships with other members of the *community*, and developing a shared repertoire of *practice* (Wenger 2006). As Wenger et al. (2002, p.43) state “all organizations have informal networks of people who communicate, share information, and build relationships and reputations. A community of practice is different from such a network in the sense that is it ‘about’ something”. Theories of community of practice are founded on Theories of Practice and Theories of Identity, which intersect the Social Theory of Learning (see Figure 5).

Whilst originally concentrating on apprentices within commercial organisations that are ‘required’ to undertake certain tasks or learning exercises, or those organisations that seek to engage personnel separated by time and space (Lee-kelley et al. 2014; Martins et al. 2013; Khedhaouria 2013), the traditional theoretical framework of community of practice has been extended to informal, voluntary memberships of virtual communities, conceptualised as a Sense of Virtual Community (Ellonen et al. 2011), as illustrated through the medium of discussion forums (Blanchard & Markus 2004) and blogs (Blanchard 2004). Ellonen (2011) assesses that an understanding of the “sense of virtual community is a prerequisite for the study of virtual collaboration” but explains that extant literature on the subject matter is lacking and established definitions have not been made.

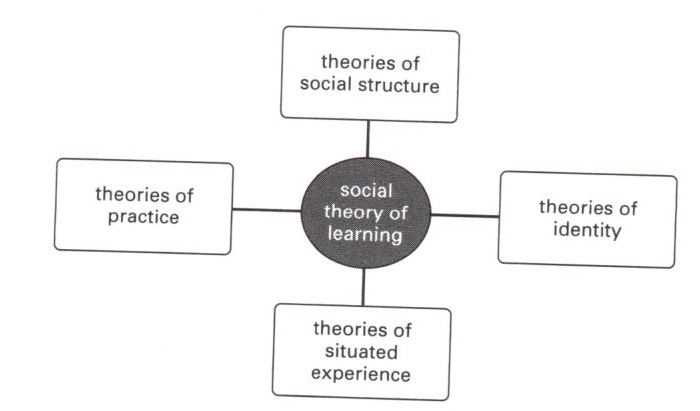


Figure 5 Two main axes of relevant traditions

(Wenger 1998, p.12)

Members of a community of practice engage with one another and “thus acknowledge each other as participants” (Wenger 1998, p.149). It is through this interaction (practice) with others that this social community is defined.

*Things have to be done, relationships worked out, processes invented, situations interpreted, artifacts produced, and conflicts resolved. We may have different enterprises, which give our practices different characters. Nevertheless, pursuing them always involves the same kind of embodied, delicate, active, social, negotiated, complex process of participation* (Wenger 1998, p.49)*.*

Major transformations in the workplace over the past two decades have led to “new forms of work organized around communities where participants share information and expertise around common interests or job roles” (Matthews et al. 2012, p.371). The concept of community of practice has been applied to heritage organisations in relation to the geographically distributed *community* of exhibition developers within the *domain* of natural history collections using online collaborations to enhance their *practice* (Moussouri 2012). Hein (1998) further explains that cross-organisational collaborative projects between museums allows for a wider range of visitor needs to be met. It would be reasonable to assume that cross-departmental collaborations would also be beneficial in building knowledge and understanding. Orr (1996) uses the metaphor of ‘war stories’ when describing the shared experiences of copier repairers. He suggests that:

*Once war stories have been told, the stories are artefacts to circulate and preserve. Through them experience becomes reproducible and reusable...They preserve and circulate hard won information and are used to make claims of membership or seniority within the community.”* (1996, p.126)

These stories allow the community to construct competencies about its members (Hildreth et al. 1999). However, this still focuses on the ‘commercial’ aspect of community of practice through collaborations with other ‘paid’ knowledge workers. Knowledge exchanges however consist of individuals who may never meet or know each other in any other way than through a social network and their online presence. These communities have been defined as a network of practice (Brown & Duguid 1998) which builds on a number of theories such as social capital and technology adoption (Choi et al. 2014). Therefore, whilst Orr’s example relates to physical work, it would appear to be equally applicable to virtual communities.

Whilst communities of practice are most commonly associated to organisations and those individuals within, networks of practice are loosely coupled systems populated by many, often anonymous, individuals. The following section provides an understanding of networks or practice, and how they differ from communities of practice.

## 2.8 Networks of Practice

A network of practice is a virtual community allowing members to share knowledge through computer aided technologies, described by Huang and Zhang (2016) as “Internet-enabled open knowledge communities” (2016, p.786). There is a great deal of extant literature focusing on virtual communities, from motivations to join (Watson & Johnson 1972; Furlong 1989; Wellman et al. 1996; Ridings & Gefen 2004; Gupta & Hee-Woong 2004), participation (Dholakia et al. 2004; Chan et al. 2004; Ardichvili et al. 2003), leadership and management (Faraj et al. 2015; Agterberg et al. 2010), and self-sustaining communities (Ridings & Gefen 2004; Blanchard & Markus 2004; Andrews 2002; Whitworth & de Moor 2002). Virtual communities generally consist of members who are loosely connected through a shared interest but are unlikely to meet or know each other outside of the virtual world that they inhabit. Indeed, Gerson (2008, p.193) notes that computer technology has evolved to assist individuals in conveniently dealing with one another, and to perform cooperative tasks. However, van Baalen et al. (2005, p.300) also comment that:

*the diffusion of innovative knowledge is considered to be one of the main challenges in the emerging knowledge society. As this innovative knowledge is distributed and fragmented, Internet-based information and communication technologies can help to leverage the knowledge diffusion.*

Tuomi (2002) concurs stating that such distributed, loosely connected ‘pockets of innovation’ can be linked by using Internet technologies, and thus the diffusion of such information takes place at high speed but with moderately low cost. Networks of practice can have enormous reach, extended by the use of information technology, and yet Brown and Duguid (2000) note that the links between participants are primarily indirect, via third parties. Bell and Tight (1993) add to this that coordination and communication are therefore explicit in nature.

Members of a network of practice can also be referred to as “virtual teams” (Sarker et al. 2000, p.1) or “communities of interest” (Wenger et al. 2002, p.43). Rifkin (2000) describes how marketing professionals established communities of interest as a way to engage new customers and retain their long-term brand loyalty. Crowdsourcing has been seen to provide highly productive, knowledge building communities, by circulating ideas to afford interactive knowledge development (Frisch 2011). Whilst literature on communities of practice and knowledge management “suggest the pre-existence of shared knowledge or a shared belief system as a condition...for networks of practice to emerge” (van Baalen et al. 2005), perhaps a common interest is a more appropriate reason. Thomas and Seely Brown (2014, p.12) refer to such communities as collectives as they are “collections of people, skills, and talent that produces a result greater than the sum of its parts”. However, Bell and Tight (1993, p.142) note that “network members [within these communities] don’t interact with one another directly to any significant degree”. Thomas and Seely Brown (2014, p.12) agree stating that “collectives are not solely defined by shared intention, action, or purpose. Rather, they are defined by active engagement” even though such engagement may not be directed between individual members. It should also be noted though that even communities of interest are hierarchical in nature and often members can feel social pressure to contribute and participate (Bautista 2014). Whether participants are currently engaged or not, Wenger et al. (2002, p.44) state that these “communities are...a place where people can make a contribution and know it will genuinely be appreciated”. This links to Majchrzak et al.'s (2013) observation that the affordance of networked-informed associating leads to increased social capital, and thus positive, productive knowledge sharing conversations take place among the community, through social network engagement. Byrd Phillips (2014) describes these communities in terms of ‘online barn raising’ where the whole community comes together to work on a task, such as building a barn, and once completed, celebrates in the success and accomplishment of the same. This is contrary to other crowdsourcing projects where the members disperse immediately the task has been completed and lack that feeling of community spirit.

Researchers used a variety of theoretical frameworks to attempt to understand knowledge sharing behaviours, such as those that take place in a network of practice, including social exchange theory (Bock et al. 2005; Kankanhalli et al. 2005; Lin et al. 2009), social cognitive theory (Yang & Farn 2009), social capital theory (Wasko & Faraj 2005; Chow & Chan 2008; Chiu et al. 2006), public goods theory (Wasko et al. 2009), and the theory of reasoned action (Gagné 2009; Hsu et al. 2007), although with the exception of social cognitive theory, none of the frameworks employed were motivational theories, but interestingly most of the studies concluded that knowledge sharing behaviours were influenced by motivational factors (Yoon & Rolland 2012). Wenger et al (2002) concur stating that motivational factors such as the variety of participatory levels prompt individuals to join a community.

Van Baalen et al. (2005, p.311) considers it “logical that at the emergence of a network of practice, knowledge exchange will start with knowledge with low transaction costs and low cognitive distance”. In other words, more generalised, explicit knowledge is being shared between participants. Wasko et al. (2009) also noted that sustaining a network of practice was achieved through generalised exchange between members who had developed strong community ties. However, as knowledge transfer increases through the knowledge informant and receiver engaged in different practices, and operating in varying contexts, the cost of such knowledge will increase (von Hippel 1994). There is also the danger that the available knowledge will be exhausted and subsequent requests will not be answered. Maintaining critical mass of active members is essential to sustaining a network of practice despite a “high proportion of member churn in the network” (Wasko et al. 2009, p.254) which would be expected as individuals’ lives and priorities change.

Commonly, the distinction between a community of practice and a network of practice can be blurred at the surface level but both form part of a social network. Dubini and Aldrich (1991) describe a social network as a patterned relationship connecting a collection of individuals, groups or organisations. Liebeskind et al. (1996, p.430) concur describing a social network as "a collectivity of individuals among whom exchanges take place supported only by shared norms of trustworthy behavior". This next section looks at how social networks have been incorporated into heritage organisations and some of the problems that have been faced.

## 2.9 Social Networks and Heritage: Blending the Virtual and Physical

The way in which the museum professional and the audience interact, and the manner in which the information is held, accessed and displayed, was highlighted in 2004 when Hamma (2004) identified that whilst there were significant websites available for museums, there were still relatively small numbers with integrated digital knowledge management functions. There is empirical evidence that this is probably less true today. Viewing almost any heritage institutions’ website, you will see digital media managers and digital curators’ profiles now prominent on the pages. Even relatively small organisations now have at least one person who taken on the digital media role as part of their current duties. In some cases, roles distinct from those of traditional technologist need to embrace IS in order to fulfil their place within the organisation. The partnership between the Internet and museums is one that can flourish as the fundamental goals are the same – to provide access to information easily and quickly and “because their differences (e.g., real versus virtual spaces, validated versus anonymous content) complement one another…The internet makes no claim of authoritative content but supports a plurality of information and relies on others – museums, visitors, etc. – to make sense of it all” (Howes 2007, p.68). Thus, as heritage organisations engage with the Internet through both websites and social networks, the more that their audience will recognise their contribution and engage with it in personalised ways as sources of online information, experiences and learning.

An advantage of the Internet is that museums can now reach millions of people around the globe, offer insights to their exhibitions, and access to their educational environments that would not have been possible before (Sarraf 1999). “There has also been a tremendous increase in knowledge about online museum visitors in general” (Marty 2007a) and with the increase of tools available to monitor and gather statistics from the various forms of social media, heritage organisations are better positioned to cater to their new audience members. Anderson (2009) suggests that “technology is a vehicle for making the museum relevant to the world”. Stein (cited in Bautista 2014, p.45) concurs stating that “technology is a way to extend audiences past a geographic border.”

Interactions through social networks involve a vast assortment of audiences including academics, historians or simply interested parties wishing to learn about objects within heritage (Marty 2008). An approach to investigating museum collaborations using Frame Analysis (Goffman 1974) was developed by Kidd (2011) to examine the frames of marketing, collaboration and inclusivity to form an understanding of social media use within these institutions, although she states that any analysis of "these frames is underpinned by reference to the frame of the social media application itself” (2011, p.67).

Heritage organisations and museums recognise that engaging with social media opens up virtual and mobile spaces allowing them to extend their boundaries to reach beyond their physical buildings and enhance the user experience both before and after the physical visit (Marty 2007a). Kelly (2013, p.54) agrees asserting that “museums now operate across three spheres: Their physical site, the online world (via websites and social media) and in the mobile space.”



Figure 6 Museums and the Internet

(Howes 2007, p.67)

Artefacts are now conceptualised in a virtual environment as well as appearing in the physical world. The Venn diagram presented in figure 6 illustrates the merging of information, objects (artefacts) and visitors across the physical and virtual realm. It is easy to see the blending of physical and virtual spaces merging at visitor and information level. Kidd’s (2011, p.65)investigation of the nature of the uses of social media within museums illustrates that:

*It is no surprise then that museums have seen various forms of social media as a natural complement to the work they are doing on site; populating, indeed colonising, such spaces with great haste and some abandon. In so doing, museums are both responding to a perceived demand for different forms of engagement, and exploring the possibilities that such moments of engagement, however facilitated, represent for audience development, marketing, personalising their offer, and seeking to “prove” their vitality, diversity and relevance.*

The implication from this statement is that while many museums see the value of social network interaction with their audience, it could be considered that some are simply using the tool in a ‘me too’ fashion to ensure they are also seen to be part of the trend. At times this may be done rather too rapidly without sufficient thought for the subsequent consequences involved in the investment of a social network platform, such as personnel time and adequate responses to questions posed. Indeed, while many papers have been written regarding the integration of social media within the heritage sector, very little actual research has taken place into the possible uses of the same (Padilla-Meléndez & del Águila-Obra 2013) and an established methodology has yet to be produced for this sector (Carmen & Jose 2008).

Stein (2011) recognises that another issue warranting further exploration is that “museums want to engage visitors and provide a variety of deep experiences, but don’t quite know how to sustain those efforts over a long period of time.” This is something that many heritage organisations struggle with as they lack the understanding of why users revisit their web pages or social media sites (Marty et al. 2013). This is not a new issue. Falk and Sheppard envisaged the problems that museums would face when they stated “the business models of the past appear to be dangerously out of sync with the rapid changes taking place around us. The public of this new century has changing needs and expectations, and most museums are woefully ill-prepared to meet these” (Falk & Sheppard 2006, p.ix). Kidd (2011, p.68) asserts that “just as individual visitors (online and offline) are complex, with multiple identities, agendas and affiliations, so too are museum professionals.” By engaging with social networks, organisational representations are evolving, providing not only immediate visibility of information, but also highlighting collaborative practices and providing direct contact between a variety of actors, often highlighting the personal social capital of internal stakeholders (Lebraty & Lobre-Lebraty 2013). Social networks offer them a voice with which to collaborate with colleagues, or reach out to the crowd.

A notion of using social networks such as Twitter to give an organisation a face or voice by which to engage and collaborate with the audience is also discussed and encapsulated in the extension of branding exercise under the term “Museum 2.0” (Srinivasan, Boast, Furner, et al. 2009, p.265). Shelley Bernstein, Chief of Technology at the Brooklyn Museum, New York, raised the question of “How do you give an organisation a face?” (Bernstein 2008). Kidd (2011) suggests that the face is very much the staff behind the technology and Bernstein (2010) confirms this fact when stating “For as long as we’ve had the Brooklyn Museum Twitter account, I’ve been the sole voice behind it” but goes on to state that from that point forward, multiple, approved personal Twitter accounts belonging to other members of staff at the Museum will be able to hashtag (#) comments in order for them to be fed through to the main Brooklyn Museum Twitter account in order to ensure “ followers can hear from a variety of voices” (Bernstein 2010). The ability for a digital curator or heritage educator to offer a differing perspective must surely be appealing. Kelly (2013) offers the opinion that the range of activities that museum audiences can engage with through Twitter could cause problems with the diffusion of the brand itself, but subject to internal personnel understanding that conflicting messages may be produced, and thus minimising such problems, it would still appear logical to have those differing ‘voices’ available to the audience.

However, care must be exercised when identifying yourself as being part of an organisation, whether you are engaging with the audience as such or on a personal level. With the increased uptake of social media for a vast amount of purposes, ensuring that an individual within an organisation does not start a highly controversial thread or divulge sensitive information is something that needs to be addressed carefully when managing expectations online. A more interesting view was given by Russo et al. (2009) stating that by using social media effectively audiences can engage in cultural debates through channels such as blogs and online dialogues offered by curators.

One issue of having curators engaging with the audience over social media is that they are no longer involved in their main role – curation – but are also now having to devote time and effort to encapsulate their knowledge in a format that they can then disseminate over social media as appropriate. In many cases this may lead to them acquiring new or different skill sets which are beyond the remit of their primary function with the heritage organisation. This open boundary of technology use has deeper implications between not only the organisation and its audience, but also internally to the organisation between staff in a variety of roles such as curator, educator and technologist, and is an area that has little extant literature relating to heritage organisations.

It is clear that the responsibility of adding an individual’s corporate influence to social media must not be understated. With an estimate in 2008 that virtual visitors could “be as much as ten times the number of physical visitors” (Marty 2008), it is easy to see that any piece of contentious or misinformation could have severe consequences to an organisation. It is also logical to expect that this ratio may have significantly increased with the move from a website alone to the addition of social networks.

Any heritage organisation evolving in this space must first understand whom their audience are, both from a virtual and physical standpoint. Making assumptions or guessing user requirements without due diligence in ascertaining real needs would be a foolhardy and potentially costly move. The influx of audience associated with social media and the desire to connect with such technology rapidly, often pushes heritage organisations to develop collections hurriedly without really knowing how to target their audience or indeed what the audience are actually looking for (Cunliffe et al. 2001). Often little research is undertaken by the organisation to comprehend the needs of their audience and they move forward with what they consider to be of interest without any actual verification. Marty (2008) confirms this stating that the desire to digitise resources and collections by heritage organisations is often carried out without the full understanding of how they will be used and the prospective impact on the very future of the organisation itself.

It would also be reasonable to assume that in many cases the physical and virtual visitor is often one and the same and increasingly those audience members who are unable to physically visit the museum or heritage location, can still view, access data and engage with the institution via virtual spaces, thus redefining the meaning of ‘museum visitor’ to include not only those persons who theoretically ‘walk through the doors’, but also those who view the institution’s virtual spaces. Drotner and Schroder (2013) see the promise that social media holds for advancing audience involvement whenever and wherever those persons desire, and forging new engagement methods for museums. The 2013 Horizon Report states that regrettably still “too few in museum administration see the opportunities that virtual museum visitors might be bringing for fundraising, philanthropy, and specialised marketing” (Freeman 2013, p.9).

The notion of building both physical and virtual visitor communities around themselves is an area that heritage organisations are beginning to embrace in order to fully utilise collaborative opportunities with their audience and enhance knowledge and understanding. Engaging with the public to develop networks of practice surrounding their institutions, would allow museum stakeholders to tap into the wealth of information available from the public. Rifkin (2000) describes how marketing professionals established communities of interest as a way to engage new customers and retain their long-term brand loyalty. It could be proposed that building a form of network or community based upon the interest in their collections, would also promote an increased sense of loyalty with the museum audience.

## 2.10 Summary

The literature has illustrated that the technological increases that have happened since the 1980s have allowed heritage organisations to look beyond the bounds of their physical location, and through the adoption of Web 2.0 technologies and social media, extend their audience reach. Self-publication through blogs and media sharing sites has enhanced their digital presence from that of the static website alone, and opened up a new wealth of virtual visitors to their collections.

Gaining global reach is something that crowdsourcing allows heritage organisations to achieve. They can now engage their audience more directly with what is occurring both inside their boundaries and externally, adding further relevance to their collections. Downes (2005) recognises that “the emergence of the Web 2.0 is not a technological revolution, it is a social revolution...it’s about enabling and encouraging participation through open applications and services”. It can therefore be understood that "research in the Information Systems field has drawn on a range of different social theories to gain insights on IS phenomena” (Jones & Karsten 2008). Nonetheless, the impact of crowdsourcing upon non-profit organisations is still little understood in academic literature, and whilst research continues on the phenomena, much is directed at the motivations of the crowd. As a rapidly growing new phenomena, exploring the impact of crowd-collaborations on heritage stakeholders appears to be lacking in extant literature and as such, there presents an opportunity for me to investigate its use and challenges, and to develop a substantive theory for understanding its role within non-profit organisations.

By utilising social media, heritage organisations have enriched the audience experience and provided a range of voices of the organisation to show contrasting views. They are gaining understanding of their audience needs and catering to them on a much faster basis, although sometimes this is not without its own dangers through hastily prepared social media responses. Simply becoming a ‘me too’ organisation, adopting technology merely for the sake of it, or incorporating social networks into collaborative endeavours because other institutions have, is likely to cause more harm than good. As Bautista (2014, p.221) concludes “as museums continue responding to their changing visitors and communities, there is another danger of becoming too myopic. The digital age is responsible for a participatory culture...however [this] covers only a segment of society today”. However, when executed well, the power of collaboration over social networks is proving highly beneficial and can enable a range of perspectives to be captured from finding the ‘voice’ of the organisation through to collaboration for exhibitions and artefacts, and even extending lifelong learning. However, understanding “digital environments has always been extremely challenging due to the virtual and often anonymous nature of the interactions” (Grabill et al. 2009).

Proctor (2010) suggests that the museum curator can become a form of facilitator or moderator of museum topics and conversations, even if the platform that is being used is beyond the museums’ control, such as a knowledge exchange or a social media discussion. However, contrary to the crowd being seen as the generator of social problems, social scientists now view the crowd as a collaborator, innovator, and intelligent collective (Chesbrough 2006; Surowiecki 2005; Alag 2009; Benkler 2006; Wunsch-Vincent & Vickery 2007). Marchi (2010, p.1635) concedes that “awareness and recognition by others of the contribution a subject has brought to the discussion, is surely one of the most valuable objects in online social practices. The way we appraise and appreciate the value of the contributions made by the various participants is the basis upon which reputations are built online.” Bacon (2009) likens this to an economy where goods (products) are marketed to generate financial reward (capital); but in the community, or ‘social economy’, the product is the contributor, and respect and trust are the capital. Recognising knowledge workers and their evolving forms of labour, heritage organisations can now cultivate rich, engaging dialogues with their audiences to build collaborative networks and develop initiatives to strengthen and diversify their understanding of artefacts.

It is interesting to understand that the motivations taking place in heritage communities may be different to those in other collaborative initiatives, and as such research focusing on incentive mechanisms alongside specific crowdsourcing projects would be beneficial (Zhao & Zhu 2012). However, gaining an understanding of the motivational behaviours of internal heritage professionals by considering a variety of theories through my examination of extant literature, allows me to consider a range of sensitising concepts to help guide my analysis.

The knowledge of the ‘amateur’ providing differing, or conflicting, views to that of the ‘professional’ is acknowledged. Yet ultimately the crowdsourcing phenomenon is producing more cohesive, co-created content. This empowers the individual and the organisation by allowing a depth of cooperation, provides a contribution to the knowledge base, reinforces engagement between organisation and public, and provides a foundation for a reciprocal partnership, or community, to be borne. Whilst literature also recognises those that seek to do harm through misinformation or anonymous misdirection as an area of concern that heritage organisations need to consider carefully, it is generally considered that there are outweighed by the positive engagement from those who wish to actively contribute to knowledge collection or expansion.

The findings raised through the extant literature examined in this chapter are now extrapolated into the following chapters where a discussion of the methodology literature and process are discussed.

# 

# Chapter 3. Methodology - Literature

“*If we knew what it was we were doing, it would   
not be called research, would it?*”

Albert Einstein

## 3.1 Chapter Overview

This chapter discusses the choice of research paradigm and methodology that was used to undertake the fieldwork for this thesis. It provides an understanding of the processes involved in establishing the use of a qualitative paradigm and the emergent case study design. Finally, it gives consideration to issues of ethics and validity around the selected approach.

## 3.2 Introduction

The term methodology is frequently used and generally refers to the procedures adopted for research, in particular “the design of the research, the theoretical orientation and the approach to data analysis” (Oliver 2004, p.29). My research investigates the impact of crowdsourcing through social media (Web 2.0) on internal heritage stakeholders employed at Armed Forces museums in the UK. A literature review was undertaken to ascertain the extant literature surrounding this research. It became apparent that whilst collaboration in the form of the crowdsourcing phenomena had been investigated from a number of perspectives (company, crowd, knowledge sharing), previous academic research on the impact on internal heritage personnel such as curators and social media personnel was very limited. This provided a suitable gap to be explored. With little extant literature available and nothing that could be unearthed at the time to show any study of the crowdsourcing phenomena from an individual’s perspective within a museum in the UK, the research aimed to accomplish an in-depth understanding of the phenomena using multi-case studies of three Armed Forces museums.

This research methodology will allow an examination of how crowdsourcing and the use of social media may alter the role of non-technical stakeholders. Does crowdsourcing undermine the museum professional’s stance or promote it through rich, descriptive encounters with artefacts? I also give consideration to the extent that embedded IS are utilised within heritage organisations and the challenges that internal stakeholders may face having to engage with them as part of their daily schedule. IS are used in many ways including managing, assimilating and disseminating information sourced through social media and crowdsourcing initiatives.

It could be argued that the phenomena of crowdsourcing are a complex area to research. There are a variety of different approaches to understanding its impact, along with many existing theories that have been adopted dependent upon how crowdsourcing has been used or examined. However, there is no definitive manner that could be suggested in order to approach such a continually evolving process and this fact has been evidenced from the literature review. Existing theories have needed adapting in order to fit the crowdsourcing genre which may present a skewed view of the phenomenon. As the literature review also illustrates, an investigation of crowdsourcing from the perspective of those involved from within heritage organisations has not, to date, been undertaken.

## 3.3 Research Approaches

When considering qualitative research approaches, a number of theoretical perspectives need to be considered, such as method used to gather and analyse data, and validity of results obtained (Myers 1997). In order to conduct research, Creswell (2009) states that a plan or proposal (research design) is required and suggests four criteria for its selection: the research problem, philosophical worldview, personal experience of the researcher and audience for whom research intended.

Denzin and Lincoln (2005, p.14) define ‘research design’ as “a flexible set of guidelines that connect theoretical paradigms [*philosophical worldviews*], first, to strategies of inquiry [*methodologies*] and, second, to methods for collecting empirical material.”

Paradigms of inquiry, epistemologies (Myers 2013), or ‘worldviews’ (Guba 1990) are a set of shared practices adopted by a professional community illustrating the fundamental assumptions of knowledge and how it is acquired (Hirschheim & Klein 1989). Greene (2007) refers to them as mental models that define assumptions, understandings, values, beliefs and predispositions of the researcher.

An example of philosophical worldviews adapted from Creswell (2009) is shown in figure 7.

|  |  |  |
| --- | --- | --- |
| **Philosophical Worldviews**  Postpositive  Social Construction  Advocacy/participatory  Pragmatic |  | **Selected Strategies of Inquiry**  Qualitative strategies  (e.g., ethnography)  Quantitative strategies  (e.g., experiments)  Mixed methods strategies  (e.g., sequential) |
|  | **Research Designs**  Qualitative  Quantitative  Mixed methods |  |
|  | **Research Methods**  Questions  Data collection  Data analysis  Interpretation  Write-Up  Validation |  |

Figure 7 A Framework for Design - The Interconnection of Worldviews, Strategies of Inquiry, and Research Methods

(Creswell 2009, p.5)

The diagram illustrates the manner in which a variety of philosophical positions can be determined by a researcher. It also shows that methods, strategies and worldviews can be combined in any number of ways dependent upon the researchers’ current knowledge, view of society, and manner in which data is accessed. Creswell (2009, p.6) suggests that “worldviews are shaped by the discipline area of the student, the beliefs of advisors and faculty in a student’s area, and past research experience”. This culmination of beliefs and preferred methods of data collection generally leads researchers to adopt worldviews that meet their philosophical stance and feel most comfortable to explore in their investigation.

When considering a starting point for my research, I used Creswell’s Framework for Design (figure 7) and commenced by looking at appropriate strategies of inquiry. From my first point of contact with the organisations that I would be using, it became apparent that face-to-face interviews with internal personnel would provide the best method for obtaining rich, grounded data on the impact of crowdsourcing on their roles. Having decided at an earlier stage to use multiple organisations of differing sizes in order to produce a comparative study, Cresswell’s framework directed me toward that of a qualitative line of inquiry which fitted with a case study approach. The research method of interviews also aligned with the qualitative style that I was moving toward.

Finally, gaining an understanding of philosophical styles from extant literature meant that I felt most comfortable with that of constructivism (often also referred to as interpretivism). I reasoned that establishing meaning from data collected (or grounded) in the field, the significance of contexts that “are constructed by human beings as they engage with the world they are interpreting” (Creswell 2009, p.8) would be at the forefront of my research.

However, before committing to a qualitative approach, I investigated all three of the main inquiry strategies which are: qualitative, quantitative and mixed method.

I begin with what appears to be the perennial qualitative versus quantitative dispute. This debate between qualitative and quantitative research approaches is well documented in literature and has “sometimes [been] described as the paradigm wars” (Punch 2014, p.2).

### 3.3.1 The Qualitative versus Quantitative Debate

Bavelas (1995) argues that the quantitative versus qualitative debate has become “a series of concatenated false dichotomies” (1995, p.50), although purists on each side of the paradigm advocate that these two methods should not, and cannot, be mixed (Howe 1988). Beyond the underlying philosophical assumptions associated with each paradigm, two different branches of journals, funding and expertise have emerged (Sale et al. 2002). Deciding which method to use involves many factors including the type of data that will be collected, and the method of such collection. Remenyi et al (1998, p.101) suggest that “the tangibility of the phenomenon being investigated” often immediately suggests a specific method of research.

The recurrent debate between qualitative and quantitative methods dates from the late nineteenth century, when an interpretivist approach to social inquiry was developed (Smith 1986). This approach was a reaction to the existing positivism and could be seen among many authors (Giddens 1984; Outhwaite 1975; Polkinghorne 1983; Crotty 1998). Some of the most recent debates have been in the world of medicine. This discipline has shown a prevalence of studies evaluating the merits of qualitative, quantitative and mixed method approaches (Robertson et al. 2014; Clement et al. 2014; Mendenhall et al. 2014; Khatib et al. 2014). Researchers using a quantitative approach tend to consider that “social observations should be treated as entities in much the same way that physical scientists treat physical phenomena” (Johnson & Onwuegbuzie 2004, p.14), and thus the researcher themselves is deemed to be detached from the subject of their observations. Guba and Lincoln (1994, p.110) agree arguing that researchers are capable of studying an object or person “without influencing it or being influenced by it”. However, Creswell et al. (2007) state that “quantitative research is weak in understanding the context or setting in which people talk...quantitative researchers are in the background, and their own personal biases and interpretations are seldom discussed. Qualitative research makes up for these weaknesses”. Firestone (1987, p.19) offers that quantitative study “must convince the reader that procedures have been followed faithfully” due to the lack of descriptive element relating to what anyone does during the research process, whereas the qualitative study must provide enough detail to the reader to show that the “author’s conclusion makes sense” (1987, p.19).

Quantitative research tends to focus on numbers as the primary data source, and the differences between those numbers are generally analysed in a statistical manner. The philosophical view point of quantitative research is often considered as positivist in nature. It is regularly used as “a means for testing objective theories by examining the relationship between variables” (Creswell 2009, p.4). However, Achen (2002, p.442) disagrees stating that “the discovery of thoroughly reliable quantitative generalizations with theoretical bite is often more crucial to the [*political science*] discipline than theory testing”. Sample sizes also tend to be larger in quantitative studies so statistical methods ensure that those samples are representative (Carey 1993) and IS research was frequently criticised for its “strong allegiance to positivist assumptions and quantitative research methodology” (Gallivan 1997, p.418).

Qualitative research has increasingly been used to aid the interpretation of quantitative results. In their British Medical Journal article, Donovan et al. (2002) support this statement, arguing that when undertaking quantitative medical trials, greater understanding of patients through qualitative interviews is required in order to successfully recruit and help them understand the trial itself. This allowed the patient to make a more informed decision and removed any misinterpretation of medical terms, increasing randomisation “from 40% to 70%, [and therefore] all treatments became acceptable”. Conversely, Zhao et al. (2014) used a qualitative approach to their analysis of facial colour complexion in traditional Chinese medicine but included “some quantitative analysis results for complexion degree” (2014, p.16).

Qualitative research explores data which incorporates descriptive text and allows the researcher to uncover meanings related to the context in which the data were captured. As Creswell (2013, p.4) asserts “qualitative research is a means for exploring and understanding the meaning individuals or groups ascribe to a social or human problem.” Qualitative researchers (also referred to as interpretivists or constructivists) tend to reject the positivist viewpoint of their quantitative contemporaries. Their worldview is more focused on constructivism, hermeneutics and realism (Guba & Lincoln 1994; Berger & Luckmann 1971) and the researcher becomes a part of the subjective experience, exploring and interpreting the rich, descriptive nature of their data collection. As Powdermaker (1966, p.9) states:

*To understand a strange society, the anthropologist has traditionally immersed himself in it, learning, as far as possible, to think, see, feel, and sometimes act as a member of its culture and at the same time as a trained anthropologist from another culture. This is the heart of the participant observation method – involvement and detachment. Its practice is both an art and a science. Involvement is necessary to understand the psychological realities of a culture, that is, its meanings for the indigenous members. Detachment is necessary to construct the abstract reality: a network of social relations including the rules and how they function – not necessarily real to the people studied.*

Although Powdermaker was referring to the original form of anthropological research, there are many areas of cross-over that can be utilised with less in-depth qualitative methods. The notion of the ‘double hermeneutic’ (Giddens 1989), whereby the researcher has to be both a participant and observer of the people or organisation that they are studying, is an illustration of this. Whilst immersing ones-self in the participants’ perception of their world, we must also stand back and observe their behaviour through their own constructions of reality. This type of immersion indicates a qualitative approach to understanding phenomena through interaction with those persons involved with it at that point in time.

Shifts in research methodology have seen “the pre-eminence and predominance of quantitative methodology...replaced by an emphasis upon qualitative methodology in British sociology” (Bryman & Burgess 1994). According to Ragin (1992, p.2), within the comparative social sciences “the wide gulf between qualitative and quantitative work” is the most distinctive feature due to the dominance of qualitative methods. Despite a whole edition of Administrative Science Quarterly (1979, Volume 24, Issue 4) being devoted to qualitative methods, it was not until the mid-1990s, that the concept of IS research being carried out through anything other than a quantitative approach was excluded from the research definition (Sarker et al. 2013). That began to change following the championing of qualitative research by Markus and Lee (1999; 2000) through their seminal articles in MIS Quarterly during 1999 and 2000. There is still a feeling that “those engaged in qualitative research [must] defend their choice of methodology by first providing a rationale for not using the logical deductive and objective approaches most commonly associated with the scientific canons of positivism” (Goulding 2002, p.10).

The concept of inductive reasoning to generate theory and ideas is at the heart of qualitative research designs, whereas quantitative design tends to follow a deductive reasoning path. An illustration of inductive logic as adapted from Creswell (2009) is shown in Figure 8.

It can be seen from this illustration that the process of induction is based upon the information gathered in the field by the researcher. Hypotheses develop as the study progresses to take into account the people and settings within the context of the research (Kaplan & Maxwell 2005). Miles and Huberman (1994) concur stating that qualitative research is based upon contact with real-life situations through observation of individuals, groups or organisations as they go about their business. Questions are open-ended to permit exploration of the phenomenon under investigation, allowing both the researcher and interviewee to digress where appropriate and explore other facets within the confines of the subject matter. Such a holistic view allows the researcher to explore around the context under investigation. Data can be analysed in a variety of ways, often through coding paragraphs, themes and categories, recognising emergent patterns in data. These codes are then used to produce new theories or verify existing ones based upon the researchers’ understanding of extant literature and their own personal worldview.

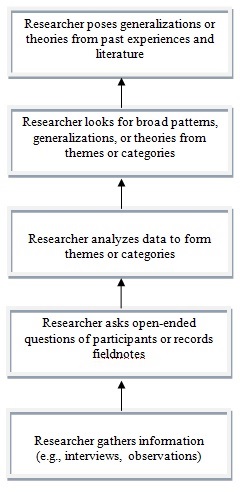


Figure 8 The Inductive Logic of Research in Qualitative Study

(Creswell 2009, p.63)

Before making a final decision on the correct methodology to employ for my research, I needed to consider a third line of inquiry - the mixed method approach. Mixed method research (MMR) is a form of inquiry that combines both qualitative and quantitative approaches equally. Teddlie and Tashakkori (2011, p.285) refer to it as the “third methodological movement” although many authors struggle to provide a definitive argument about exactly what MMR is (Johnson & Onwuegbuzie 2004; Creswell 2009; Greene 2007).

### 3.3.2 Mixed Method Approach

With origins in the late 1970s, MMR evolved as researchers within the social and behavioural science fields added an element of qualitative study to what was initially a quantitative project. The justification that MMR uses all the strengths and none of the weaknesses of each individual method has been advocated for over 30 years now (see Jick 1979). The primary reason for such mixing of the approaches was to make better sense out of the data produced from the quantitative approach (Teddlie & Tashakkori 2011), including narratives created by both participants and researchers during the study. Greene et al. (1989, p.256) offered the definition of MMR “as those that include at least one quantitative method (designed to collect numbers) and one qualitative method (designed to collect words), where neither type of method is inherently linked to any particular inquiry paradigm”.

Creswell (2009) suggests that a mixed method approach is best used when neither a qualitative or quantitative approach will adequately provide a solution to the research question or the strengths of each approach will add further understanding. Johnson and Onwuegbuzie (2004) concur that a mixed method draws on the best of each approach, playing to its strengths and minimising its weaknesses. However, they also note that there is much work yet to be achieved on a mixed method approach in understanding “philosophical positions, designs, data analysis, validity strategies, mixing and integration procedures, and rationales” (2004, p.15). Denzin and Lincoln (2005) criticised MMR from the perspective that it implies that qualitative methods are subordinate to quantitative ones. In other words, the data obtained from quantitative methods can be ‘enhanced’ by adding in some qualitative approaches but primarily the quantitative data is at the forefront. However, one of the most logical concerns when considering a MMR approach is that of time. Undoubtedly, MMR is more time consuming that a single method approach and “should be used only when necessary to adequately answer the research questions” (Teddlie & Tashakkori 2011, p.295).

A final consideration is that the researcher has adequate understanding and skills in employing both qualitative and quantitative methods (Creswell & Piano Clark 2007). When employing a MMR approach, to be inept at either method would lead to insufficient data collection and analysis to meet the requirements of the research inquiry.

Having reflected on the arguments presented, I considered that a MMR approach would be inappropriate for this study as the data collection method will be through qualitative inquiry. The only quantitative data that may be captured is that of interviewee/participant demographics. Thus, despite Greene at al.’s (1989) definition of a MMR approach requiring at least one of each method to be used, the quantitative data acquired within this study could quite legitimately be omitted altogether without impacting the results in any way. I therefore concluded that a qualitative approach would be the best method for this study. This conclusion was reinforced by my research question(s) and the underlying methods I would employ to engage with - and elicit information from - the participants.

### 3.3.3 Qualitative Research Approaches

Unlike quantitative research whereby data (generally numbers) are evaluated against an hypothesis that the researcher wishes to investigate either to prove or disprove a theory, qualitative research looks at the meanings, definitions and descriptions of non-numeric data (words, actions, images) in order to better understand the personal experience of the participants (Kaplan & Maxwell 2005).

Denzin and Lincoln (2005, pp.3–4) describe qualitative research as:

*The studied use and collection of a variety of empirical materials – case study; personal experience, introspection; life story; interview; artifacts; cultural texts and productions; observational, historical, interactional and visual texts – that describe routine and problematic moments and meanings to individuals’ lives. Accordingly, qualitative researchers deploy a wide range of interconnected interpretive practices, hoping always to get a better understanding of the subject matter at hand.*

Maione and Chenail (1999) concur stating that qualitative research is an umbrella term for methodologies describing and interpreting social phenomenon. Miles and Huberman (1994, p.10) consider that qualitative data are “naturally occurring, ordinary events in natural settings” illustrating ‘real life’. Merriam (2002, p.2) concurs and proposes that qualitative research “requires a data collection instrument that is sensitive to underlying meaning when gathering and interpreting data. Humans are best suited for this task”.

Researchers, at every step of the research process, inject predisposed ideas and assumptions about knowledge into our interpretations and reports on our observations and discoveries (Annells 1997b). These preconceived ideas are referred to as research paradigms. Guba and Lincoln (1994, p.105) suggest that “interest in alternative paradigms has been stimulated by a growing dissatisfaction with the patent overemphasis on quantitative methods”. Underlying paradigms have been proposed and positioned by different authors as can be illustrated in Table 4.

As can be seen from the table, there are many similarities in philosophical positioning despite differences in naming conventions. Miles and Huberman (1994, p.5) note that “current perspectives such as pragmatism and critical theory have qualities of both interpretativism and postpositivism” illustrating that the lines between worldviews can overlap making philosophical stances less easily defined.

Table 4 Philosophical Worldviews by Author

|  |  |  |
| --- | --- | --- |
| **Orlikowski and Baroudi (1991)** | **Guba and Lincoln (1994)** | **Creswell (2009)** |
| Positivist | Positivist | Positivist |
| Interpretive | Constructivist | Social Constructivist |
| Critical | Critical | Advocacy/Participatory |
| - | Post-Positivist | Post-Positivist |
| - | - | Pragmatist |

As predominant research paradigms can vary across disciplines, Cresswell’s Framework for Design (Figure 7) demonstrates that combinations of strategies, worldviews and methods are not limited by the field of research, but can be utilised in a variety of ways dependent upon a researchers’ view of society and existing knowledge. In order to ascertain my own framework, each philosophical worldview needs to be evaluated against my research questions and planned study method. In the case of my own discipline of management, Myers (2013) notes that whilst positivist and interpretive research is well known, critical research is less common and less well understood. In this respect, it is nonetheless important to understand differing philosophical worldviews.

#### 3.3.3.1 Critical/Advocacy/Participatory Research

Habermas is a prominent exponent of critical research (Hirschheim 1985). His approach to critical theory was adapted from hermeneutics and psychoanalysis and he focused on the use and structure of language. Others include Pierre Bourdieu (1989), a pioneer of social capital studying the construction of reality through symbolic systems such as language, myths, etc., and Michel Foucault (Foucault & Deleuze 1977), who looked at the impact of power and discourse on networks of society through analysing the relations between agencies, people and knowledge. Carspecken and Apple (1992, p.512) summarised critical researchers as “usually politically minded people who wish, through research, to aid struggles against inequality and injustice.” It can therefore be seen that “critical theorists use symbolic interactionism to discover social determinisms” (Miles & Huberman 1994, p.4) although Kincheloe and McLaren (2002) argue that critical theory is actually very difficult to define due to its changing and evolving nature.

Critical research is grounded in history that is produced and reproduced by individuals. As Cohen et al. (2005, p.28) state the purpose of critical research is “not merely to understand situations and phenomena but to change them. In particular, it seems to emancipate the disempowered, to redress inequality and to promote individual freedoms within a democratic society.” The critical researcher therefore usually advocates strong ethical values such as equal opportunity and open democracy, and believes that individuals are constrained in their ability to change their socio-economic circumstances through limitations such as current political and cultural conditions (Myers 2013). This leads to a critique of the critical research approach that argues that researchers should not be ideologists or have agendas focused on change, but should remain objective observers (Morrison 1995). Following a more conventional qualitative approach to inquiry and then adding elements of critical theory was suggested by Thomas (1993) for ethnographical studies in order to consider the relationships between knowledge, society and politics, although still illustrating a preference for developing grounded theory (Glaser & Strauss 1967).

Miles and Huberman (1994, p.276) suggest that “critical theorists emphasize the ‘emancipatory’ aspects of distortion-free communication between researcher and researched – but supply little help on how this might actually work out”. Emancipatory research – developed by scholars from the Frankfurt School - highlights oppressed or inequitable positions and aims to empower them to take corrective action. Smith (1996) concurs stating that illuminating and empowering individuals to change injustices in society is the primary intent of critical research. However, Acker et al (1983, p.431) point out that “an emancipatory intent is no guarantee of an emancipatory outcome”.

Initially I considered critical theory due to the fact that crowdsourcing over social media could provide the means for a variety of individuals to change the perception and understanding of artefacts within heritage organisations. Indeed, the organisations themselves may change their policies and practices due to the increase in interactions with the public. Similarly in educational research, critical theory has been employed not simply to explain social or educational reality but also to provide a means of changing it (Smith 1996). However, my research focus is on understanding how heritage personnel interact with the public and not on empowering individuals, changing the manner in which the interactions take place within their organisations, or the societal and technological backbone to such interactions.

Interestingly, whilst I would argue therefore that critical research is unsuitable for my intended study, positivist paradigms, conversely, are a “dominant form of research in most business and management disciplines” (Myers 2013). As such it is necessary to ascertain whether a positivist approach would be appropriate, particularly in light of the IS element of crowdsourcing.

#### 3.3.3.2 Positivist Research

A positivist view uses more deductive logic and investigates dependent and independent variable relationships. It concerns itself with theory testing as opposed to theory generation and makes the “assumption that the researcher is independent of and neither affects nor is affected by the subject of the research” (Remenyi et al. 1998). Empirical data (facts) are normally deemed to be objective. These data are then used to test theory and build generalisations that could be applied to a wider population within the same context.

Orlikowski and Baroudi (1991) examined IS research literature and identified hypothesis testing, quantifiable measures of variables and formal phenomenon inferences, thereby classifying IS research as positivist. While such examination and testing does “increase the predictive understanding of phenomena” (Myers 2013, p.38), a pre-conceived theoretical perspective would be employed as a starting point, whereas theory surrounding the crowdsourcing phenomena has generally been adapted rather than defined (Zhao & Zhu 2012).

The argument within the literature review that crowdsourcing is an IS artefact in its own right, throws up an interesting dilemma here. It would seem logical then to consider a positivist view for my research in light of the IS aspect of crowdsourcing and investigate one of the theories already suggested within the papers that Zhao and Zhu (2012) examined. But IS does not exist within a self-contained vacuum but as part of a social context within a users’ perspective (Kaplan & Maxwell 2005). IS technology for crowdsourcing is also dependent upon the collective commitment by the crowd themselves to use the tools in a social manner. Subsequently, the ability for heritage organisations to embrace and utilise IS tools to gather and understand data they are presented with through crowdsourcing is dependent upon the social engagement perspective of the individual institution. Given that the phenomena of crowdsourcing are still relatively new and evolving, I considered that existing theories do not fit the crowdsourcing artefact model exactly. My research is therefore centred on the discussion and analysis of data to form a new theory, as opposed to testing an existing one.

A positivist stance would also place the emphasis on quantifiable observations that can be analysed in a statistical manner (Remenyi et al. 1998). This is contrary to my position of developing an understanding of the crowdsourcing phenomenon through detailed dialogues with those personnel involved with it. Additionally, I recognise that I am not independent of the study and it is through my involvement and, on occasion, bias that I have gained the access that I have to my study participants. Developing and building mutual understanding and trust is what allows the in-depth discussions to take place and data collection to ensue. This is contradictory to the positivist viewpoint.

Finally, within the context of my study, there are no dependent or independent variables that I need to check against in order to verify theory. However, whilst concluding that a positivist perspective is not appropriate to this research, a post-positivist view may indeed be suitable. Post-positivism was borne out of Guba and Lincoln’s (1994) view that positivism’s vision of reality is a naive realism – that which is ‘real’ but apprehendable – should be restructured.

#### 3.3.3.3 Post-Positivism

The post-positivist paradigm updated the positivist view to that of critical realism, where the existence of reality is assumed but due to flaws in human intellect, is only apprehendable in an imperfect style. Post-positivism is also referred to as scientific method or empirical science.

Post-positivist views developed from an opposition to the positivist stance through the rise of epistemologies surrounding social movements such as feminism and post-structuralism. Many of these stances evolved through discursive forms of power used to control certain groups of people, which provoked a drive for societal change (Ryan 2006) Positivist critics suggest that “methodological pluralism” (Wildemuth 1993, p.450) exists due to the fact that “divisions between objectivity and subjectivity, or public and private knowledge, or scientific and emotional knowledge, are socially constructed” (Ryan 2006, p.16). Post-positivism challenges the quantifiable approach of traditional positivist concepts and advocates aspirations of world or societal change, and social justice. The fact that we cannot positively claim knowledge when dealing with human behaviour (Creswell 2009, p.7) leads post-positivist researchers to look at interpretive approaches to knowledge and experience, and led me to consider post-positivism for my research.

In post-positivist research, knowledge claims are constructed and emerge through a dialogue, with interpretations based upon participants’ reactions to interview questions (Ritchie & Rigano 2001). This illustrates a level of commonality with interpretivism and fits in with my own planned data collection through semi-structured interviews. Indeed, the post-positivist worldview asserts many common values with that of qualitative, interpretive research including passion, values, situations of interest, and objectivity of the researcher in the field. It is therefore often assumed “that post-positivism and qualitative methods are one and the same thing” (Ryan 2006, p.20). However, the intent of the post-positivist researcher is to look for ways in which to numerically measure observations. This is what sets it aside from interpretive research. Also, within the context of the scientific approach to post-positivism, “an individual begins with a theory, collects data that either supports or refutes the theory, and then makes the necessary revisions before additional tests are made” (Creswell 2009, p.7).

It would therefore appear that many aspects of post-positivist research could work well with my investigation into participants’ views of crowdsourcing. However, I would argue that the lack of empirical measurement or theoretical verification, along with no underlying proposal for societal change, provides a valid rationale why such a research paradigm would ultimately be unsuitable.

Reconsidering the nature of my research questions around how heritage personnel assimilate, manage and disseminate knowledge gained through their crowdsourcing experiences over Web 2.0 technologies leads me to consider a pragmatic worldview. Pragmatists seek to understand human actions and visions before seeking descriptions or theories surrounding such. This appears to fit with my rationale of using semi-structured interviews to gather data and develop, or employ, an appropriate theory.

#### 3.3.3.4 Pragmatic Research

The pragmatic worldview arises out of actions, situations and outcomes as opposed to antecedent conditions (Myers 2013). It is derived from the work by, among others, Peirce, James, Mead, Dewey, Quine, and Rorty (Cherryholmes 1992). Pragmatist researchers “contend that each individual is different, with varied preferences, and that these preferences need to be taken into consideration in every possible inquiry” (Scott & Sarker 2010, p.116). They base what and how to research upon intended outcomes. In other words, pragmatic approaches are based upon what the researcher may expect the result to be in a given situation. “Pragmatists are interested in consequences” (Cherryholmes 1994, p.16). This lead me to consider a pragmatist viewpoint to examine a version of grounded theory produced by Strauss and Corbin (1990) within the context of my own research. Strauss and Corbin’s coding process has “strong emphasis on conditions, context, interaction strategies and consequences” (Goulding 2002, p.158). Ultimately, however, I felt this branch of grounded theory did not fit my research as well as Glaser and Strauss’s (1967) version (see section on Grounded Theory Method).

My research is based upon seeking the understanding of others and gathering data full of rich descriptions prior to its analysis and, ultimately, theory formation. Pragmatists are interested not only in what study participants know but how they use and apply that knowledge (Scott & Sarker 2010). The belief that “reality, causality, and objectivity are context dependent and change” (Cherryholmes 1994) would seem logical. Different situations, feelings and occurrences will alter how a participant feels about aspects of their life or work at that point in time. As this worldview still appeared to fit with my own, I investigated the possibility of undertaking pragmatic research particularly considering the technological aspect of the interactions between my participants and the public. Dewey put forward an argument that technology can be used in multiple ways and provides vast possibilities, but it is up to those individuals using the technology to make the best of such possibilities (Hickman 1999). This argument could be applied equally to internal heritage personnel and the external public.

The nature of the pragmatic researcher to use all and any methods available to understand the research problem which could be considered as liberating, but also confusing. How does one combine multiple methods and approaches? Pragmatists challenged the notion of qualitative and quantitative paradigms being mutually exclusive (Onwuegbuzie & Leech 2005) and took a worldview better suited to a mixed method style of research, in which pluralistic (multiple path) approaches to knowledge are utilised and pre-supposed consequences can be appropriately analysed. Therefore, whilst I acknowledge that pragmatism provides an open manner in which to manage research and allows great flexibility, particularly through mixed methods, it would be incorrect to say I have a pragmatist viewpoint. For reasons previously discussed, I will not be pursuing a mixed method approach to my investigation, nor do I have pre-determined consequences in mind when considering my research outcome.

Once again, referring back to my research questions relating to understanding social processes – in this case crowdsourcing over Web 2.0 technologies - through those heritage personnel involved with it, led me to consider an interpretive approach. Interpretivists endeavour to comprehend phenomena through the meanings assigned to them by the individuals they are engaged with and their own interpretations (Orlikowski & Baroudi 1991).

#### 3.3.3.5 Interpretive/Constructivist/Social Constructivist Research

For ease of communication, I shall refer to this research as Interpretive. Interpretive research “has gained ground over the past 20 years” (Myers 2013, p.39) but is still not as common as positivist research in management disciplines. In interpretive research, dependent and independent variables are not defined as they are in positivist research. Interpretivism is based upon the epistemological belief that “social process is not captured in hypothetical deductions, covariances, and degrees of freedom. Instead, understanding social process involves getting inside the world of those generating it” (Rosen 1991, p.8). An interpretive researcher assumes that “access to reality (given or socially constructed) is only through social constructions such as language, consciousness, shared meanings, and instruments” (Myers 2013, p.39). Understanding of the world is derived from a “detailed description of the actors’ cognitive and symbolic actions...the meanings associated with observable behaviours” (Wildemuth 1993, p.451). Orlikowski and Baroudi (1991, p.13) define interpretive research as:

*Interpretivism asserts that reality, as well as our knowledge thereof, are social products and hence, incapable of being understood independently of the social actors (including the researchers) that construct and make sense of that reality.*

Interpretivists focus on human complexities and sense-making as circumstances appear to them (Kaplan & Maxwell 1994). The assumption in interpretivist research is that people interact with one another and the world they inhabit, to associate meanings to events and actions that take place around them. When considering phenomena, the interpretive researcher is interested in understanding the meanings assigned to it by participants who are engaged with it. Meanings are defined by participants involved with the phenomena at the time.

Interpretive research is closely linked to social constructivism (Berger & Luckmann 1971), whereby individuals look to understand the world they inhabit through attaching meanings to their experiences. Meanings can be associated to a variety of objects or intangible ‘things’ and the researcher aims to gather the views of the individuals involved in the study based upon the situation that those subjects are in. This socially constructed knowledge is inextricably linked to the manner in which it occurs. Berger and Luckmann (1971, p.149) state that “since society exists in both objective and subjective reality, any adequate theoretical understanding of it must comprehend both these aspects”. Subjective meanings are constructed through interactions with others (hence ‘social construction’), as well as through historical and/or cultural standards in the individuals’ lives at that point.

### 3.3.4 The Interpretive Approach in Detail

Merriam (2002) contends that qualitative, interpretive research has the following four characteristics:

* "To strive for understanding and meaning of others’ constructed world and experiences" (2002, p.4).
* "The researcher as the primary instrument for data collection and data analysis" (2002, p.5).
* "The process is inductive" (2002, p.5) for gathering data and building concepts.
* A "richly descriptive" (2002, p.5) inquiry is produced.

The nature of the social scientist to view the subject matter from the ‘inside’ is what allows the researcher to get close to the individuals and data, allowing an interpretation of what has been discussed within those social interactions. The data are words “meaningfully pre-structured by a group of fellow human beings” (Myers 2013). I will be conducting data collection and analysis alone, and am thus able to adapt and respond to situations as they arise through the data collection period. I also recognise that I am effectively taking part in a collaborative project with the interviewees. This manner of social science is sometimes referred to as a ‘double hermeneutic’ which Giddens (1976, p.146) describes as:

*Sociology, unlike natural science, stands in a subject-subject relation to its ‘field of study’, not a subject-object relation; it deals with a pre-interpreted world; the construction of social theory thus involves a double hermeneutic that has no parallel elsewhere.*

Recognising that the researcher is also a ‘subject’ interpreting a social situation, as much as the subjects of the study themselves, is what constitutes the double hermeneutic.

Researchers have their own understandings, are part of a particular culture in any particular time, can be affected by what they see and hear in the field, and have their own predetermined convictions (Miles & Huberman 1994). Context therefore becomes important to interpretive researchers. Words on their own cannot be understood until the context of how they were used and in what circumstances is taken into account also. Interviews are usually semi-structured and undertaken in more of a collaborate manner. The researcher is anything but detached from the interviewee and subject matter. Confidence in the data is increased by “local groundedness” and “thick descriptions” (Miles & Huberman 1994, p.10). This illustrates the fact that the data was collected through close proximity to the participants and their current circumstances, where interactions and expressions can also be observed. Those data are vivid in description and rich in real-life context. These characteristics of research can be applied to this project as it aims to understand the impact of crowdsourcing from the perspective of internal heritage stakeholders to obtain a “depth of understanding” (Merriam 2002, p.5). The epistemological stance of interpretivism therefore fits with my worldview and the manner in which I am carrying out my investigations. It has therefore been adopted for this study, thus providing for an inductive approach to the data and its subsequent analysis.

### 3.3.5 Summary of Research Approaches

Whilst it can be considered that the underlying philosophical epistemologies of positivist, critical and interpretative research are quite distinct, Myers (1997) asserts that there is considerable disagreement within the research community as to whether the paradigms are indeed opposing views. Miles and Huberman (1994, p.5) consider that “the paradigms for conducting social research seem to be shifting beneath our feet, and an increasing number of researchers now see the world with more pragmatic, ecumenical eyes.”

Within the qualitative paradigm adopted, underlying approaches to qualitative research differ dependent upon the author concerned (Maione & Chenail 1999; Myers 2013; Trochim 2006; Creswell 2009). These approaches include ethnography, grounded theory, case study, field experiment, action research and phenomenology. In the instance of crowdsourcing phenomenon, Zhao and Zhu (2012) noted that the most commonly used approach was the case study.

An analysis of qualitative data via and inductive approach has been described by Thomas (2006, p.238) as an approach to:

*Use detailed readings of raw data to derive concepts, themes, or a model through interpretations made from the raw data by an evaluator or researcher...The primary purpose of the inductive approach is to allow research findings to emerge from the frequent, dominant, or significant themes inherent in raw data, without the restraints imposed by structured methodologies.*

Miles and Huberman (1994) agree that qualitative data permit understanding and discovery of a phenomenon by allowing richly described, grounded processes to be analysed.

## 3.4 Case Studies

A case study can usefully be undertaken as an “inspiration for new ideas. Indeed, the goal of inductive theory generation features quite prominently in many case-based research papers” (Siggelkow 2007). As I will be focusing on a very specific group of individuals within particular organisations, chosen for their relevance and where the subject is bounded to the context, case study seemed the most appropriate mode of enquiry. Hartley (2012, p.323) surmises that “case study research consists of a detailed investigation, often with data collected over a period of time, of phenomena, within their context.” In other words, the phenomena are tightly bound to, and influenced by, the context within which it is found and operates, and not separated from it (as would be the case in laboratory-based research). Yin (1994) suggests case study research is ideal when boundaries between phenomena and contexts are unclear. Merriam (2002, p.41) further defines a case as a phenomena that is “intrinsically bounded”, where there is “a limit to the number of people involved who could be interviewed”. Using more than one group of employees or organisations to provide a comparative study is another reason case study research would be preferential to other qualitative methods.

Benbasat et al. (2014) define the case study as a method of examining a phenomenon within a natural setting. Denscombe (2004) agrees and explains that the case is normally in existence and not, as in the example of an experiment, something that is artificially formed solely for the purpose of research. This allows the researcher to use multiple methods from participant observation and focus groups, through to semi-structured interviews and examination of documentation. Eisenhardt (1989) talks about reaching theoretical saturation to achieve closure during case studies. The case study approach consequently works very well with Grounded Theory Method where rich data is gathered in the field.

Case study research has, however, has faced "frequent criticism...that the results are not widely applicable in real life" (Tellis 1997) and cannot easily be generalised. A response to such criticism is provided by Allan (2003, p.8) who states:

*Yin* (1994) *defended the position that case studies do lead to building theories applicable in the world at large. Grounded theory specifically attempts to investigate the real world, usually through interview data. It discovers the concepts grounded in the data and uses those concepts to build theory. The use of both these methods, therefore, minimises the criticism.*

Denscombe (2004) also highlights the fact that generalising from case studies can be challenged by scepticism. He suggests that a number of lines of reasoning can be adopted in defence of case study research, which I have applied to my cases as follows:

* Although aspects of the case are unique, it is a single example of a range of similar organisations;
* Generalisation to other organisations is dependent upon how similar those organisations are to the main study type;
* Detail of the case should be reported carefully so informed judgement allows the reader to understand how other similar organisations can be compared to the specific case study organisations used in the research.

With the specific organisations I am working with, a comparative case study is a logical approach and I am aware of the challenges in defending generalisations from my findings. Also, with accommodating organisations, in-depth interviews and excellent access, case study is ideal for my line of enquiry in order to obtain rich data, within context, from which to build theory. Eisenhardt (1989) supports the concept of building theory from case study research and suggests three strengths for this approach:

1. “it’s likelihood of generating novel theory" (1989, p.546);
2. "the emergent theory is likely to be testable with constructs that can be readily measured" (1989, p.547); and
3. "the resultant theory is likely to be empirically valid” (1989, p.547).

Using case studies for theory building is also well suited to areas of research where existing theory is limited or to totally new research where theory can be bounded with empirical evidence (Eisenhardt 1989). Benbasat et al. (2014, p.372) concur stating that the case study is best used when “research phenomenon not supported by a strong theoretical base may be fruitfully pursued”. Case study is therefore a means of challenging existing ideas to provide rich detail, and thus contributing to theoretical development. Glaser and Strauss (1967) discuss the use of the case study approach in order to build empirically sound, valid, new theory as outlined in their ‘Grounded Theory’ research method.

My strategy to find appropriate cases commenced with correspondence to a variety of heritage organisations in order to ascertain their interest in being part of the study. Whilst more organisations than have been selected were interested in being involved, a decision was made to look for clearly comparative organisations as opposed to highly distinct ones. A comparative case study was ultimately undertaken as these organisations differ in terms of location, funding, and staffing numbers. “There is emphasis on uniqueness, and that implies knowledge of others that the case is different from, but the first emphasis is on understanding the case itself” (Stake 1995, p.8). Particularisation rather than generalisation is the main focus of case study research.

## 3.5 Instrumentation

I have established a qualitative/interpretive approach to my research due to the relatively new phenomena being investigated, and comparative case studies in order to understand organisations that are distinct both and in size. In order to understand the phenomena in context, semi-structured interviews were selected to provide the bulk of the data, with review of documentation (online and offline) as a secondary source. Additional data has been obtained through direct emailing a set of interview questions to specific respondents, where limitations such as time constraints to meet, or distance to travel, have been encountered. Qualitative interviews are commonly selected when researchers are seeking broad patterns or themes shared between specific types of participants or organisations (Warren 2002), as is the case with my research.

### 3.5.1 Participant Interviews

My research poses a number of challenges. Firstly, the ability to build a new theory around crowdsourcing, and what that term actually means, from the perspective of the individuals engaged with such within heritage organisations. The second challenge is the manner in which to gather rich, descriptive data. Literature suggests that the best method for such data collection is through interviews. This method has successfully yielded quality data for a number of researchers (Bilal & Bachir 2007; Hardaker & Singh 2011; Marty 2007b; Kristiansen 2012; Paul & McDaniel Jr. 2004; Han et al. 2014).

Within my interpretative paradigm, the primary data was collected through voice recorded, face-to-face interviews with specified internal heritage personnel such as digital media, curators, archivists and historians, at each case study location. The role of the interviewer is to stimulate the production of a narrative (Holstein & Gubrium 1997) by sharing beliefs and injecting personal views into the conversation (Ritchie & Rigano 2001) to build trust and rapport. Kvale and Brinkmann (2009, p.1) state that a qualitative research interview “attempts to understand the world from the subjects’ point of view, to unfold the meaning of their experiences, to uncover their lived world prior to scientific explanations”. Law et al. (1998, p.5) add that qualitative interviews “can be done relatively quickly, with little expense, and are useful when a particular issue needs to be explored in depth” and are an appropriate method of data gathering (Marty 2007b) in grounded theory methodology.

Roulston (2010) presented four facets for interviews as a methodology in relation to quality of qualitative data which I aimed to follow and meet during my data collection phase:

1. "Interview data is an appropriate means to inform the research questions posed;
2. the interaction facilitated by interviewers within the actual interview generated 'quality' data;
3. 'quality' has been addressed in research design, the conduct of the research project, and the analysis, interpretation and representation of research findings; and
4. the methods and strategies used to demonstrate the quality of interpretations and representations of data are consistent with the theoretical underpinnings for the study" (2010, p.202)

Interviewees were asked to read and sign a Consent Form and will complete some broad demographic data whilst the interview is being set up. Interviews were recorded to allow for a more natural flow of conversation and to avoid having to stop and start discussions in order to ensure notes are adequate and capturing the data. Initial questions were posed to introduce the researcher and find out some preliminary information about the interviewee and their role within the organisation prior to the main body of the interview taking place. Interviews took place at the heritage organisations’ premises to allow for minimal disruption to the participants’ working day. Rooms were booked (where possible) to allow for privacy and openness in dialogue between the interviewer and interviewee. I acknowledge that preconceptions that the interviewee may have about what the interview process will involve and what information is deemed appropriate and valuable to the interviewer may become explicit as the interview progresses and will need careful redirection and possibly re-phrasing of interview questions to be applied at the time. Appropriate examples were provided by me should the interviewees need clarification on any question during the interview process. Alvesson (2003) notes that “intensive interpretation of what the researcher is after – before, during, and perhaps after the interview” may need to take place.

Allan (2003, p.8) proposes that:

*Greater reliability can be placed on the data gathered in an interview over that gathered by a list of self-completion questions in a survey. In a face-to-face situation an experienced interviewer can tell whether the respondent is the appropriate person to answer the questions. Respondents are able to discuss issues in detail and it is possible to use diagrams to clarify points.*

This also allows for questions to be rephrased, within the general context, and for them to be asked in a differing order dependent upon the direction of the discussion, rather than sticking rigidly to the order listed in Appendix D.

I acknowledge that it is not always possible to arrange a face-to-face meetings with interviewees due to their time constraints and where this has been the case, the interview questions, that required more than a yes/no answer in order to gain a useful level of response, were emailed to the interviewee to elicit their replies. This throws up limitations as Allan (2003) suggests. However, as the number of interviews undertaken this way was relatively small, and most often was instigated as a secondary/follow-up interview to an existing interviewee, I consider that the content of the responses was also useful to this research.

An further advantage of GTM is that as soon as the first interview is started, data collection has begun and analysis can commence (Glaser, 2002 cited in Allan 2003). This allows the researcher to immediately identify concepts that may not previously have been considered and adapt interview questioning to incorporate those data. The order of questions may lead to differing responses from interviewees to the same, but it is necessary to maintain the general flow of data and ideas as they surface. New questions could also be asked where pertinent and following issues that the interviewee may have brought up that had not been considered. Each question is designed to provide some level of insight into the interviewee’s views towards social media and crowdsourcing but, again, it is acknowledged that not all data yielded may be pertinent to this study as human nature is sometimes to think at a tangent. Thus the questions are designed to allow this to happen to a degree, but to bring the interviewee back to the area of interest for this research relatively quickly.

Follow-ups to each interview were provided to the appropriate interviewee to ensure that I had understood what they have told me. This could be done at the time of the interview, once the discussion is over, or at a later point via telephone or email. This allows for any misunderstandings to be eliminated as much as possible from the data that will subsequently be analysed.

Interviews are appropriate for my research objectives as they fit with my underlying epistemological assumptions on knowledge production and exchange, and the principal theoretical perspective that I adopted. Interviews using open-ended questions have also allowed me to engage in a conversation with various internal heritage personnel in order to elicit their views on the social media and crowdsourcing phenomenon in a free-flowing manner. Kvale and Brinkmann (2009, p.2) state that:

*The research interview is based on the conversations of daily life and is a professional conversation; it is an inter-view, where knowledge is constructed in the inter-action between the interviewer and the interviewee. An interview is literally an inter view, an inter-change of views between two persons conversing about a theme of mutual interest.*

Unlike structured (defined, predetermined questions are posed) or unstructured (total freedom, spur-of-the-moment questioning) interviews, I chose to use semi-structured interviews which offer an approach to questions that allows a form of inquiry to be followed in a flexible, responsive and open manner providing for a flowing discourse dependent upon scenarios that are forthcoming. Whilst interview questions are themselves informed by the main research question, the semi-structured interview allows for an open discussion between the interviewer and interviewee to encompass any appropriate and interesting deviation from the initial questions posed. Patton (2002) suggests questions should elicit information from the participants relating to behaviours, opinions, feelings, knowledge, values and demographics. Presenting evidence to illustrate procedures followed, sources of data used or observations noted (Roulston 2010) will demonstrate the interview data obtained is credible within the context of this research.

Transcription of interviews was primarily undertaken by me personally to ensure that changes in tone and other paralinguistic features that I noted are included where appropriate. Two of the longest interviews were transcribed by a third party company - WayWithWords[[5]](#footnote-5) - to assist me with research time constraints, but I subsequently double-checked them to ensure that phrasing and terminology were correct and any missing words were put in where possible.

This form of study was an observed inquiry that allows the researcher to investigate a contemporary phenomenon through empirical research and evidence (Myers 2013). This is particularly relevant where the topic to be investigated is relatively new and theory can be built inductively through each case (Myers 2013). The aim of this research was to contribute a new theory surrounding the impact and use of crowdsourcing by heritage institutions to better understand this contemporary phenomenon. Using a cross-organisational case study view to ascertain whether such opinions are also expressed in differing heritage organisations, aided the understanding of the impact that crowdsourcing is having on internal heritage personnel.

The study has elements of a longitudinal approach as I have met with some participants multiple times, in a number of cases already seeing changes to their roles within the organisations. In order to evaluate when and if changes towards particular crowdsourcing methods or social media are found, the majority of further approaches tended to take place through email contact as this was the follow-up method that the heritage personnel involved in this research expressed as their preference. Some in-depth interviews were conducted with specific staff a second time, primarily due to their roles or organisational structure changing since the first interview took place. These further interviews fitted in well to my study, given the time constraints of the research period. “The ability to get closer to theoretical constructs is particularly important in the context of longitudinal research that tries to unravel the underlying dynamics of phenomena that play out over time” (Siggelkow 2007, p.22).

One of the potential problems with a longitudinal study is that should the same internal heritage personnel be contacted each time, they could answer the semi-structured interview questions in the same or similar manner as they will know what to expect from multiple contacts. It was therefore be more beneficial to use different members of heritage staff, but in the same field, and hold small ‘focus groups’ of existing participants to gather fresh perspectives. However, I recognised that going beyond this to produce a true longitudinal study was not going to be possible due to the size of the organisations involved in the study, the ability to schedule subsequent interview slots with participants, and the time constraints of the research.

### 3.5.2 Documentation

I also studied secondary data resources such as historical and current social media documentation, crowdsourcing projects, in an attempt to understand the impact of newer Web 2.0 technologies and IS on the organisations concerned. Secondary data sources were gathered through information supplied by the heritage organisations themselves in terms of staff numbers, social media subscriber numbers, plus access to heritage community web forums and social media sites. Clearly potential issues with secondary data include validity and reliability as well as availability of the data itself.

## 3.6 Ethical Considerations

De Laine (2000) states that “ethical codes and guidelines are by necessity generalizations and therefore lack the complexity and specificity of any given ethical or moral dilemma” (2000, p.17). Leedy and Ormrod (2001) consider ethical issues arising from human subjects in research and note that participation must be strictly voluntary, and define four categories of ethics issues: "Protection from harm, informed consent, right to privacy, and honesty with professional colleagues" (2001, pp.107–108).

Wellington (2000) outlines eight rules to assess an ethical study which primarily encompass those already mentioned but include “all participants should be treated fairly [*and*] with consideration” (2000, p.57) and, particularly important to my study, “confidentiality and anonymity should be maintained at every stage, especially in publication” (2000, p.57).

As this research is primarily exploratory through semi-structured interviews with members of heritage personnel who have volunteered to assist with the research, each person was provided with a copy of the Royal Holloway Simplified Ethical Approval Form dated 17 February 2014 (see Appendix C). Authorisation for the Simplified Ethical Approval Form was sought from my supervisor, Dr Simon Foley, who agreed that the nature of this research should not cause harm to any participant involved. Full guidelines for research ethics of Royal Holloway University can be found online[[6]](#footnote-6).

All participants were informed that if they are uncomfortable with any line of questioning, they should say they would prefer not to answer. If respondents were unhappy about any aspect of their interview being recorded, time would be made at the end of the interview for the recording to be turned off and the appropriate area to be discussed and hand-written notes taken to attempt to make them feel at ease about any verbal ‘evidence’ of their conversation being available. However, during the course of my interviews, no such requests were made. Similarly, there were no occasions when participants asked for matters to be 'off the record' but had such been requested, in accordance with my assertion of confidentiality, those conversations would not have been used within my research. Finally, if the participant wished to remain anonymous for any reason, their name would be removed from my transcript to protect their identity, although I would retain their organisation name and role in order to categorise their response appropriately.

The interview process was relatively relaxed. Some participants seemed a little tense when we first began to talk but generally they became less guarded and relaxed into the conversation as the discussion progressed. It was interesting to note that in the conversations with two participants together (a mini focus group), that quite a number of times, one prompted the other to say something a little more evocative than perhaps they would have done if they had been interviewed separately. I was also provided with information that one set of participants was aware of, that others were not. This reinforced the confidentiality agreed between the parties.

When considering whether it was ethically appropriate to use the data that I had collected, I gave consideration to a set of questions:

* Would the specific information identify the participant?
* Would the data elude to a specific organisation and as such, would it depict such organisation in a negative light?
* Had the participant specifically asked me to exclude any part of their data?
* Was the data given to me in order to inflate the importance of the participant or the organisation?
* Did the data contain any racist, sexist or other similar undertones that would be deemed unacceptable in today's society?

If the answer to any of the above was yes, then it would not have been considered ethical to include in within my analysis.

Recordings were stored on my personal PC at home (hard drive is password protected) and also in my private drive at Royal Holloway until the transcript had been produced. Once the transcript was produced, the recordings were deleted. The transcripts were then held on my private PC and also copied to my Royal Holloway Y drive. Unbiased reporting of the findings will be provided to illustrate ethical research practices.

With regard to the responses to interview questions by participants over email, there may be issues regarding privacy, confidentiality and informed consent. However, only two participants engaged with me via email. The first for a follow-up interview and the second for an initial interview. Each was sent a scanned copy of the Letter of Introduction that Dr Foley provided to me for their records. Emails were printed and then deleted from Outlook, copies were again transferred to my Royal Holloway secure drive.

## 3.7 Privacy and Informed Consent

Research participants need to consent to their participation in the research and have a full understanding of not only the procedures surrounding the interview process but also that the findings will remain anonymous and confidentiality between the researcher and participant will be maintained, particularly surrounding concerns or contentious issues with the organisation they are employed by and the technologies being used.

It is understood that the interviewee, despite assurances, may have doubts over what will happen with the information provided during the interview. Alvesson (2003) notes that this can be particularly problematical when interviewing management personnel who have an ability to present answers in a tactful, rather than necessarily truthful approach, constructing a reality that views the organisation or technology in a favourable manner rather than a true representation of their views or what is happening in the workplace. This can clearly affect the credibility and quality of the interview data obtained.

A paper Consent Form (see Appendix B) was provided to each participant (Myers 2013) along with an introduction (see Appendix A) that had been produced by my supervisor, Dr Simon Foley. Each participant signed and dated the Consent Form and was provided with a scanned copy via email for them to keep. Carnegie (2006, p.72) raises the question though of whether when consent is given or permission is granted to use personal data in any format “should this mean that permission is granted forever so that people do not have the right to have their history, past or present returned to them?”

Although it was only employed once, the invitation to complete an online interview was followed with an overview of the study and links to my page at Royal Holloway detailing the research in greater depth and my email address for any specific queries around the research in general (within the bounds of what can be disclosed). By completing the online interview, the user was deemed to implicitly have given informed consent.

## 3.8 Confidentiality

It could be considered extremely difficult to anonymise the organisations that will be taking part in the case study as by their nature they are well known in the heritage community and at least one has currently embarked on a very specific crowdsourcing project. Each organisation has had this issue clearly highlighted and the matter has been discussed. None of the three organisations I used have expressed specific concerns about their identities being ascertained through the case study, providing that of their employees that are assisting the research remain anonymous. However, every effort will be made to also make the organisations themselves anonymous.

Participant anonymity will be maintained as far as is reasonably practical and no harm will come to interviewees during the process. Interview data will remain the property of the informants with their consent for me to use it in this study. Anonymity will be provided by ensuring the participating museums are labelled using a number (see Table 5) to define them and individual participants will also be given a number to identify them, i.e. P1, P2, P3, etc. However, both my supervisor and I will have knowledge and access to the participants’ names and job descriptions, where possible, for verification purposes during the data collection phase.

## 3.9 Appropriation of Other People’s Personal Accounts

Data ancillary to the interviews held with the study participants will be offered as secondary data. This is presented within the study as participant demographics. I also observed social media subscriber numbers on a monthly basis, on the first of each month, for one year commencing May 2015. These subscriber numbers were used to inform subsequent interviews with participants to understand what was happening with the museums at that point in time. Information that I have gathered through monitoring the social media accounts, along with collating monthly follower statistics, is available to the public. No quotes from the public that were posted on such social media sites were used in this research.

## 3.10 Validity

Creswell and Miller (2000) acknowledge that determining validity is a challenging area within qualitative research and can be problematical. Winter (2000) concurs stating that the nature of validity has no single or common definition in social research. Schwandt (1997) offers a definition of validity, within the social science context, as "the findings accurately represent the phenomena to which they refer" (1997, p.168). However, he also goes on to discuss arguments against any single definition of validity within qualitative research, proposing four alternative positions dependent upon the researcher's own perspectives. Indeed, Glaser and Strauss comment that:

*There is no fundamental clash between the purposes and capacities of qualitative and quantitative methods or data. What clash there is concerns the primacy of emphasis on verification or generation of theory – to which heated discussions on qualitative versus quantitative data have been linked historically* (1967, p.17)*.*

By this, Glaser and Strauss illustrate that whatever strategy a researcher chooses for their study, defining and proving validity will always be difficult dilemma.

A challenge of qualitative data within my research is that it is used in order to understand a narrow section of the population – curators, historians, archivists and digital media personnel – within a specific group of organisations – museums – and narrowed down further to UK Armed Forces related museums. Examining this data ensured that I gathered rich, descriptive understanding of complex interactions between chosen parties. Had I have used quantitative data, I could have captured the responses of a larger sub-set of the research population but without the ability to engage with them directly, through interviews, that data would have proved superficial to my needs.

Creswell and Miller (2000) argue that validity within the qualitative, interpretative paradigm are reflected by the researcher engaging in approaches such as credibility, confirmability, authenticity and dependability, replacing the "usual positivist criteria of internal and external validity, reliability, and objectivity" (Denzin & Lincoln 2003b, p.35). Guba and Lincoln (1994) concur and provide detailed explanations of forms of trustworthiness and authenticity. Whilst acknowledging that the concept of research validity is most usually associated with a positivist approach, it is worth mentioning the checks that I completed to ensure that my data was trustworthy within my interpretative paradigm.

### 3.10.1 Research Credibility (Internal Validity)

A criticism of qualitative data is that it is subjective. Merriam (1995, p.52) notes that “qualitative research is based on assumptions regarding reality, thus demanding different conceptualizations of validity and reliability”. In order to increase credibility, the ability to use data from different sources is employed (Denzin & Lincoln 2003a; Haralambos & Holborn 2008). This allows the researcher to "[see] things from a different perspective and [provides] the opportunity to corroborate findings [to] enhance the validity of the data" (Denscombe 2004, p.133). Commonly referred to as Triangulation, this technique helps to avoid a method-dependent view of the research. In the case of my research, data was gathered primarily from semi-structured interviews with individuals, but also through small focus groups, emailed questions to specific individuals, and observation of the social media trends of each organisation over a twelve-month time period. This approach allowed a comparison of the data through the different collection methods, allowing a corroboration or questioning of the findings to be undertaken (Denscombe 2004).

Sherrard (1997) however, points out that qualitative studies do not seek to find and understand facts, but are looking at interpretations. Understanding and accurately recording and transcribing conversations is key to my research but Winter (2000) notes that “measures that are too precise, such as the time in seconds of pauses in conversation or exact measures of vocal intonation, can confound and obscure...research and analysis”. Accuracy of field notes (Emerson et al. 2011) however is important in social research although social researchers do recognise that complex working situations cannot be wholly recorded due to their very nature (Miles & Huberman 1994).

Whilst originally writing as full a set of notes as possible at meetings, this soon proved to be too slow and disrupted the flow of conversation as I had to often ask the interviewee to stop for a moment whilst they were mid-flow, to ensure I captured a specific detail that they had just informed me of. I quickly decided to record my meetings with participants in order to ensure nothing was missed from the conversation, as can easily be done when one is writing at the same time as trying to listen. The ability to voice record on-the-spot stories (Denzin 2002) has provided a valuable tool to the social researcher to ensure that the majority of data is captured accurately. Recording conversations also meant that the interviewees quite quickly forgot about the device sitting on the table and could focus on me and the questions that were being asked. This allowed for a more natural, conversational feel to the interview process. I do acknowledge that whilst recordings are a more accurate representation of what happened out in the field, subsequent transcription is highly dependent upon contextual representations of what was happening at the time of the discussion. Transcription is also dependent on representations of speech (Atkinson 1992). I also tried extremely hard not to exert any influence over the interviewees during the interview process, although at times this could be very difficult when dealing with an area I was particularly interested in or subject matter that became emotive to the interviewee.

Once my interviews were recorded, I made sure the recordings were moved to my home computer as soon as possible to avoid any problems with accidental deletion from my mobile telephone. Once transferred, the recordings were deleted from my phone. I initially transcribed each myself and included vocal stutters (whilst thinking of a response) and additional elements such as laughter, ‘err’, ‘umm’ and pauses, along with the questions that I had asked to elicit responses. However, I soon made the decision to leave out any 'err', 'umm' and duplication of words as this was not necessary for my coding and, in fact, could be problematical. Any words or phrases I did not understand were signified with a question mark and if I could not work out the word accurately through the context of the remaining sentence, I could check it with the participant. Emphasis was used for tonal changes in the transcripts by words such as ‘[whispering]’ and '[laughter]', or symbols such as ‘!’. Two of the largest recordings were sent to WayWithWords for transcription in order to save time and allow me to move forward with coding. Once those transcripts had been received, I listened through the recording again whilst reading the transcript to correct any errors in terminology, or add missing words. Each transcript was also date referenced.

All interviews have been checked, in brief, with the participants. When asked, none of the participants wanted me to send them a full transcript of our conversations due to time constraints, but were happy to speak on the telephone, if required, to confirm their agreement with my understanding of primary and secondary points raised in our discussions. Most confirmations of main points raised were confirmed with interviewees at the end of the interview process itself whilst it was fresh in both of our minds, and notes were duly taken around the discussion. The interviewees were also aware that any direct quotes that may be used within my thesis will remain anonymised, and I will attempt not to use any quotes that could identify them or their institution. If the quote is exceptional and may identify the interviewee, it will not be used without their express permission in order to maintain the confidentiality that I assured them of.

Clearly though, the researcher is the main instrument of enquiry in qualitative research and as such, the need to employ reflexivity and understand personal motivations helps to avoid misconceptions, guided questioning and potential prejudice. There is concern that involvement by the researcher with the participants that form the subject of the study can affect said researcher’s judgement. Establishing one’s own viewpoint, background and prior experience in the field all allow the research to be presented in ‘perspective’. The ability to recognise and defer your own personal judgements (Wolcott 1994), and to understand your own bias (Goulding 2002) as the research progresses, are essential elements that allow the researcher to deflect criticism of lack of credibility.

In accordance with the confidentiality that I offered my participants, I ensured that I only discussed matters arising out of conversations with my supervisor and first advisor, thus adhering to the anonymity promised to my interviewees to remain. This allowed me to express my surprise or irritation at both participants and findings, and thus reduce my own emotional attachment to the subject matter. Making notes both during and after the interviews that I held ensured that I could compare and contrast my opinions of participants and potential findings as my understanding of the situations, participants, and their complex working practices changed over time.

Naturally there were constraints and limitations to my research such as my own time and availability as a mother of three school-age children. Additionally, the availability of the interviewees was a limiting factor as they also had their full days' work to contend with alongside making time to meet with me. Constraints such as these will have limited the amount of data that I could gather. It should also be noted that some interviewees changed position or even organisation during the process and as such, in the case of the latter, follow-up interviews were not always available – or relevant - to me. On a few occasions, despite booking meetings in advance, either the meeting was cancelled or room availability at the organisation was an issue. Therefore, the interviews had to be held in public locations which may have resulted in the interviewees becoming more guarded about what they were willing to share with me for risk of being overhead. Whilst most interviewees I perceived as being very open and frank in their discussions, knowing that their viewpoints would be used in a publication, albeit anonymised, will no doubt have shaped their view on the research being undertaken, and myself as a researcher. My interviewee pool was limited due to the nature of the research and the impact to specific cultural heritage personnel so a potential criticism could be that my data collection was relatively small. However, I feel that I counter that by the fact that to extend the scope of the research and include other internal heritage personnel would have diluted the data set and moved from the specific focus of my research questions. I would have liked to have interviewed further historians/curators but given the timescales to the research and the fact that the interviews took place over an eighteen-month period to be able to fit in as many face-to-face meetings as possible, along with a number of follow-up interviews, I consider that it would not have been conducive to my research to attempt any further interviews.

I also should note my own limitations as a researcher. Coming into research after a significant period away from academia, working in commercial businesses, meant that my knowledge of the research process was limited and I needed to undertake significant reading around the subject matter, and down many tangents, in order to narrow down my proposed contribution. Gathering and analysis of data is another area that, despite my optimism and keenness, may have limitations due to my own lack of experience in completing such research tasks.

As the data was collected, I began my analysis. Having been on the NVivo 10 course, I decided to use that tool in order to help me categorise my findings. However, after numerous attempts at using it, I found it not to my liking and opted to use a simpler method to record the emergent codes. I subsequently wrote codes onto small Post-It notes but soon discovered that this method was flawed due to the number of codes that were emerging. Having tried to put the Post-Its onto my office wall to produce a visual representation to allow me to discover categories, I was irritated to find that they became unstuck quickly and fluttered the ground. My third attempt was coloured index cards, one colour for each organisation. Once again, I found this method flawed due to the number of codes that were being produced at the open coding phase and the duplication of codes between the three organisations. Finally, and throughout the rest of my coding process, I set up a collection of Excel spreadsheets. This allowed me to enter newly discovered open codes onto each line as well as having a separate worksheet for each organisation. I could then amalgamate all the codes found for the three organisations onto one final worksheet, removing all duplicates and providing me with overall categories. This separation was essential to my research in order for me to provide a comparison between the three organisations.

As categories began to emerge from the codes, they were assigned to the front of that code, thus allowing a second method of sorting. This allowed me to begin to narrow down my coding further and visualise the category that each piece of data was assigned to.

### 

### 3.10.2 Transferability (External Validity)

Another perceived difficulty with qualitative data is its lack of transferability. Miles and Huberman (1994, p.279) discuss the concept of external validity as the researchers conclusions being "transferable to other contexts". Generalisation to the wider population is somewhat less helpful in qualitative research and is difficult to achieve with no two contexts being the same, and the researcher dealing with interrelationships between research participants, other personnel, and the organisation they belong to. It is therefore not possible to replicate such settings and contexts across organisations. However, some generalisations are possible that can be applied to make a considered judgment about similarities and differences in other organisations, but they are subject to the manner in which the research was considered in the first place (Silverman 1999; Yin 1994).

Findings within an interpretative study are "usually presented in terms of the criteria of grounded theory" (Denzin & Lincoln 2003b, p.35). Suddaby (2006, p.636) suggests that:

*Unlike more traditional, positivist research, grounded theory offers no clean break between collecting and analyzing data. Rather, a researcher must continue to collect data until no new evidence appears. This process, called "category saturation," is one of the primary means of verification in grounded theory (Strauss & Corbin, 1988). Premature departure from the field may well result in data that are only partly analyzed and therefore fail to elevate obvious categorizations to a more abstract theoretical level.*

This means that whilst the data that I gathered was context-specific, its level of detail, richness, and the fact that it is grounded in the social practice of the museums that I worked with, does not prevent the concepts being utilised elsewhere providing that they are appropriately modified to fit the new context in which they are being used. Denscombe (2004, p.122) also observes that "because the theory emerges from the data there ought to be a comfortable fit between the facts of the situation and the theory used to explain them...on this basis, there can be no allegations that researchers are in any sense forcing a fit between the data and the theory". The very fact that the concept can be used in variable ways proves its potency when applied to other areas of social research.

### 3.10.3 Implications for the researcher

I chose to work with cultural heritage personnel within their organisational setting due to my interest in the manner in which contemporary history is shared through social media. I believed that the wealth of additional knowledge available to museum personnel around their own subjects of interest was significant. I considered that this collaboration between ‘expert' and 'amateur' resides within the field of knowledge exchange, and is built upon developing communities of interest through engagement with subject experts (internal and external), and reciprocal exchange of rich stories over social media technologies. Whether the term 'crowdsourcing' is appropriate in this case can be debated, and it is acknowledged that crowdsourcing is often associated with specific, dedicated projects. However, Zhao and Zhu (2012)suggest that crowdsourcing as a concept is simply:

*A competitive/collaborative workflow or group decision support system, [that] provides user-generated content, human intelligence and/or other kinds of information artifacts as a solution or feedback to mediate, support, or facilitate the problem-solving process.*

The concept of crowdsourcing purely to "share knowledge, experience, and insights" (Dawson 2012, p.7) is a concept that many heritage organisations understand. It could therefore be argued that whether the request for information is asked directly by the heritage organisation, or whether such information is simply forthcoming through the public imparting personal knowledge and understanding, and stories of interest, is irrelevant. The focus of crowdsourcing is primarily on knowledge enhancement and sharing, however that is elicited.

The research process was a positive experience for me on the whole. I enjoyed visiting the cultural heritage personnel and often spent time after meetings going round the various galleries within the museums. I found the personnel to be accommodating and generous with their time spent with me. The organisations were all familiar to me as I have visited them many times before as a tourist and also interacted with them through my own WWII website. It was interesting to get a feel for the museums from the internal perspective of their employees.

I was amazed to be offered a seminar opportunity by one of the museums to come in and discuss my research with them, and other members of the heritage community, once my findings are available.

## 3.11 Summary

My research aim was to investigate the impact of crowdsourcing on internal heritage personnel and to understand the inhibitors and enablers that they encounter to being able to effectively work with this new form of knowledge sharing and collaboration. It provides an understanding of the implications for knowledge transfer between internal cultural heritage personnel and the public. It allows for a holistic view of social interactions from the perspective of those museum stakeholders involved, using a qualitative/interpretative approach.

I chose a case study approach, engaging with three differing sized museums to allow for a comparative study. My data was collected over an eighteen-month period through face-to-face interviews, questions emailed to specific participants, small focus groups, and observation of social media feeds.

The following chapter details my research process: preliminary engagement with cultural heritage organisations, the pilot study, details on the three chosen museums, and the analysis used.

# Chapter 4. Methodology – Research Process

“*Once we accept our limits, we go beyond them”*

Albert Einstein

## 4.1 Chapter Overview

This chapter discusses the pilot study that was completed prior to my full research being commenced, and provides an overview of the organisations involved in the study. I will then provide a detailed discussion of why Grounded Theory (Glaser & Strauss 1967) was ultimately selected, its place in this study, and some of the conflicting arguments around this particular theoretical approach. It concludes with details of my coding procedure and details categories that emerged from the data.

## 4.2. Introduction

My research investigated the impact that crowdsourcing/co-curation activities through social media may be having on internal heritage professionals such as curators and digital media personnel. Within the context of my sub-research question of how such collaboration is changing the role of the internal heritage stakeholders, I was looking to discover whether there is evidence of any perceived deprofessionalisation through its use or, in fact, it is proving a tool to complement their knowledge and understanding within the scope of their organisation. Understanding any impact that both external and internal IS have on the ability to crowdsource/share knowledge effectively is also to be explored. Commencing with a broad set of tentative questions as a starting point (Denscombe 2004) around theoretical preconceptions such as “*what impact has social media had on your existing role?*”, the research begins by formulating these provisional ideas as opposed to empirical facts (Seidel & Kelle 1998). With these broad questions in mind, the unit of analysis used was determined to be internal heritage personnel engaged with social media and as such, potential key informants were sought from within the heritage community.

Various organisations were approached and each selected would become part of a comparative case study. The aim of the research was to explore in-depth, attitudes, perceptions, and developing practices of working with the public through social media and crowdsourcing, as opposed to offering a generalised view. The role of curators, as an example of heritage stakeholders, has been little explored to date and yet these personnel are involved in many new forms of collaborative curation with the public and other heritage institutions through the medium of social media. With single case studies being most appropriate for previously inaccessible investigation, critical testing of a theory, and an extreme or unique case, I would argue that this research is best suited to a multi-case study which is primarily employed in order to describe, build or test theory (Benbasat et al. 2014). Understanding how certain professionals within heritage organisations view, use and engage with crowdsourcing is the primary objective of this research, and speaking to multiple individuals, across different heritage organisations is the most appropriate way to develop such understanding in order to build an appropriate theory.

Prior to commencing the full study, I needed to complete a limited pilot study in order to gather preliminary information, test questions and assess the practicality of my chosen methodology.

## 4.3 Pilot Study

The criteria that I used for selecting the sample for the pilot study was internal heritage personnel engaged in crowdsourcing or collaborative activities over social media (or dedicated crowdsourcing websites). The research investigates the impact of such interactions with the public on these personnel from the required increase in technology adoption to facilitate the collaborative engagement itself, through to any perceived changes to their role that have emerged as a result of such partnerships.

A small UK Armed Forces museum consisting of eleven employees was selected to run the pilot study as this is indicative of the other organisations that will be used in the main case study. In July 2014, semi-structured interviews were conducted with internal personnel that met the criteria as set by the full research sample. Two personnel were interviewed; a Deputy Curator (PP1) and a Marketing and Commercial Services Officer (PP2). Whilst the sample size may appear small in number it equated to 18% of the organisation size. Sandelowski (1995) concedes that determining the appropriate sample size for research can be a matter of judgment and in the case of a small museum, one of each primary personnel type would be sufficient.

Interviews were recorded onto my mobile phone which was positioned in the centre of a table in order to hear all voices. As PP2 was new to the organisation, PP1 suggested that the interview be conducted with both participants in the room as there was an intersection of knowledge. A set of pre-defined ‘prompt’ questions had been produced beforehand to ensure that during the discussion answers to all relevant areas of my research had been sought.

The aim of the pilot study was:

* to check the questions asked of the participants encapsulated the core research question;
* to ensure the research design was correct, and
* to gain a critical perspective of my own interviewing techniques

The interview started with introductions and moved swiftly on to the social media experience of the two participants. Allowing the participants to discuss their perceptions of social media engagement, crowdsourcing and interacting with the public in general, provided a great deal of insight into their roles both in collaborating with their audience and also each other. At the end of the interview, I re-checked my questions to ensure that we had covered everything required during the course of the conversation and thanked the participants. I am aware that my academic interviewing style produced some errors in both my leading the question/answer and my own input to the discussion. However, as Berg (2001, p.100) suggests “the only way to actually become proficient at interviewing is to interview”.

The interview transcript was typed up by me, and a copy sent to my supervisor. Prior to sending the transcript, I held a brief telephone discussion with the two participants to ensure that the salient points of the interview were correct and I had not misinterpreted their discussion. They confirmed that my interpretation was correct. The benefit of this pilot study was in allowing me to:

* check my interview technique,
* ensure that questions asked at interview related to my research question, and
* practise my transcription skills on data collected in the field.

Following the pilot study, I adapted my prompt questions and have realised that I do not need to ‘fill the gaps’, but allow the silence. I also became aware of my own bias through my occasionally, over-elaborate prompts and my discussions during the process. This has also allowed me to refine my ideas further, adjust my prompts and ensure that I do not provide personal bias to the situations being discussed.

I also established that the interview itself was too long at an hour and I was attempting to ‘make it last’ rather than wrapping up after the appropriate data was recorded. Thus, for the main study, interview times have been reduced to 30-45 minutes per participant. I am, however, allowing an hour of time for each to provide flexibility should additional information be forthcoming from an interview, or to give me time alone to reflect on what had been said and jot down some thoughts for my theoretical memos (Glaser & Strauss 1967; Urquhart 2013).

## 4.4 The Primary Organisations

My strategy to find appropriate cases commenced with correspondence to a variety of heritage organisations in order to ascertain their interest in being part of the study. Whilst more organisations than have been selected were interested in being involved, a decision was made to look for clearly comparative organisations as opposed to highly distinct ones. A comparative case study was undertaken on three Armed Forces based museums in the UK. As these organisations can be different in terms of location, funding, and staffing numbers, the sample was selected to represent three different sized organisations, to reflect the varying challenges each will face in engaging with crowdsourcing initiatives and social media use. Particularisation rather than generalisation is the main focus of case study research. “There is emphasis on uniqueness, and that implies knowledge of others that the case is different from, but the first emphasis is on understanding the case itself” (Stake 1995, p.8).

Following on from initial meetings with the main contact within each organisation, and their continued interest, the museums selected constitute the study population for this research. They are sized as per Table 5.

Table 5 Heritage Organisation Study Population

|  |  |  |  |
| --- | --- | --- | --- |
| **Organisation** | **Size** | **Permanent Personnel (Number)** | **Location** |
| Museum 1 (M1) | Large | 489 | Central London |
| Museum 2 (M2) | Medium | 202 | Hampshire |
| Museum 3 (M3) | Small | 120 | Outer London |

The organisations, and the employees within each, have been anonymised to allow the focus to be on the data produced and theory developed. This provides some degree of confidence for the employees that they will not be identified either through their interview responses or their place of work. It was felt this was the best approach to allow individuals to speak freely of their experiences with social media and crowdsourcing.

Case selection is an important aspect of theory building. An appropriate set of cases prevents extraneous data variation and defines the limits for generalisation of the findings (Eisenhardt 1989). Museums 1 and 3 were contacted by me in 2013 prior to commencing the research project as their subject matter was already of interest. Siggelow (2007, p.20) argues that “it is often desirable to choose a particular organization precisely because it is very special in the sense of allowing one to gain certain insights that other organizations would not be able to provide”. Whilst it is acknowledged that these museums will not necessary be a representative sample of all heritage organisations in the UK, Museum 1 in particular was chosen as it is already an active user of both social media and crowdsourcing. Its use of these initiatives allows a more in-depth understanding of the impact to internal personnel, and the technological changes that have taken place within the organisation, to be investigated. This data could then potentially be transferred to other organisations in the non-profit field to which the process of implementing crowdsourcing or knowledge sharing initiatives is relatively new. Motivation and understanding that is grounded in real-life situations are far more appealing to other organisations than those that are purely theoretically motivated (Siggelkow 2007).

Museum 3 was newly involved in social media but had limited social media experience. Originally the final participant organisation was going to be either a National non-profit dealing with heritage properties throughout the UK, a generalist maritime museum, or the UK section of a genealogical site. However, after due consideration, it was felt that the organisation should be a further UK Armed Forces related museum to allow for relevant comparisons to be made. I then contacted Museum 2 in 2014 and they subsequently agreed to participate in the research.

The reasons for choosing the museums and their internal personnel are as follows:

* Relationship – I have found that UK Armed Forces museums have been the most forthcoming with their responses due to shared interest areas. I run a WWII website as a hobby and thus have links to the organisations involved in the research. There was therefore an early commonality in interest. This promoted a receptive discourse to develop between myself and the organisations, making it significantly easier for me to gain access. As from the literature, access to or between organisations and individuals can be positive if they have a desire to discuss and reflect on their own successes or frustrations. This can be enhanced further when an interviewer has an understanding of their role and/or technologies utilised (Levina & Vaast 2008; Vaidya 2010; Vlarr et al. 2008). Being able to work closely with an organisation where core values align and are understood allows a good relationship to form and more contacts within the organisation to be developed. This is important to ensure continued access to the organisation over the entire research period.
* Size – As well as the fact that each museum I selected ranges in size from small, medium to large, this also means that their access to internal IS systems will have a similar range. A comparative study based upon size is therefore appropriate for this research. The large, blue chip, museum located in London with significant financial support, has better access and funding to outsource, purchase or use large scale IS where necessary, as opposed to the smaller Outer-London museum that shares both IS and personnel resources between two sites but is less well funded. Comparative studies are commonly used in both qualitative and quantitative research (Hardaker & Singh 2011; Leonardi 2013; Tess 2013; Paul & McDaniel Jr. 2004; Quintane et al. 2013).
* Relevance – The social media and crowdsourcing activities that the organisations are engaged with is relevant to 20th Century contemporary history. Living memory is still a useable tool to explore Armed Forces campaigns and gather descriptive detail to add to existing curatorial knowledge. An example running from 2014-2018 is the Imperial War Museums’ Lives of the First World War crowdsourcing project[[7]](#footnote-7). The information on artefacts from this period is still very much evolving, i.e. photographs from the First and Second World Wars are still being viewed and relatives or friends recognised within them. As the literature review has illustrated, it has only been since c.2004 and the development of Web 2.0 (Anderson 2007) technologies that the two-way communication between organisation and public has developed. This allows 20th Century data to still be discovered or amended through living histories, whereas we are less likely (although not impossible) to be able to add, with integrity and certainty, to data and artefacts gathered, say, in the 17th Century.

Patton (2002, p.244) argues that “there are no rules for sample size in qualitative inquiry” and therefore the three museums form my substantial sample. The criteria for a substantial sample is defined by Flick (2014, p.168) as those “specific features of an individual (or group) [that] are relevant for deciding to include this individual in the sample” and have been considered and identified before the main study commenced. The features of the group (heritage organisations) are that they are Armed Forces related, hence 20th Century history/living history, and receptive to the research process. They are also existing users of social media, knowledge exchange processes, and crowdsourcing to some degree or other. The criticism of the substantive sampling method is that with a predefined sample, the range of comparison is restricted. However, that was a consideration duly made in order to maximise exposure within those organisations as opposed to attempting theoretical sampling (Glaser & Strauss 1967) at that level. Theoretical sampling will be initiated on an individual employee basis as data collection commences to ensure that the correct personnel are being interviewed.

Within each organisation, I made contact with one or more social media/digital media personnel. The reason for choosing these individuals in the first instance is their immediate association with the technologies I am researching. Digital personnel are predominantly at the forefront of the organisations’ external communications – both to the public and other institutions. The individuals are involved in digital communications (website and social media presence) along with raising awareness of the organisation, and subsequently aiding income generation, funding and increased footfall within the physical location. Their roles tend to include analysis of web data, managing digital interactions both internally and externally, increasing social media traffic, and writing blogs.

With the nature of research being interpretative in order to gain an in-depth understanding from the interviewee’s perspective, I needed to give due consideration of my own performance and influence on the process of data collection and be as reflexive as possible about my role. Having had over twenty years’ experience in working within the IS field, it would be hard for me to claim a totally unbiased view towards social media technologies and IS, but the research itself will remain subjective based upon my philosophical stance. Recognising any bias, identifying and monitoring it, and acknowledging how it may shape data collection and interpretation is an important to note within the research context (Merriam 2002). By focusing on conceptual arguments that develop as the research progresses, guidance about what to exclude from the thesis will also emerge (Siggelkow 2007).

Sampling is the “principles and procedures used to identify, choose, and gain access to relevant units which will be used for data generation by any method” (Mason 2002, p.120). A sample is simply a sub-set of the population. The informed sample within this research will be those persons internally within each heritage organisation who will be using, or expect to be using, social media and knowledge sharing/crowdsourcing as part of their role. In the case of my study, it refers to three museums – the case studies - selected from a much larger number of possible organisations. However as de Vaus (2006, p.240) points out “cases are used for theoretical rather than statistical generalization [*therefore*] there is little point in selecting cases because they are in some sense representative of some wider population”. Therefore, my sample would be biased towards those internal members of heritage organisations that have agreed to engage with me in the research, and those organisations that I have selected in order to perform a comparative study.

As exploration of diversity is the primary aim in qualitative research (Kumar 2012), sample size is less relevant than would be the case in quantitative research. I anticipated that the number of interviews scheduled for the main study would lead to a data saturation point relatively quickly due to the nature of the specific phenomenon being investigated in this research. I worked with existing contacts within each organisation to verify appropriate personnel and obtain their permission to be included in this research study. The study does, however, depend upon the willingness of the contacts and their organisations to allow staff time away from their duties to take part.

Access to these initial contacts was through both direct email (where practical and email addresses were found) or via Twitter contact to the organisation directly, who then provided an email contact. Twitter was a successful medium for making contact especially given the nature of my research. An email then followed with a basic introduction to see if the research was of interest. This was followed up by a telephone call, when the respondent replied in the positive, and I then introduced myself in more depth and discussed my research ideas and talked to the respondent about how this might interest them or their organisation. A face-to-face ‘fact-finding’ meeting with the initial respondent then took place to ascertain their ability to assist with finding research participants within their organisation. I was fortunate to primarily be in touch with digital media managers or curators who were interested, happy to assist, and could suggest colleagues who would also potentially like to be involved in the research. The nature of this contact development (Feldman et al. 2003) provided a snowball (Oliver 2004) effect which has meant that subsequent internal heritage personnel are more open to contact as it was initiated via a colleague.

I had already experienced some problems with organisational contact in terms of my initial respondent leaving, and lack of contact or response to requests from other members of staff. This is expected in any form of research as personnel may move positions, become involved in other projects, or simply lose interest. Fortunately, other organisations that fit my sample criteria are available for my research purposes.

Table 6 Research Sample - Unique Participants

|  |  |  |  |
| --- | --- | --- | --- |
| **Stakeholder (P = Primary, S = Secondary)** | **Rationale for Inclusion** | **Specific Selection Strategy** | **Interviews** |
| (P) Digital Media Personnel (Manager, coordinator, or similar) | Influential in managing digital media projects and encouraging use by other personnel | Involved with digital media as primary element of their role | Museum 1 = 5  Museum 2 = 1  Museum 3 = 1 |
| (P) Curator / Assistant Curator/ Researcher / Historian / Educational Manager, or similar | Engaging with audience through digital media initiatives (direct or indirect) alongside traditional role | Variety of ages, time in role and differing experience of digital media engagement | Museum 1 =8  Museum 2 = 5  Museum 3 = 2 |
| (S) Organisational Manager / Director | Managing personnel and organisation objectives. Involved in digital media initiatives with additional specialist personnel | Involved directly or indirectly with digital media interactions | Museum 1 = 2  Museum 2 = 1  Museum 3 = 1 |
| **Total Unique Interviews** | | | **26** |

The participants were broken down into demographic groups as follows:

**Gender**

Male participants: 17

Female participants: 9

Similarly for the time with the current museum, shown above, the majority of the participants (fourteen) had ten or more years in the heritage industry, with a further six having seven to nine years heritage experience.

The sample personnel within each organisation were contacted via my own internal contact or directly by me once initial interest had been obtained by my contact and the prospective interviewee’s details passed to me. My informed sample is illustrated in Table 6 (adapted from a table presented by Professor Gillian Symon in the Qualitative Research Methods course on interviewing held at Royal Holloway).

Primary personnel are those that have daily/frequent interactions with the organisation’s audience through social media technologies, and secondary personnel are those that are on the periphery of the interactions from a technology or management perspective. The focus of this research is centred around the primary personnel but, where possible, secondary personnel have been interviewed.

Participants interviewed were selected not only on their engagement with social media at the time of the study, but also for their experiences of how social media had changed their role or understanding. For example, one curator that was interviewed was initially anti-social media. He considered that he had undertaken his role perfectly well without needing to engage with the public, and could not see the benefit of Twitter or Facebook. An occasion presented itself when some information in a collection item was highlighted by a member of the public to be incorrect. At first, he was rather perturbed about this, and felt that his knowledge and ability had come into question. However, as he had been asked, he took to investigating the information that he had been provided with. He was surprised to find that the data was in fact incorrect and that the member of the public had indeed indentified some issues with it. Rather than feeling irritated by this intervention, he actually found it invigorating and said that it added to his knowledge, along with changing his opinion on the benefits of engaging over social media with the public. Similarly, for another curator, engaging with the public presented a unique insight into a painting that was housed in the gallery at his institution. The painting had within it, an acoustic mirror, which none of the museum professionals had spotted prior to it being pointed out by a member of the public over social media. He found this to a be a very positive experience and felt motivated to engage more frequently. He also spoke of his understanding that there are a myriad of ‘experts’ outside of the museum and social media was leveraging those new engagements.

Finding individuals within organisations to engage with, not only due to their current involvement with the public over social media, but also due to changes in their perceptions of the same, was important to this study. Interviewing participants who were highly engaged on social media could likely have given a false view of the engagements, but by seeking those less engaged, such as archivists, a balanced perspective was sought. Likewise, being able to compare individuals at a similar level across institutions, proved enlightening.

Within each organisation, interviews were held with similar levels of personnel. For example, a curator within one organisation may be referred to as a historian in another, but they both primarily undertake the same type of tasks in their daily work. Ensuring interviews were undertaken with participants in similar positions within each of the three organisations allowed a more consistent comparison between them to take place, as opposed to interviewing a curator in one and a departmental manager in another who may hold quite differing views of engagement with the public.

Whilst most of the participants remained in the same role during the study period, six had significant changes. In the case of one, this was due to the merger of the museum group. The participant commenced with the role of digital coordinator working the majority of their time with social media, but also on other tasks surrounding website maintenance. Within ten months, the museums had merged and they had assumed the responsibility of a digital manager, with a direct report. Both individuals were now focusing solely on the organisation’s social media presence. Two other individuals had their remit increased between my first and subsequent interviews, covering a six month period. The final two had signficiant position changes. One had moved from a marketing role, encompassing social media, into a purely social media focused position four months after my first interview, and the final one had moved to a senior curatorial role some seven months later. The benefit in reinterviewing these individuals was to allow any changes to their focus to be captured for the study.

## 4.5 Method of Analysis

My study focuses on a relatively complex social situation in the field but within the confines of a selective set of case studies. Through my literature review, research paradigm and methodology, I decided the most suitable analysis for my research style and case study would be grounded theory (Glaser & Strauss 1967).

Allan (2003) describes grounded theory as “a powerful research method for collecting and analysing research data”. It is a “qualitative inquiry in which data collection and analysis reciprocally inform and shape each other through an emergent iterative process” (Charmaz 2011, p.361). Indeed, grounded theory is not a theory in itself, but simply an approach or strategy to produce theory (Punch 2014) or “a set of principles and practices” (Charmaz 2006, p.9). This theory approach was described by Glaser and Strauss (1967, p.3) as:

*A strategy for handling data in research, providing modes of conceptualization for describing and explaining. The theory should provide clear enough categories and hypotheses so that crucial ones can be verified in present and future research.*

Grounded theory therefore investigates phenomena from the perspective of those involved with it. It illustrates the importance of micro-aspects of an individual’s social interactions, rather than macro aspects such as the interactions centred around the organisation itself, and focuses the researcher on emergent meanings that are given to these social interactions.

### 4.5.1 Grounded Theory Method

The seminal book on grounded theory method (Glaser & Strauss 1967) was published in 1967 and was seen as a revolutionary way to analyse qualitative data. Glaser was from a quantitative research tradition and Strauss from a qualitative one, yet despite the conflicting philosophical perspectives, it is widely recognised that the theoretical underpinning of “symbolic interactionism [*is*] the most important source of inspiration for grounded theory” (Alvesson & Skoldberg 2009; Strauss & Corbin 1990). There followed a book by Glaser (1978) on Theoretical Sensitivity which elaborated on how theory emerges from the data. As Glaser and Strauss (1967, p.23) explained:

*In discovering theory, one generates conceptual categories or their properties from evidence; then the evidence from which the category emerged is used to illustrate the concept. The evidence may not necessarily be accurate beyond a doubt (nor is it even in studies concerned only with accuracy), but the concept is undoubtedly a relevant theoretical abstraction about what is going on in the area studied.*

A second strand of grounded theory method appeared after a split between Glaser and Strauss in 1990 leading to a new publication by Strauss and Corbin (1990) with differing methods and procedures for implementation of the same. This newly developed coding process had “strong emphasis on conditions, context, interaction strategies and consequences” (Goulding 2002, p.158). These processes are at the heart of pragmatism and yet although there a many influences of American pragmatism on grounded theory, “the impact of contemporary philosophy of science on Glaser and Strauss’s writings is almost non-existent” (Haig 1995). Annells (1997a; 1997b) provides a discussion on the contrasting elements between ‘classic’ grounded theory of Glaser and Strauss, and the Straus and Corbin method, concluding that “potential users of the grounded theory method need to be aware that the method is maturing and branching, being affected by multiple experiences and new ideas encountered in the world of inquiry” (1997a, p.128). Glaser (1992) criticised the Strauss and Corbin book resolutely in his publication on Emergence v Forcing where he argued that by forcing the data, this new approach was no longer grounded theory.

Criticism of approaches to grounded theory have been directed at other writers also. Glaser was scathing in his view of Charmaz (2006) constructivist perspective to grounded theory in his article stating that “Constructivist Grounded Theory (GT) is a misnomer. GT can use any data; it remains to be figured out what it is” (Glaser 2002). Concurring with Charmaz, Mills et al. (2006, p.26) disagree with Glaser stating “variations of grounded theory exist on a methodological spiral...constructivist grounded theory is positioned at the latter end of this methodological spiral, actively repositioning the researcher as the author of a reconstruction of experience and meaning.”

Often perceived as a term relating to ‘coding’ of data (Urquhart 2013), grounded theory method (GTM) can be viewed as a purely analytical tool whereas in reality, the concepts and associations informed by such codes can be extended to build theory “suited to its supposed uses” (Glaser & Strauss 1967, p.3), which was the original aim. Through coding, “our analytic categories and the relationships we draw between them provide a conceptual handle on the studied experience” (Charmaz 2006, p.3). The theory itself is grounded in data through systematic collection and analysis, producing a more inductive theory of a substantive area of research (Glaser 1992). GTM generates theory “based on data, rather than [*to*] verify ‘grand theory’” (Urquhart 2013, p.5) and as such is based on the ground up interpretation of data from the researchers own perspective. As Suddaby (2006) states:

*[Glaser and Strauss] argued that scientific truth results from both the act of observation and the emerging consensus within a community of observers as they make sense of what they have observed...They argued that new theory could be developed by paying careful attention to the contrast between “the everyday realities (what is actually going on) of substantive areas”* (Glaser & Strauss 1967, p.239) *and the interpretations of those daily realities made by those who participate in them (the “actors”). They also rejected positivist notions of falsification and hypothesis testing and, instead, described an organic process of theory emergence based on how well data fit conceptual categories identified by an observer, by how well the categories explain or predict ongoing interpretations, and by how relevant the categories are to the core issues being observed.*

Theory generated through a grounded theory approach “is typically a substantive mid-range theory” and is often based on a “behavioural phenomenon” (Morse 2001, p.3). Indeed, “the ‘rule of ‘phenomenalism’ is central given the key role that is played by ‘data’ in all GTM writings” (Bryant 2002). The ability to constantly compare, code and analyse data for conceptual relationships is the strength of GTM (Urquhart 2013; Glaser & Strauss 1967). As positioned by Haig (1995) “good grounded theory is one that is: (1) inductively derived from data, (2) subjected to theoretical elaboration, and (3) judged to be adequate to its domain with respect to a number of evaluative criteria.”

An elaboration of Haig’s suggestion is offered by Denscombe (2004) who positions that good GTM:

* "Uses empirical field research as its starting point (the researcher starts the fieldwork research early in the investigation).
* Develops its analysis with constant reference to fieldwork data (an iterative process).
* Produces explanations that are recognizable to the subjects of research.
* Is geared to modest localized explanations based on immediate evidence.
* Adopts an emergent design (based upon theoretical sampling).
* Generally is linked with qualitative research, exploratory investigations, small-scale studies and research focusing on human interaction in specific settings." (2004, p.125)

As a qualitative approach, GTM has become influential in its (almost) fifty-year history and yet it is still an area that is proving controversial, especially within the Information Systems research arena. Suddaby (2006) notes that many articles misunderstand what grounded theory actually is, often purporting to be a grounded theory study incorrectly. Debates about the validity and uses of grounded theory in differing disciplines abound. Wilson and Hutchinson (1996) identified six methodological mistakes in GTM which they claim are reasons not all studies can be regarded as grounded theory based:

1. "Muddling Qualitative Methods": Here the researcher can muddle methods by compromising "the integrity of the grounded theory approach and instead generates a typology, long verbatim biographical narratives, or an outcome associated with any number of alternative qualitative approaches" (1996, p.122).
2. "Generational Erosion" (1996, p.123): Considered to undermine Glaser and Strauss' (1967) original concept of grounded theory, adding 'rules' to research using the grounded theory approach, and often ignoring the principles of the method, that it should be grounded in the data.
3. "Premature Closure": Simply described as "underanalysis of textual or narrative data" (1996, p.123), leaving results as little more than descriptions rather than emergent concepts.
4. "Overly Generic": Nothing new is truly discovered and findings could relate to a range of other phenomenon. Whilst generalisation to similar research is perfectly acceptable, in grounded theory "the theory is rich, complex, and replete with illustrations from multiple substantive areas of empirical inquiry" (1996, p.123).
5. "Importing Concepts" (1996, p.124): Occurring when the researcher fails to provide an original interpretation based upon the data. This can be due to predetermined ideas or being overly led by literature surrounding the subject of the research.
6. "Methodological Transgression" (1996, p.124): Researchers begin to analyse outside of known versions of grounded theory, often moving to a positivistic use of terminology whilst trying to 'fit' the findings to a pre-existing conceptual framework.

Using GTM allows a researcher to fully understand the phenomenon under investigation from the perspective of those persons immersed in it. As Thomas (2006, p.239) states, an inductive/qualitative approach to data analysis is common “especially [*in*] grounded theory”. Nevertheless, there are arguments for and against GTM. Denscombe (2004, pp.121–123) evaluated the pros and cons of using GTM and these have been illustrated in Table 7 along with my additional comments and arguments (in italics) relating to my research.

Table 7 Advantages and Disadvantages of Grounded Theory

(adapted from Denscombe 2004, pp.126-128)

|  |  |  |
| --- | --- | --- |
| **Advantages of Grounded Theory** | | |
| **Benefit** | **Description** | **My Response** |
| Suited to small-scale research | Ideal for lone researchers on limited budget/time | *This fits my research as I have 3 museums to work with and a limit within the PhD timescale (3 years) for completion. GTM is particularly suitable for “small-scale studies”* (2004, p.125)*.* |
| "Recognized rationale for qualitative research" (2004, p.126). | "Currency in the research community" (2004, p.126), standard rationalisation for small-scale research where rigour could become an issue | *Fits well with my research focus of a qualitative, interpretative study* (Thomas 2006)*.* |
| Adaptable | Can be used with "a variety of qualitative data collection methods (e.g. interviews, observation, documents) and forms of data (interview transcripts, fieldwork, texts)" (2004, p.126) | *In this study the data collection is through semi-structured interviews but would work equally well with focus groups or an ethnography based on human interactions* (Denscombe 2004)*.* |
| Pragmatic | "Focus on practice (human interaction) and what is practical (pragmatic philosophy)" (2004, p.126). | *In this research, human interaction and practice is key to the understanding of the phenomena. As Glaser and Strauss* (1967) *comment, theory is developed through understanding everyday realities by way of the interpretations of those who participate in them.* |
| "Systematic way of analysing qualitative data" (2004, p.126) | Useful to the new researcher in making sense of data and developing concepts and theories | *Being able to gather data and then analyse it from the ‘ground up’ allows the emergence of ideas and theories rather than the forcing of existing ones to fit the phenomena under investigation* (Glaser 1992)*.* |
| Data "analysis can draw on computer software for help" (2004, p.126) | Tools such as NVivo can help with coding and sorting data | *NVivo was investigated but ultimately the choice of the researcher was manual coding and analysis* (Urquhart 2013)*, and Microsoft Excel to note and sort codes as they were produced.* |
| Theory development | Theoretical propositions can be developed from data | *The analysis of data to look for themes and patterns leads to a more abstracted level of understanding. Generated theory is based upon the data obtained in the field and not used to verify grand theory* (Urquhart 2013)*.* |
| "Explanations are grounded in reality" (2004, p.126). | continuous allusion to empirical data builds sound evidence. Theories are relevant to reality | *Theory is built from data collected through interactions with those involved with the phenomena at that point in time and is built inductively. Constant comparison is key to analyse and code data to produce conceptual relationships* (Urquhart 2013; Glaser & Strauss 1967) |
|  | | |
| **Disadvantages of Grounded Theory** | | |
| **Problem** | **Description** | **My Response** |
| Planning | Precise planning is difficult. "The use of ‘theoretical sampling’ means that it is not possible to predict in advance the nature of the sample that will be used" (2004, p.127). Anticipating research completion may be difficult | *By nature I am a planner and consider that my pilot study has helped establish my sampling strategy well. Completion timescales are predetermined. I acknowledge this could lead to a more basic theory being produced* (Suddaby 2006) *but aim to ensure that this is not the case by allowing myself the maximum time for data collection and analysis within the scope of my research period.* |
| Context | "There is a danger that the theory generated from the data might ignore the influence of social, economic and political factors...and the historical background to events" (2004, p.127). | *My research is looking at a new phenomenon where there is little background but is entrenched in social factors and, to some degree, economic (‘free’ resources from the public). Political factors are less well defined and I would argue, less relevant. Denscombe* (2004) *concurs that observing human interaction in specific settings is an ideal base for GTM.* |
| Open-mindedness | Total ‘open-mind’ is a misconception as "researchers are inevitably influenced by prior conceptions based on their own culture and personal experience. The question is: how far can these be put to one side for the purposes of analysing the data?" (2004, p.127). | *Reading and understanding extant literature provides good grounding and understanding of what has been done and allows for theoretical sensitivity* (Glaser 1978) *to be gained by the new researcher. Analysing the current problem, particularly for new phenomena, means that it is more conceivable that existing theories and ideas will be set aside in preference of new ones applicable to specific areas of research. Siggelkow* (2007) *offers the notion of open mind, not empty head.* |
| Complexity | "The systematic way of analysing data development by Strauss and Corbin (1990, 1998) can be daunting in terms of the complexity of the process" (2004, p.128) | *Glaser and Strauss (1967) provide a much clearer, concise approach consisting of 3 coding levels, which is used in this research. Analysis of data is time consuming but the scale of the task was understood early on and thus sufficient time has been allowed for it.* |
| Positivism | "There is a positivist strand of thought in which the 'grounding' of theory means that it is not liable to be refuted by the later discovery of facts that do not fit the theory" (2004, p.128). | *I would suggest that theory well grounded in data will provide sound basis for future work. Facts should be carefully incorporated as theory is generated and thus theory should not be forced* (Glaser 1992; Kelle 2007)*.* |
| Empiricism | Criticism has been leveraged "that it relies too heavily on the empirical data" (2004, p.128). | *I would argue that researchers must be open minded but not empty headed* (Siggelkow 2007; Glaser & Strauss 1967)*. By their very nature, those taking part in research have sought extant knowledge in order to find new areas to explore. New theories are formed from sound data analysis through an iterative process* (Charmaz 2006)*. An understanding of previous theories and research methods can only do but aid a researcher narrow down their specific study area and provide 'theoretical sensitivity'* (Glaser 1978)*. I would suggest it unwise to start research with no formal knowledge of what has been before* (Goulding 2002; Urquhart & Fernandez 2006)*.* |

A variety of authors have reflected on elements included in table 7 when debating the adoption of GTM (Cranfield 2011; Schreiber & Stern 2001; Allan 2003; Kelle 2007; Cutcliffe 2005). Annells (1997b) considers two practical elements that are prominent in GTM literature; the ‘time-consuming’ nature of building theory, and the idea of theoretical saturation (planning) whereby the length of time that data collection may take is unknown. Suddaby (2006, p.636) concurs stating that researchers could produce only a basic output as they “may simply have stopped collecting data too early”. It is also suggested that despite the positive element of a providing a systematic manner in which data is analysed, such analysis can prove to be a highly complex task for the novice researcher which can lead to failure to analyse the data correctly and view it from a conceptual level (Suddaby 2006).

A common misconception in grounded theory is that a literature review prior to data collection can taint the researcher’s coding process (Urquhart & Fernandez 2006). Goulding (2002) concurs stating it would be hard to enter research in GTM without any fixed ideas. Siggelkow (2007, p.21) agrees and suggests “an open mind is good; an empty head is not. It is true that one wants to retain the capacity to be surprised, but it seems useful (and inevitable) that our observations be guided and influenced by some initial hunches and frames of reference.” Allan (2003) suggests that a common misconception in GTM is the notion of fieldwork before a literature review. Dey (1993, p.66) argues that "to analyse data, we need to use accumulated data, not dispense with it". Strauss and Corbin (1998) recognised the use of literature as professional knowledge and labelled it ‘literature sensitivity’, but it can also referred to as sensitising concepts (Blumer 1954).

#### 4.5.1.1 Sensitising Concepts

Backman and Kyngas (1999) question how widely and deeply should a novice researcher read prior to empirical studies when using GTM. Researchers, by their very nature, have an understanding to some degree or other of existing theories around their chosen subject matter. It would be more accurate to assert that GTM “does not start with a theory to prove or disprove” (Urquhart & Fernandez 2006, p.460). Glaser and Strauss (1967) themselves suggested that any preconceived ideas are side-lined so that the data may be inductively coded and analysed without influence from existing theories. The define the method as “the discovery of theory from data systematically obtained from social research” (Glaser & Strauss 1967, p.3). Strauss and Corbin (1990) suggest that whilst adhering to preconceived ideas should be avoided, a certain amount of theoretical sensitivity is expected from the researcher through sources including personal or professional experiences, as well as extant literature. Using the researcher’s sensitivity to the data allows credibility and meaning to be given to the decisions and understandings gained whilst in the field (Patton 1990; Eisner 1991). The notion of exploring existing theories within literature was discussed by Bowen (2006) in an article on sensitising concepts within grounded theory research. The use of the sensitising concepts allowed him to form a conceptual framework through the review of extant literature.

The difference between definitive concepts and sensitising concepts was explained by Blumer (1954, p.7):

*A definitive concept refers precisely to what is common to a class of objects, by the aid of a clear definition in terms of attributes or fixed bench marks...A sensitizing concept lacks such specification of attributes or bench marks and consequently it does not enable the user to move directly to the instance and its relevant content. Instead, it gives the user a general sense of reference and guidance in approaching empirical instances. Whereas definitive concepts provide prescriptions of what to see, sensitizing concepts merely suggest directions along which to look.*

Charmaz (2008) argues that this stance of using sensitizing concepts is contradictory to the grounded theory approach. She suggests that using knowledge of extant concepts affects whether grounded theory is used as “an emergent method or becomes a method of application” (2008, p.158). She does, however, agree that sensitising concepts can be used “as points of departure from which to study the data” (2003, p.259).

Within the scope of my own research, using sensitising concepts has allowed me to consider the diverse aspects of crowdsourcing within the museum community and consider a variety of theories ranging from motivations to knowledge management, as illustrated in the literature review. From the literature, I used these concepts as my analytical framework to guide me with my data analysis. Blumer (1954, p.8) notes that “sensitising concepts can be tested, improved and refined” but this is not always necessary as they may simply be used as a foundation for analysis of research data.

#### 4.5.1.2 Grounded Theory Variations

Other variations of GTM are now also presented as different grounded theorists present codes in diverse manners, using a variety of terminology (Schreiber & Stern 2001). Pandit (1996) prefers the notion of concepts, categories and propositions as the three elements to produce GTM. The propositions element was discussed in Whetten’s (1989, p.491) article where he suggests “during the theory-development process, logic replaces data as the basis for evaluation. Theorists must convince others that their propositions make sense”. Hutchinson’s (1988, pp.133–135) exploration of GTM in education produced three stages of coding field notes: Level I (*in vivo* or substantive), Level II (categories) and Level III (theoretical constructs). Clarke and Frieses (2010) have presented GTM as “situational analysis” as a form of postmodernism. It can therefore be seen that the fact that research normally followers either the Glaserian or Straussian approach can immediately create problems due to the number of perspectives by differing authors of GTM, and the manner in which it is used (Morse 2001). However, despite the diverse nature of GTM approaches, some of the founding elements remain the same: collection and interpretation of the data, abstracting concepts from the data, and finally to present the theory (Moghaddam 2006) and this is the unique nature of GTM.

#### 4.5.1.3 Rationale for Grounded Theory Method Adoption

The advantage of using GTM is primarily where little or no theory exists for a new phenomena (Urquhart 2013), such as crowdsourcing. Punch (2014, p.168) concurs stating that “the rationale for doing a grounded theory study is that we have no satisfactory theory on the topic and we do not understand enough about it to begin theorizing.” Siggelkow (2007, p.21) agrees that “if only limited theoretical knowledge exists concerning a phenomenon, an inductive research strategy that lets theory emerge from the data can be a valuable starting point.” As can be evidenced in Zhao and Zhu’s (2012) research, very few academic articles use theories around the crowdsourcing phenomena, and those that do, tend to use existing theories that have been developed for other research projects. The use of GTM relates well to my research questions examining how crowdsourcing is changing the role of internal heritage stakeholders and the extent that embedded IS within heritage organisations allows crowdsourcing initiatives. GTM is generally adopted when researchers find “an interesting phenomenon without explanation” (Suddaby 2006, p.636), or where the phenomenon has been relatively ignored in extant literature (Zhao & Zhu 2012). GTM therefore fits this specific research topic based upon the criteria of phenomenon and lack of significant literary attention. As Siggelkow (2007, p.21) points out “the near-ubiquitous claim that ‘not much is known, hence we engage in grounded theory building,’” is a consideration that needed to be addressed. Therefore, in order to ensure that GTM was the correct approach, a number of other theories relating to crowd engagement and technology use were investigated prior to GTM being adopted, as was illustrated earlier in this chapter.

GTM is also well documented and has been seen increasingly used in a wide variety of research projects from social sciences and education, to IS (Cranfield 2011; Lehmann 2001; Onions 2006; Diaz Andrade 2007; Levina & Vaast 2008). Data sources used in GTM can be single or multiple and the researcher is free to consider many perspectives from a coding and categorisation perspective (Onions 2006; Fernandez 2004). As can be seen from Table 7, the advantages of GTM are measurable in the context of this study.

The research question considers the impact of crowdsourcing on protecting and promoting National heritage through the changing role of heritage stakeholders, its use through social media technologies employed by the public and heritage participants, and its function as part of an embedded IS system within an organisation. Gaining an understanding of the impact of crowdsourcing on those personnel in a variety of heritage organisations involved in its implementation and use, is one way in which this phenomena can be explored. Therefore, the purpose of this study is to look at crowdsourcing from the perspective of those internal heritage stakeholders that are involved with it, either in large scale projects or simply through increased social media interactions with the public.

Onions (2006, p.3) proposes that “working with an open mind requires the researcher to consider issues of uncertainty and inconsistency, and select the logic of enquiry accordingly.” This allows data collection to proceed without too many pre-conceived ideas of the outcome being in place. It also allows for flexibility when data may send the researcher down a different path that has not yet been considered. These aspects reinforce that GTM is a suitable choice for the research proposed in this thesis. Denscombe (2004) concurs and offers that allowing comparative data analysis and flexibility in sampling enables the exploration of new ideas.

The technology involved with crowdsourcing, that of Web 2.0 and particularly social media, have only come into the fore for most people in the past eight years. As explored in the literature review, prior to 2006, social media was relatively limited in both its function and audience. As a phenomenon, social media is continually changing and evolving. Corbin and Strauss (1990) consider that it is important to recognise that phenomena are not static and to incorporate change into GTM. To present a static view of a constantly evolving process would be a limiting factor if using some of the more conventional theoretical analyses within the IS field. The advantage GTM has is in allowing the researcher to continually revisit the literature as the study progresses. By constant comparison and analysis of new literature as it becomes available, further changes around crowdsourcing and social media can be captured and incorporated right up until the final moments of the study.

In their seminal book, Glaser and Strauss (1967, p.108) point to the usefulness of writing “memos on, as well as code, the copy of one’s field notes”. This notion was expanded into the ‘Theoretical Memo’ (Glaser 1978), which prompts the researcher to stop coding and write down thoughts and interpretations of the data in a separate format. Theoretical memos allow one the ability to think in a more creative manner and express those thoughts and ideas at that point in time rather than reflectively. Allowing this creativity to occur will often produce those “lightbulb moments we have about data” (Urquhart 2013, p.110). Charmaz (2006, p.72) concurs stating that “when you write memos, you stop and analyze your ideas about the codes in any – and every – way that occurs to you during that moment”. It also permits researchers to move between creative theorising and practical coding. Developing this relationship between codes through the use of theoretical memos can be considered to aid the emergence of abstraction and ultimately, theory.

Memos can consist of thoughts around the interview process, interpretations, theoretical insights that appear early on and, occasionally, offer directionality for further research (Goulding 2002). Urquhart (2013) argues that to first code the data and then write it up, without utilising theoretical memos, could prove disastrous for researchers using GTM. She continues that “the overlapping processes of coding and theoretical memoing are what build the theory” (2013, p.113). Furthermore, Charmaz (2006) positions that memos are often more valuable than the publication for which they were prepared, often spawning new ideas and articles that can generate further research.

Along with data that can be considered in a creative light through theoretical memoing, a further advantage of GTM is that it allows one to focus analytically on interview data. Such in-depth analysis means it is more likely that new concepts will be discovered from such investigations (Urquhart 2013). This suggests that there are strong indicators that GTM, as distinct from other theories, offers the most appropriate approach for this research topic area. Nonetheless, coding and developing new theory using GTM is not a simple process.

Theoretical coding (Glaser 1978) conceptualises how substantive codes relate to one another. "Substantive codes 'conceptualise' the empirical substance of the area of research" (Urquhart 2013, p.107). One of the dangers of GTM is that whilst it is an inductive method that uses emergence of theoretical codes through substantive analysis, it could be possible for a researcher to ‘force’ a theory a specific way (Glaser 1992; Kelle 2007). This is a dilemma that is faced in any research where the researcher may interpret the data to validate or negate an existing theory, not just in GTM. I have provided an explanation of the coding process in the next section.

#### 4.5.1.4 Study Process using Grounded Theory Method

As can be seen from previous literature, theory in GTM is built from data acquired in the field and in the case of this thesis, through semi-structured interviews with internal heritage personnel. Theory can also be built through the exploration of secondary data in the form of documentation, web sites and online heritage communities. The process of developing theory "is through the constant comparison of data with data and codes, categories, and relationships" (Seidel & Urquhart 2013, p.239) seeking out connections between them as “an important component of a theory is building relationships between constructs” (Urquhart 2013, p.9). This cycle of comparison and review is repeated until theoretical saturation point is reached. Theoretical saturation is accomplished when "no new concepts are emerging from the data" (Urquhart 2013, p.9) being analysed and existing categories are simply being repeated. A illustrative research model was produced by Lehmann’s (2001) to show the grounded theory building process in a pictorial manner. This was subsequently expanded by Fernandez (2004) by adding components from Eisehardt’s theory building article, as well as those from Glaserian literature highlighting theoretical memos and extant literature. The new constant comparison illustration is shown in figure 9 and this is the method employed within this study, that of Open, Selective and Theoretical Coding.

#### 4.5.1.5 Coding Procedure

Open coding is the first step in analysis of data and offers an open analysis of data, beginning by breaking data down into simple descriptive codes providing a summary of the data. However, “the aim is always to get an analytic code – one that analyses the data rather than simply describes it” (Urquhart 2013, p.81) and these emerge as coding progresses through the descriptive/summary phase. Glaser (1992, p.39) described open coding as “the initial step of theoretical analysis that pertains to the initial discovery of categories and their properties”. Often open coding is completed on a line-by-line, or even by “microanalysis which consists of analysing data word-by-word” (Strauss & Corbin 1998, pp.65–68). However, a weakness of this microanalysis method is its time-consuming nature (Allan 2003).

Selective coding is “the stage at which coding is limited to only those categories that relate to the core category” but also “point the way to future theoretical sampling” (Urquhart 2013, p.88), and ultimately theoretical coding. The developing relationship between codes can be observed at a selective level through the use of theoretical memos alongside traditional GTM coding techniques. How selective codes are determined is dependent upon the researcher’s decision making process and determination of the core category, and the problem to be addressed through the research question. Strauss and Corbin (1990; 1998) refer to this process as focused coding, allowing the most significant open codes to be determined and appropriately categorised to organise large quantities of data. Using focused coding “requires decisions about which initial codes make the most analytic sense to categorize your data incisively and completely” (Charmaz 2006).

In Lehmann’s (2001) Research Model, as expanded by Fernández (2004, p.85), the literature review section is not defined at the beginning of the study when the researcher enters the field, but is incorporated at various points within the study as a cyclical event that is revisited as the coding and theoretical building progress. This is an interesting perspective as the majority of researchers will come to the field with some element of pre-defined understanding of the literature around their subject matter. Indeed, this is often a pre-requisite for being accepted onto a research degree. Whilst Glaser and Strauss (1967) suggested that the researcher commence with an ‘open mind’, they ensured that this did not mean an empty mind but encouraged the researcher to review literature “for informing rather than as data for analysis” (Glaser & Strauss 1967, p.162). As Goulding (2002) states, researchers are not ‘blank sheets’ but will have past experiences and literature already embedded into their personal philosophy. I have therefore expanded Lehmann’s model further based upon Fernández’s (2004) version, as illustrated in Figure 9 to incorporate the literature review at the beginning of the Model prior to entering the field, as well as during the investigative phase.

With the additional element included, the diagram is very indicative of the GTM approach and the way in which I will be conducting this research. For this specific study, a literature review was carried out first to explore extant journal articles and books to gain an understanding of the current thinking around social media, crowdsourcing and heritage in general. I began to more deeply investigate the area that I was interested in – heritage crowdsourcing - through the literature, and subsequently found a gap. From this, I entered the field and commenced initial discussions with various heritage organisations (Theoretical Sampling in the diagram). This allowed me to refine the organisations that I would be working with as these initial conversations illustrated to me that some organisations do not use social media and/or crowdsourcing in the manner that I expected. Their limitations on the use of these IS tools meant that they would not be viable for the main body of the research. This fed into the Additional Slice of Data area.

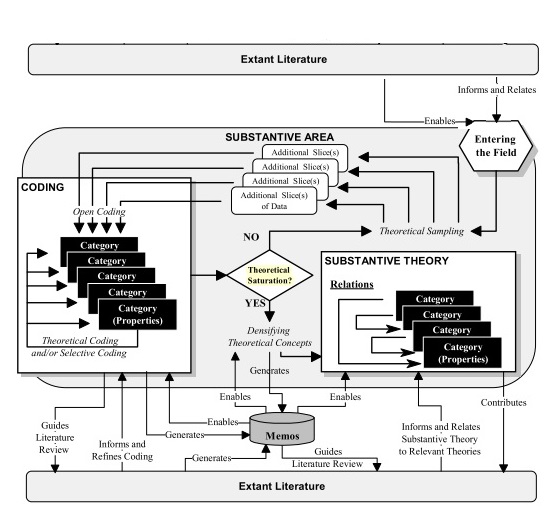


Figure 9 Adapted from the Expanded Lehmann's Research Model (2004)

My pilot study began the transcription of semi-structured interviews through the Coding section of the diagram. The process is cyclical as I constantly reviewed the literature based upon any new data published as I begin coding, and thus the literature may inform for further interviews and coding processes. The manner in which I investigated and coded is followed through the process of the diagram until theoretical saturation is reached, theoretical concepts are densified and new, substantive theory is generated, to contribute to the literature for future research. It can therefore be seen that the literature is a highly relevant area of the research as it will be revisited numerous times during the course of the study both to inform new findings, and compare or contrast existing knowledge as the coding develops. This fits with the refining process indicated in Figure 9.

## 4.6 The Coding Process

Having initially reviewed the literature surrounding crowdsourcing, I investigated some theories to develop my theoretical sensitivity. This allowed me to consider where my research may fit into existing theories or, indeed, whether it would produce a new theory. Understanding the different ways in which academics examine and interpret the crowdsourcing phenomenon was an important step to allow me to move forward in my data collection.

My data was gathered primarily through semi-structured interviews with twenty-six unique personnel within three museums who are involved in gathering stories and information relating to contemporary historical events; those in 'living memory'. Five personnel were re-interviewed due to their roles and/or organisational structure changing during the period of my study. The five repeat interviews took place between four and ten months after the initial interviews, dependent upon the changes that had taken place. This allowed for me to ascertain whether their perception of engaging the public had subsequently changed. The twenty-six interviews were sufficient to achieve theoretical saturation (Glaser & Strauss 1967), and confirm understanding by re-interviewing five personnel again (Johnson 2002), providing a total of thirty-one responses. The interviews took place between January 2014 and December 2015.

On average interviews lasted around forty minutes, although two in-depth interviews lasted over ninety minutes each. Two of the interviews were in the format of a mini-focus group as I interviewed two individuals together. It allowed the participants to encourage each other to say things they may not have done if individually interviewed. Questions were also emailed to participants who were willing to take part in the research but not able to make face-to-face meetings, or follow-up meetings.

Secondary data was collected through my monitoring of the museums' websites and social media feeds over a year (May 2014 - Apr 2015), with numbers of followers recorded every month, along with an examination of the kinds of interactions taking place. This provided me with an overview of what was happening both within and around each institution.

### 4.6.1 Coding - Open and Selective

Initial coding occurred once the primary interview data (which was recorded) was transcribed. This process began very early on during data gathering and was something that I refined as my data grew. From examining the transcripts, I began to identify initial codes and consider appropriate naming conventions, gradually grouping codes together into larger categories as links between them emerged. Using an iterative process, codes were reviewed, developed and re-categorised as the process itself was refined. Coding at a line by line level allowed me to carefully analyse the participants' feedback and ensured that essential information was not missed. Undertaking constant re-evaluation of the codes and categories allowed me to capture new, emergent data as well as remove that which had become superfluous. For subsequent interviews, I refined my questions to encompass the new data that had emerged. This process is known as theoretical sampling, and it allowed me to then develop my categories further and capture deep, rich data to continue coding with. Undertaking this process also meant that code saturation was achieved quite early on in the process due to being able to hone in effectively on specific interpretations and understandings that emerged from the data.

Open coding allowed me to capture a range of thoughts, understanding and emotions that my participants provided. My first set of codes were written onto small Post-it notes and put onto a wall so that I could begin to move them around. This proved fairly futile as the Post-it notes soon lost their stick and fell to the ground, causing me problems as I was trying to develop categories through them. I then decided to purchase 200 index cards, cut them in half and used them as I coded. Much to my surprise, I ran out of cards very quickly, so finally I opted for three Excel spreadsheets to allow me to enter codes for each museum type (small, medium, and large). Using Excel meant that I kept codes separate for comparison purposes but also could combine them as a whole on a new worksheet to analyse as a whole. Excel has proved far more useful to me than NVivo which quickly became laborious to enter codes into.

I also found that theoretical memos became an important part of the coding process and allowed me to write down ideas as they occurred. This meant breaking away from the coding process for a short period of time but ultimately provided some inspirational thoughts to be captured, along with specific memories of conversations that I had been involved in. The memos ranged from single line observations or thoughts, through to full A4 pages of 'thought dumps' as I was working through the coding process. I had notebooks and notepads all around my house, as inspiration or insight could come at any point. I also recorded memos onto my mobile telephone when I was out of the house, and transcribed those at a later point.

My strategy to find appropriate selective codes was to review each open code that I had entered into my Excel spreadsheets and see if a specific word or interpretation of the code was obvious. I then began to consider the selective codes that I could use by sorting the codes numerous times and reviewing each to understand where they fitted, in line with re-checking transcripts to ensure that meaning was not lost or misconstrued. However, this still meant I had a large set of selective codes to work with and Glaser suggests that only two or three are needed in order to produce theory. Whilst it was doubtful that I would get to a point where only two codes could represent my findings, it did mean that the selective codes needed to be narrowed down in order for me to get to the abstraction level that I required. By revisiting the selective codes and underlying open codes, I began to work to group the codes more tightly. I also made the decision to focus on the codes surrounding my research question relating to social media interactions and specific crowdsourcing engagement. This meant that I could then remove codes relating to general conversation, introductions, and areas where the discussion went off at a tangent as occurs in the flow of conversation. This allowed me to focus my attention on specific code types that were being generated from the transcripts. This reduced my open coding to two hundred and ninety-five codes in total. These codes were reviewed and refined further by checking each against one another to see if a better 'overall' code could be used. They were then checked against the transcripts once again, allowing key categories to form that captured the essence of the data in my research. This reduced the open codes to one hundred and ten once similar or duplicate codes were removed. The codes were then broken down further into possible selective codes. I initially considered using Gioia et al.'s (2012) data structure of 1st order concepts, 2nd order themes and aggregate dimensions, but preferred what I considered to be a structure more aligned with my way of thinking as provided by Urquhart (2013). The open and possible selective codes are illustrated in Table 8.

Table 8 Open and Possible Selective Coding

(Based upon Urquhart 2013, pp.100-101)

|  |  |
| --- | --- |
| **Open Codes** | **Possible Selective Codes** |
| OC:1  Internal collaboration  Knowledge sharing  Inter-departmental conversations  Understanding organisational structure  Defined organisational meaning  Clarification of ideas  Departmental conflict  Internal Co-operation  Internal rapport | SC:1  Departmental collaboration |
| OC:2  Contemporary data relevance  Shared contemporary history  External 'expert' recognition  Rich stories and descriptions surrounding objects Building collection with social context  Community project collaboration Community engagement Virtual community recognition  Self-reinforcing community  Contemporary collecting through social media  Specialised public knowledge  Stories around everyday objects  Community of interest  Niche engagement  Assumed expertise (public)  Ensure participation  Build loyalty  Build influence  Community protection  Museum ambassador | SC:2  Developing an external community |
| OC:3  Audience engagement  Desire to collaborate  Develop bonds with the public  Handling public queries  Communication links  Understanding differing viewpoints/perspectives  Conversational strategies  Addressing knowledge gaps  Emergent interpretations  Push/pull engagement  Collections development  Reframing public engagement  Increasing engagement  Unconditional sharing  Proactive and reactive engagement  Public needs, not internal likes  Diversity of views  Challenging museum perceptions  Rapport building Challenging existing assumptions  Different audiences  Setting expectations  Extended reach  Re-telling of history  Learning through stories and rich descriptions  Building visitor interest  Public interpretation  Collections interpretation  Learning potential  Balancing expectations  Informal learning  Validating new interpretations  Expansion of curatorial role  Museums lacking contemporary knowledge  Building importance of collections  Personal recounts of events  Living memory | SC:3  Engagement between public and museum |
| OC:4  Technical capabilities of museum personnel  Sharing stories through social media (Facebook/Twitter)  Changing public perception of availability of 'experts' in museums  Capturing real-time events  Technology tools for engagement  Increased content availability through technology  Digitising of artefacts  Engaging with known technology (i.e. smartphones)  Digital expertise of the public  Prolonging the museum experience  Redefining visitors | SC:4  Technology Involvement |
| OC:5  Transcribing  Verification of data  Interpretation  Voting | SC:5  Taking Action |
| OC:6  Limitations of capacity  Existing museum knowledge  Verification of data  Lack of staff to cope with new interactions  Quality of data  Short response times to interactions | SC:6  Time Factors |
| OC:7  Citizen curation/co-curation  Shifting paradigms of engagement  Specific crowdsourcing projects  Internal project apathy | SC:7  Crowdsourcing |
| OC:8  Acknowledging errors  Accepting corrections to existing data  Fear of factual errors  Inability to answer complex questions  Inability to correct public misinformation  Limited exhibition updates  Changing demands of the public  Cohesive voice of organisation | SC:8  Stages of Uncertainty in Collaboration |
| OC:9  Large quantity of enquiries through online forms  Timescale for responses  Managing telephone enquiries  Impact on workload  Enforcing engagement times (limitations)  Ignoring requests | SC:9  Pre-social media engagement |
| OC:10  Edict to engage  Return on investment  Social media marketing  Frustration with immediate management  Location specific problems  Additional task pressure  Perceived to be listening  Mistrust (lack of knowledge by management)  Unscheduled time for engagement  Political organisation  Limitations of use  Positive encouragement | SC:10  Management engagement and frustrations |
| OC:11  Challenging professional opinion  Increasing professional status  Evolving role of curator/historian | SC:11  Professional status |

I was concerned at one point as some categories were becoming very full and yet others only had two or three open codes beneath them. However, it was important that I did not try and force these separate codes into a category that did not fit them. A discussion with my supervisor reminded me that not all of my data needs to fit, and that having areas that fell outside of the scope of my research was perfectly acceptable. Once this had been re-established in my mind, I relaxed with the coding, ensuring that categories were suitable for the codes, as opposed to trying to fit codes into categories; something which I was aware that I had begun to consider. This allowed me to focus the grouping for possible selective codes, bringing them to a more manageable eleven in total.

### 4.6.2 Coding - Theoretical

I found the process of generating theory challenging. I constantly questioned my own abilities to produce anything of merit. I found I was re-reading transcripts over and over in order to ensure that the coding categories that had emerged were appropriate to capture responses that the participants had provided to me. Self-doubt loomed for some time and I had to ask myself repeatedly if I was forcing any aspect of the data or categories. Having repeated the process many times, I felt confident that my codes were sound and a true reflection of the data that I had gathered. I also realised that some codes were outside of the final theoretical contribution but were still relevant within the context of my research. This was particularly applicable to 'management engagement and frustrations' which was an area that many of the participants of museum 1 discussed.

I went down a number of tangents during the process of theoretical coding whilst looking for where my data fitted best. This made me realise that, at times, I was looking at areas that were not accurately grounded in the data. This caused a little stress as I felt I had some good ideas and then realised the direction was not correct and the data did not sufficiently back up my understanding. I particularly found this when considering knowledge management. Whilst some codes fitted very well, too many were still on the periphery which allowed me to conclude that the theory did not fit. The same applied to the theory of social media affordances. Whilst initially it seemed that this was a perfect 'catch all' theory to use, the data showed me that limiting myself to this concept was not correct, and I needed to revisit how the data informed me, and allowing the theory to emerge from the data, as opposed to considering the theory beforehand.

Working with three different organisations meant that to settle on one specific set of theoretical categories could prove difficult. In order to achieve this, I needed to focus on what the combined understanding of crowdsourcing meant to all three institutions. This allowed me to set aside additional coded areas that had emerged that were pertinent to a specific museum, and present those in the cross-case findings chapter. To focus on the core finding of this research, I used an iterative process whereby I moved from the data to the codes and back again, using both existing and emerging codes in the analytical process.

I then investigated how the categories that had emerged from my open coding in Table 8 would relate to one another. Figure 10 illustrates an integrative diagram (Strauss 1987) to show the possible selective codes and their relationships. I then reviewed the possible selective codes against one another, also considering the underlying open codes that were generated. Glaser (1978) recommends having one or two selective codes so I needed to see if any of them could be combined into a single selective code. I went back to my research question to consider which of these, if any, specifically dealt with the impact of crowdsourcing on heritage personnel. In vivo codes such as 'community of interest' proved very useful as they were used by multiple participants and initially I considered that they provided a natural selective category. However, the definition of a community of interest from the museum perspective was somewhat different to that in academic terms. I therefore decided that this was a useful open code but needed refinement within the context of the other open codes and could therefore not be a selective code in its own right.

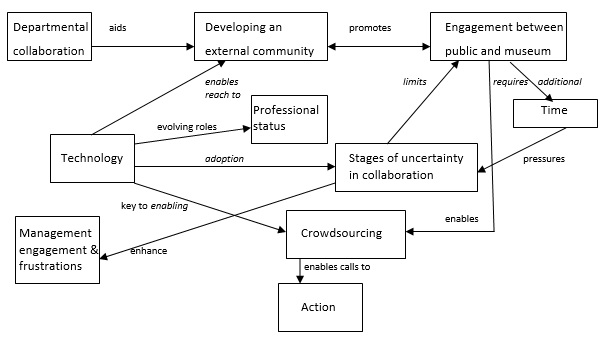


Figure 10 Relating Selective Codes

Whilst many of the possible selective codes could be combined, there remained a number that were relevant to the research but did not fit into the overall theoretical code that emerged. Two categories: pre-social media engagement, and management engagement and frustrations needed to be separate. Pre-social media engagement was interesting as participants discussed how they engaged the public prior to the emergence of social media. Management engagement and frustrations could be felt from confusion over how to engage the public using social media technologies. Clearly management frustrations were an extensive category in their own right encompassing many areas including hiring and dismissal of staff, restructuring, organisational boundaries, and many others. In order to consider this selective code, I went back again to my research question and related the participants’ viewpoints to those surrounding engaging the public only. The results of this process are shown in Table 9.

From this further analysis, one overall concept emerged from the museum collaboration theme: networks of crowd. This new code became the core theoretical code of my research as it encompassed all the elements of museum collaboration with the public as perceived by internal stakeholders. Once the core theme became apparent, I reviewed it against the transcripts once again to ensure that the codes generated were relevant to my research questions. The final codes that emerged and were applicable to all three museums. What I found interesting about the final selective categories that emerged from the data was the inter-relational nature of the different areas that had emerged from the possible selective codes. For example, to achieve collaboration between a museum and its audience, one needs to have developed an external community with which to collaborate, allow sufficient time to respond to queries or post information the community may feel is useful or interesting, have the ability to fully engage an audience, and access to known technologies with which to engage.

Table 9 Category Refinement

|  |  |  |
| --- | --- | --- |
| **Possible Selective Codes** | **Selective Codes** | **Theoretical Code** |
| SC:1  Departmental collaboration | SC:1  Internal departmental collaboration | TC:  Network of Crowd |
| SC:2  Developing an external community | SC:2  Collaboration with the public |
| SC:3  Engagement between public and museum |
| SC:4  Technology Involvement |
| SC:5  Taking Action |
| SC:6  Time Factors |
| SC:7  Crowdsourcing |
| SC:8  Stages of Uncertainty in Collaboration |
| SC:11  Professional status |
| SC:9  Pre-social media engagement | SC:3  Pre-social media engagement |  |
| SC:10  Management engagement and frustrations | SC:4  Management engagement and frustrations |  |

The levels of engagement that museum stakeholders are witnessing can now be identified as a 'network of crowd'. Originally, this was coded as a ‘network of public’, as ‘public’ was the term used by the majority of participants when referring to their interactions with the audience over social media. Still, the term ‘public’ was too broad given that not all members of public are engaged with the study museums. The term ‘crowd’ was also somewhat problematical as crowdsourcing is commonly considered to relate to specific, dedicated projects or tasks (Zhao & Han 2016; Deng et al. 2016; Yang et al. 2008). However, having revisited Howe’s (2008) expanded definition of crowdsourcing as an umbrella term for a variety of approaches of eliciting a contribution from the crowd, the code ‘network of crowd’ appeared most applicable to the types of interactions that the study participants were engaged with. Thus, the theoretical code of ‘network of crowd’ better serves to present the engaged community of individuals surrounding the museums.

The ‘network of crowd’ also arose as there are significantly more interactions between stakeholders than are commonly associated with networks of practice, which was another code I had given considerable thought to, and had been employed as my conceptual framework. The formation of a network of practice (Brown & Duguid 2000) is assumed to lead to limited levels of knowledge sharing, intra-organisational knowledge sharing that required some level of management control (Agterberg et al. 2010), a specifically designed knowledge portal in order to share knowledge (van Baalen et al. 2005), or some form of group leadership within the network (Faraj et al. 2015). In the case of my research, the network that the participants observed:

* encouraged significant engagement in open, non-organisational knowledge sharing;
* used existing social media technologies;
* did not require management control in order to share knowledge, or a knowledge broker to facilitate knowledge acquisition or dissemination; and
* had no discernible leader within the network.

This indicated it went beyond the current interpretations and understanding of a network of practice. Engagement and knowledge sharing, within the museum context, was between heritage professionals and the public, as well as public to public conversations that heritage participants are purely witness to and do not need to be actively involved in.

Alongside the formation of highly engaged networks of crowd, the museums themselves are evolving through their engagement with social media and increased public interactions and knowledge acquisition to leverage understanding of their collections. All of these categories become inter-dependent when considered within the scope of the phenomenon of crowdsourcing over social media.

## 4.7 Summary

My data was gathered from three sites, all UK Armed Forces related museums who can focus on contemporary, ‘living memory’ history and artefacts to build on their collections and knowledge. Additional data was gathered from a set of questions sent out to specific participants over email to allow theoretical sampling to take place. A short pilot-study in the form of a two-person focus group was conducted to test my line of questioning and assess whether any groups of codes could be drawn out from the transcribed data. Questions were subsequently modified and interview technique clarified for the main data collection.

I selected Grounded Theory (Glaser & Strauss 1967) as my method of analysis, preferring Glaser’s version to that of Strauss and Corbin. I considered a number of sensitising concepts to help guide my thinking and questioning. Following a coding process, I developed a set of categories that emerged from the data, which in turn provided guidance to a relevant theoretical understanding surrounding the development of evolving electronic networks for knowledge sharing. These networks, as evidenced by the museum participants, I coded as 'network of crowd'.

The following chapter considers emergent codes that were different between the three museums, before moving on to Chapter 6 to highlight the findings that are common to the three organisations. Both Chapter 5 and Chapter 6 provide details of the findings that arose from the coding.

# Chapter 5. Cross-Case Findings

"Insanity: doing the same thing over and over   
again and expecting different results."

Albert Einstein

## 5.1 Chapter Overview

This chapter discusses the findings that emerged from coding of the semi-structured interviews with museum participants. It focuses on the differences that were highlighted between each museum, to illustrate the disparity between the organisations. Direct quotes are provided with the allocated museum reference (M1, M2 or M3) and participant reference (P1, P2, P3, etc.) that I assigned for anonymity.

From the coding undertaken on the transcripts, the three museums had many commonalities (discussed in Chapter 6) which have been the main focus of my research. This chapter focuses on the perceived differences between the museums as described by the participants, relating to their understanding of crowdsourcing, and its implications, within their organisation.

## 5.2 Large museum (M1)

Within the large museum, crowdsourcing initiatives were directed initially by senior management and the Board. There was a perceived notion that as other museums were engaging their audience over social media, this museum ought to be doing the same. A dedicated team was set up to manage social media interactions on behalf of the museum, working alongside all departments. This was seen as internal crowdsourcing. However, there was also a requirement to run a 'test bed' for a large-scale crowdsourcing project. A project lead was hired to work on external crowdsourcing projects, along with an internal systems architect. The external project build began but the systems architect left after six months and management needed to consider whether to employ another, or look for an external organisation who were experienced in developing crowdsourcing platforms. They decided on the latter and produced a joint platform to launch their first crowdsourcing initiative. This first project was developed to see if the public would engage with it, and to what extent. Having shown the project was a success over time, they worked with a new external supplier to develop and release their dedicated crowdsourcing project.

The museum is considered to be 'blue chip' and has the associated funding and staffing numbers. The choice of social media tools was in line with those that the museum audience were currently using, those that reflected specific information that the museum wished to convey, and a dedicated platform. Table 10 illustrates the crowdsourcing decision makers, technologies used, perceptions and viewpoints provided by the participants, which I shall now go on to discuss.

Table 10 Museum 1 Crowdsourcing Overview

|  |  |  |  |
| --- | --- | --- | --- |
| **Crowdsourcing decision maker** | **Crowdsourcing Tools** | **Perceptions of crowdsourcing** | **Participant views** |
| Management and Board | Dedicated platform #1 (Museum, Zooniverse and National Archives)  Dedicated platform #2 (Museum, Findmypast)  Social media: Facebook, Twitter, Instagram, Flickr | Single voice of museum  Dedicated crowdsourcing project  Time issues  Management mistrust | Voice of museum not cohesive  Internal apathy towards project  Additional time for tasks not incorporated into daily activities  Lack of social media knowledge at senior management/board level  Political institution: must be seen to be doing crowdsourcing |

At the time of my study, the main crowdsourcing project was underway and much of the participants’ awareness and discussions were primarily related to this specific project. Within their context, it meant additional resources being utilised, and a feeling of considerable pressure on the existing time constraints that staff already felt. After the initial 'buzz' of the launch, internal apathy quickly set in. It seems that this may relate to the anonymity that crowdsourcing allows, creating a form of "bystander apathy" (Yoon & Rolland 2012, p.1135). However, Wallis and Dollery (2005) consider that social interactions require varying degrees of emotional investment and when such emotional benefit levels feel low, an degree of apathy can set in. What once was an exciting launch, with appropriate publicity, now was no more than a database of information of little use to curators and historians in their day-to-day activities. They still acknowledged that crowdsourcing was an effective tool to gather further stories, information and contextual data. However, for many it was a form of self-motivation and enjoyment of the process (Deci & Ryan 1985a) that kept them engaged with the public, through the common ground (Grant 1996) that they held, as opposed to a commonality of interest associated through the museum itself.

Concern was also raised by the participants of this museum that the social media department were considered a separate entity, not wholly encompassed within the museum itself and, at times, quite literally on the periphery of what was happening:

*"We are encouraged to engage with the digital team as much as possible, but I'm sad to say that isn't always the case, particularly with them being off-site." (M1, P9)*

Having the department located physically outside of the museum buildings did little to encourage a feeling of belonging and inter-departmental sharing:

*"We have a social media team here but, to be perfectly honest, they are very much on the periphery of the business and thus, sadly, often forgotten about." (M1, P14)*

With social media being the key to effective crowdsourcing that the museum was undertaking, it was a concern expressed by participants that the department itself was not better integrated into the museum as a whole. This gave the impression that the social media team were an offshoot of the organisation, or a sub-set of the museum, rather than being integral to it and promoting its message of cooperation and engagement. This led to many also considering that what was deemed to be the voice of the museum, as portrayed by the social media department, was not cohesive and did not 'gel' with what they considered the institution stood for:

*"[Social media is] locked down and there is a feeling that we cannot engage with it. only a few people have access to it and are deemed to speak with the voice of the museum. I don't like our tone of voice very much. It doesn't gel well with what I understand that we do." (M1, P5)*

It would appear that trust (Ardichvili et al. 2003) was therefore missing between members of the curatorial teams and those within the social media team. They did not feel that the social media team could be relied upon to present accurate, consistent information as they did not have the depth of understanding that the curators and historians held. A feeling of misrepresentation emerged when participants discussed how the social media team interacted with the public.

Within the three museum's participants within this study, management are viewed as either highly efficient and positive, or conversely, ineffective and making unreasonable demands upon the employees (Table 8, OC:10). Within the three museums, there was much consensus surrounding many areas of management input, but what was particularly interesting in the large museum was the feelings of mistrust and scepticism levied at management. With many museums facing funding cutbacks, blurred philosophies, and insufficient resources to meet internal and external demands (Hooper-Greenhill 2000), it can be understood how some of the participants in this study could consider these factors were solely down to poor management, thus leading to such feelings of mistrust.

Within the museum community of practice, feelings of mistrust will have adverse effects on knowledge transfer within the museum, particularly between the curatorial participants and management. A number of participants observed that the push to be engaged with social media was from management, without any real understanding of the increased pressures that they then faced in completing their own daily workloads, alongside the requirement to engage with the public:

*"I am first and foremost a curator/historian, and that is the role for which I am paid my salary. Additional tasks need to fit around this and, at present, I do see social media as somewhat of an 'extra'. However, the edict from 'on high' is that we engage with social media, so we do." (M1, P9)*

This form of response was quite common amongst participants. Organisations recognise that distributing knowledge beyond their employees and internal projects is central to developing content creation, collaborations and innovative thought processes (Majchrzak, Wagner, et al. 2013). However, there is still a significant gap in literature on people management issues (Scarbrough & Swan 1999), and how individuals internal to organisations manage knowledge acquisition and dissemination, particularly around crowdsourcing where quantities of data exchanged can be significant. There was also concern that the museum itself must not be seen to be unsuccessful with crowdsourcing projects:

*"You're not actually allowed to fail in the museum sector. You have to pretend it was a success, right? So people who talk about fail-fast don't know what they're talking about, because the way we're funded and the way our Government structures work, it doesn't really allow failure...even though it was a failure, people will say it's a success and claim some success for it..." (M1, P2)*

This puts a lot of pressure on the participants to prove success from their engagement with the public. Not all success can be statistically measured but that which is not, often needs to be quantified to provide evidence of why such interactions are required. This in turn means that when the public are dissatisfied with an aspect of their engagement with the museum, and take to social media to say so, there is intense pressure on museum staff to resolve the matter speedily:

*"So, if people don't like something and they're shouting about it online, there is a tendency for everyone to start, well for some people to start, jumping up and down [saying] 'we've got to do something about it'. Do we really?" (M1, P2)*

The argument that this participant makes is that if a single person is complaining about something in the museum, does that necessarily warrant a unified response? At present the museum management have requested that responses are provided to all queries and complaints. Again, this is seen as problematical for the participants due to time pressures. An example of another critical view of senior management of the organisation can be illustrated as follows:

*"[Management are] just not interested...our [manager] has only ever done like two tweets about [this site] in the entire time that, you know, [they've] been at the museum, which is what, like, [number of] years?... [But they] tweet quite a bit about [the other site]." (M1, P6)*

This relationship is perceived by the participant as far from harmonious. There are clearly significant elements of frustration and mistrust being communicated.

Mistrust focuses on the possibility "that a potential or actual transaction partner's interests are not aligned with one's own" (Lindenberg 2000). In this case, the participant felt that the manager did not consider the site that they both worked from as being particularly relevant to the museum. There was a lack of understanding by the participant as to why the manager would not wish to promote their site more effectively, rather than focusing on the main site. The participant thus used an almost excessive number of tweets to ensure that their specific site got attention, as they knew that this particular member of management watched all tweets sent by the organisation. This way, they felt that they were showing that their site had much to offer, and was certainly comparable to the main site location.

In order for effective knowledge sharing to take place, there must be trust between the parties to it. This is particularly relevant within the museum, where trust between the community of practice and management was an issue. Trust is increased over a period of time, and knowledge-based trust (KBT) develops through repeated interactions between individuals as they nurture a deeper understanding of one another (Panteli & Sockalingam 2005). Levels of trust between peer groups was perceived as good at this museum, with the sharing of information between relevant parties clearly illustrated in many interviews. Management trust varied between site locations, with the main site generally reporting good levels of trust. However, there appeared to be an element of cynicism surrounding some of the management located at this site. A feeling that, in some way, this site was a 'poor relation'.

There were many frustrations that came out of this specific interview focused on the perceptions of these two particular sites. The participants showed awareness and understanding that the two sites were very different, focused on quite distinct collections. Organisational studies (Baard et al. 2004; Gagné et al. 2000) have shown that when employees feel that their perspectives and choices are acknowledged, there is an increased level of trust in the organisation, willingness to accept organisational change, and more job satisfaction. The frustration shown by the participants at this site however, emerged through their perception that management were not acknowledging them or their perspectives, and were interested only in the 'blue chip' site. Management also did not acknowledge the very different work carried out at the [local] site. It would therefore appear that there was a definite mistrust in the management located at this site.

When considering the impact and leadership of members of management surrounding trust and knowledge exchange, the tone of the discussions with participants changed, with the perception being that management have little or no awareness of what is involved:

*"Well, it's not always battling [management], you know they are on side... it's just that they don't understand, they don't have that expertise..." (M1, P2)*

This participant went on to suggest that if members of the board or senior management were dealing with financial issues, it would be expected that at least one of them would have the appropriate level of financial understanding. One would expect trust in financial management to subsequently increase, due to confidence by employees that management have a better understanding of the issues faced. The same should be expected of social media activities and collaborations, but it was felt that this was currently lacking. Trust in decisions relating to social media were consequently met with less enthusiasm.

Another participant illustrated how they continued to work with a project and manage it themselves, despite no support for the same from management:

*"...it never had anybody to manage it. It did do in the project, but afterwards it came down to me, because I loved it. I liked what we got through it, and I just felt it was such a shame to lose it..." (M1, P4)*

This illustrates the level of involvement and personal investment that participants have in projects that museum management deemed were no longer of interest. In this case, the participant maintained the software interface himself for over two years after the project officially closed to the public. He felt it was worthwhile to maintain the project, thereby illustrating a level of intrinsic need satisfaction (Deci et al. 2001), something he appeared to be lacking in the other tasks he was assigned to. Finally, the interface was removed and his involvement came to an end. He showed a sense of frustration that the project could not continue, particularly as management replaced it with something very similar:

*"...I was hoping that we'd decide to put some more effort into it to make it better, rather than get rid of it..." (M1, P4)*

It would appear that management within this organisation were detached from the projects that were considered worthwhile by the participants, feeding a sense of frustration.

One of the most prevalent areas within the discussions by the participants of this museum was the question of time allocation (Table 8, OC:6) for engaging with social media:

*"Time is a factor for sure. Anything additional to your normal day-to-day working will have such an impact. However, it is interesting the organisation, as a whole, encourage engagement with social media and the public, but do not actively allow time to be scheduled into one's day to do so." (M1, P14)*

This response, and others already quoted, were typically associated with frustrations with management. The requirement for participants to engage with social media appeared to be rarely scheduled into their daily tasks.

The large museum was also viewed as a rather 'political' institution, with a definite hierarchy that was structured not only around positions within the institution, but ability to engage with the public:

*"...if we are seen as too 'junior' in a subject, the senior curator will take the slot [responding to social media engagements]. It can be quite political here you know!" (M1, P14)*

This 'political' nature of the museum was also evidenced by the use of social media within the organisation:

*"...we are not permitted to have an official departmental Twitter feed, only an institutional one, which means that I have had to use my personal account for professional purposes." (M1, P3)*

This is another area that raised some interesting points. Many of the participants discussed their interactions on Twitter specifically, in terms of the engagement that they had with the public directly. This led me to examine a number of the Twitter accounts associated with these participants. Whilst most of them are heavily focused on activities around their museum, they are private accounts, linked to the museum by the statement that they worked for the same, with 'all views are my own' as a comment in many cases.

## 5.3 Medium museum (M2)

For the medium museum, the decision to be involved in crowdsourcing was taken by senior management, who employed a social media coordinator to deal with this new form of engagement. The coordinator was duly promoted to manager as a social media team was formed.

The museum has gone through a unification process, bringing together separate sites under one umbrella organisation and, to a certain degree, location. The choice of social media tools was in line with those that the museum audience were most actively engaged with, and best represented the museum itself. Table 11 provides an overview of the different findings related to this museum which will now be discussed.

Table 11 Museum 2 Crowdsourcing Overview

|  |  |  |  |
| --- | --- | --- | --- |
| **Crowdsourcing decision maker** | **Crowdsourcing Tools** | **Perceptions of crowdsourcing** | **Participant views** |
| Senior management and social media manager | Social media: Facebook, Twitter, YouTube | Interactional requirements  Knowledge source  Outward view of organisation | Daily engagement essential to build community  Addresses gaps in understanding  Merge of museum group to present a united organisation |

For the medium museum participants, crowdsourcing meant daily interactions over social media, whether it was simply answering a question on opening times or developing a more in-depth dialogue to add contextual detail to an exhibit. Continued interaction was key to building a community around their institution:

*"[Social media] brings us closer to the visitor and allows us to interact with them in a more informal way, and on a wider variety of topics. The immediacy of responses in social media let you know if what you are doing is working or not, often the same day. The learning potential for how to engage your audience is huge if listened to". (M2, P1)*

In networks of practice, knowledge was regarded by Kollock (1999) as a public good. Within collective action theory "the network participants are the interest group, and the public good is the continuous stream of knowledge produced" (Teigland 2003, p.52). The museum felt it wise to maintain a level of continued dialogue with their audience by posting multiple times per day. The participants felt that this helped them build community interest and added value to future knowledge exchange by illustrating that they were highly engaged with their audience.

Participants also openly requested 'help' in understanding gaps in their knowledge relating to collections, with little fear of being seen as 'unknowledgeable' or 'not the expert'. Holley (2010) concurs with this idea and states:

*The normal procedure...is that a photograph is not digitised until it has been catalogued. If instead it is digitised first and users are given the chance to describe the content this would radically open up access to a lot of 'hidden' and difficult to describe photographic collections.*

To them, reaching out to the public to request assistance does not mean engaging the amateur, it meant engaging a wealth of globally located experts, and they value this source of knowledge and nurture it. They acknowledged that as curators they did not know everything and were eager to engage those individuals who were experts in their field, whether that was an academic or hobbyist:

*"...we are well aware that we don't know everything and there are a lot of gaps out there, and there are a lot of people who do know those gaps, and they are keen to tell us." (M2, P2)*

Social media allows curators to construct a dialogue with the public (Bott 1990), and that dialogue can lead to new levels of understanding.

The merging of the museum group into one, large entity with a more centralised approach was seen as a positive move, despite there being job losses in a number of departments:

*"...they are asking the museum not only 'what do you need in terms of IT' but they are also asking 'what do you need in terms of support' for whatever project they are doing...so they get a better overview of what's needed and it's more efficient that way. With the efficiency comes more budget, so more investment..." (M2, P7)*

Management within the museum were considered open and supportive of their staff, with efforts being made in all areas to ensure the transition to a single organisation was seen as a positive step, listening to, and acknowledging, the needs and requirements of their staff. They were also perceived to be positive in understanding time pressures that participants could feel:

*"Some of our experts participate very well in the event and it is quite the production to get everyone taking shifts at the helm [for #AskACurator Day]. It is a very big investment of time by the organisation." (M2, P1)*

This participant found that management had a positive view to scheduling appropriate time for them to be involved with a variety of social media engagements with the public. It was considered a good return on investment which allowed the building of a solid community around the museum:

*"...we are doing a live Twitter Q&A and it's the first time we've done one of those with one of our curators...I'm really hoping it's a success, because I want [the curator] to go back to the curatorial team and say 'this was really good, it was fun, come and do it'." (M2, P7)*

Once again, this illustrated that there was a real investment in curatorial time by this museum to promote new ventures using social media, and encourage other personnel to become involved.

## 5.4 Small museum (M3)

For the small museum, the decision to engage with crowdsourcing was taken by the board on the advice of the Head of Marketing, who was the only individual within the organisation communicating with the public over social media. The choice of social media tools was in line with those that the museum audience were currently using. Table 12 illustrates the different findings associated to this museum.

Table 12 Museum 3 Crowdsourcing Overview

|  |  |  |  |
| --- | --- | --- | --- |
| **Crowdsourcing decision maker** | **Crowdsourcing Tools** | **Perceptions of crowdsourcing** | **Participant views** |
| Board and Head of Marketing | Social media: Facebook, Twitter, Instagram, YouTube, Pinterest | New engagement  Visible approach  Positive management approach  Problematical with old collections | Changing engagement levels between museum and public  Seen to be listening/responding  Engagement fully supported by management  Inability to rectify or change old collections/exhibitions in light of new information |

For the small museum participants, the manner in which engagement now happens between them and the public is shifting from a more direct, contact centric style through the marketing team, to one of wider reach within the organisation, involving personnel who may never before have been engaged with their audience in such an interactive manner. Some respondents questioned the need for social media and considered that the 'old style' of sending in an email was equally good, if not better. They felt pressure to respond quickly when something was asked of their expertise over social media and were concerned about making factual errors that could reflect badly upon their institution.

Being able to adequately engage with social media, particularly around complaints that the public are making or errors in collections that they feel need addressing was something that this museum was struggling with somewhat:

*"We had this discussion in the last twenty-four hours haven't we, as somebody posted on our Facebook page a number of complaints about one of our exhibitions in [location] saying it's inaccurate...I suspect when the exhibition was written, it was right, but we don't update our exhibitions, I would say, probably at all. I would say new exhibitions are great, old exhibitions are left to moulder on the walls, and that's true everywhere. There isn't the money, the energy, the staffing, to go back and do it correctly....[so] we're just saying 'thank you very much for your feedback and we're going to talk to our curators'. You know, which is a holding reply really." (M3, P4)*

Whilst the opportunity to correct parts of an exhibition or collection is possible, large scale corrections are generally deemed not feasible by the participants from this museum. There is so much focus on what is coming up, what is new, that to revisit old exhibitions to make substantial corrections is not a valid use of time.

Whilst acknowledging a certain requirement by management for them to engage with social media, the participants all appeared to enjoy the same nonetheless, even when it fell completely outside the remit of their roles and answers to problems were not forthcoming. They did, however, feel that the use of social media was helping to illustrate that they were listening to their audience, understanding their needs, valuing their opinions (Brambilla & Bozzon 2012) and, where possible, were seen to be acting upon the same. Providing ways for their audiences to engage in debate with experts was something that social media has afforded museums (Russo et al. 2009). For many however, the challenge was understanding how to engage. There was a growing realisation that not every enquiry needed, or could be given, an instant response, and that there was no failure in taking time to explore a complex question before providing an answer:

*"If possible, I try and get responses immediately, but I am to always get back to enquirers to ensure they get a response, even if it may take a week or so." (M3, P1)*

Encouragement from all levels within the museum has allowed curators within the small organisation to become more familiar with engaging over social media and alleviating the potential fears that they had of making errors or seeming 'unknowledgeable' on a subject. Recognising that the public were not necessarily the 'amateurs' has helped build confidence in crowdsourcing.

## 5.5 Cross-case comparison

Whilst there were a number of differences between the museums, what is interesting is the similarity in tools that they have used to adopt crowdsourcing initiatives, shown in Table 13.

Table 13 Museum Crowdsourcing Comparison

|  |  |  |  |
| --- | --- | --- | --- |
| **Crowdsourcing / Museum** | **Large** | **Medium** | **Small** |
| Social Media Technology | Facebook  Twitter  Instagram  Flickr  Dedicated Platform #1  Dedicated Platform #2 | Facebook  Twitter  YouTube | Facebook  Twitter  Instagram  YouTube  Pinterest |
| Perceptions of Crowdsourcing | 1. Voice of museum not cohesive 2. Internal apathy towards crowdsourcing project 3. Time constraints 4. Management mistrust | 1. Daily engagement 2. Addressing gaps in understanding 3. Positive feelings towards management (museum merge) | 1. Seen to be listening 2. Changing engagement levels 3. Positive feelings towards management 4. Difficulty in correcting old exhibitions/collections data |
| Decision Makers | Management  Board | Management  Social Media Manager | Board  Head of Marketing |

Using technologies that the public are familiar with has allowed the museums to engage far more efficiently. When dealing with dedicated crowdsourcing platforms, there is a requirement for the public to spend time learning to navigate their way around them. As one participant explained:

*"...you know [dedicated crowdsourcing platform] is a specialised thing which will only ever have a niche because it's quite hard to do, it requires a lot of dedication, there's a steep learning curve." (M1, P2)*

In order to appeal to as many of the public as possible, utilising the right tools to capture that engagement is essential to the museums:

*"...people are less inclined to click on the blog icon than they are to just flick through their Facebook or Twitter account. We can get 200 likes, 100 shares, and 35 comments on a Facebook post compared to a low level response, if any, to a blog post." (M2, P2)*

The example above illustrates that choosing the correct platform with which to reach the target audience is essential if museums wish to engage in crowdsourcing.

For all of the museums, the decision to undertake crowdsourcing came from management. For the medium and small museums, the decision was taken by incorporating the personnel that would be dealing with the technologies. This allowed these museums to have a focused individual dealing with the interactions that such engagement generated. At the time of my first meetings with these individuals, they were the only person within their organisations dealing with social media engagement. During the time that I undertook my research, further personnel were hired to grow the social media teams.

For the large museum, the decision was primarily taken by the Board and senior management. At the time that the decision to engage with social media was taken, the personnel were part of the digital media team, who primarily dealt with web content and management. The museum joined Twitter in 2009 but the engagement was purely a push of information to the public. A Facebook page was also set up by the marketing team but was there was very little content on it. Posts on social media were primarily done by one member of staff, and there was little engagement with other staff or departments. One interpretation could be that by not involving a social media individual in the decision to begin engagement, the levels that were first employed were seen as more of a marketing tool for the museum than a way to engage the public with their collections and exhibitions. This is in stark contrast to the medium and small museums use of social media.

Engagement through social media is another factor that the museums have in common but is perceived in different ways by the participants. For the medium and small museum, it was important to have daily interactions with their audience. They felt this reinforced the message that they were listening, available, and responsive to questions and queries. The large museum also engaged frequently with its audience but concerns were raised by participants there that the voice of the museum was not always cohesive with what they felt it stood for. This may have been due, in part, to the initial engagement being through a single individual:

*"I suppose I was really the voice of the museum at the time." (M1, P1)*

As social media engagement became more prevalent, other voices were added:

*"...anyone who writes an article for us gets their name against it, and so we allow different voices to come through..." (M1, P1)*

Despite the willingness to share other views through social media voices, there was still a level of feeling amongst participants that the voice was 'toned down' or edited to one that was suitable for the museum purposes. This is not to say that every participant was unhappy with the manner in which the museum engaged with the public, but for some, this linked closely to their mistrust of management through the scrutiny that social media posts received. For the medium and small museums, where the social media personnel were involved with the decisions to engage the public, there appeared to be a far more harmonious view of management, often cited by participants as being supportive and understanding of what they and the museum were trying to achieve. It could be considered that this may also be why the large museum participants had a level of apathy towards the dedicated crowdsourcing platforms as they were perceived as separate to the main body of engagement that the museum had with the public.

A final issue that was raised by the small museum was the inability to correct old collection or exhibition data. Clearly every museum has new exhibitions they are developing or new collections that are being displayed. Participants talked about the focus on these being the priority. However, where existing exhibitions were still in place, there was a feeling that correcting any errors within them was not a worthwhile exercise. Facts that come to light once an exhibition has been running for some time are difficult to correct and thus, in most cases, are not changed:

*"There isn't the money, the energy, the staffing, to go back and do it correctly..." (M3, P4)*

The participant went on to explain that there simply wasn't the money available to make such corrections.

## 5.5 Summary

It is clear that there are differences between the three museums participants' view of crowdsourcing and its impact within their institutions. Many differences would be expected as the size, funding and levels of engagement vary significantly between the museums.

Whilst many of the same social media technologies are used by all three museums, the view of them differs between the participants. Where social media personnel have been involved with decision making, there appears to be a more positive approach to the engagement.

Whilst the differences between the museums has been highlighted in this chapter, what is most significant and interesting about them is the similarities they share. Their consensus on the formation of communities around their institutions and the changing nature of engagement between them and their public were particularly interesting findings. These are discussed in the following chapter.

# Chapter 6. Findings

"The secret to creativity is knowing how to hide your sources."

Albert Einstein

## 6.1 Chapter Overview

This chapter provides details of the emergent themes from my findings. It considers how engagement with the public has changed both pre-social media and now that social media is being used proactively to engage the audience. It also focuses on the interpretation of the codes that emerged in Chapter 4.

## 6.2 Evolving engagement with the public

Prior to social media/crowdsourcing becoming a popular medium, museums were generally contacted by the public via methods such as email, contact pages on their website, or a letter written in (Table 8, OC:9). The problem with this type of engagement was that most responses were received within a central repository and then allocated out to the appropriate personnel. The level of engagement was extremely limited and, even when the response was provided, it was primarily on a one-to-one basis between the museum and the requester. Information that had been requested by one member of the public was not shared with anyone else, nor was the response particularly swift:

*"You have to fill in [a form] and then you get an auto-generated response which says, you know, we've got tonnes of enquiries and we might not get back to you for weeks and weeks and weeks..." (M1, P6)*

No knowledge building or development evolved from this contact. Whilst it is possible to see that a curator or historian found a new level of understanding from such an interaction, in most cases, it was at an individual level and not shared around peers within the museum in any other way. The same applied to those museums who tried to engage their curators directly with the public pre-social media:

*"We used to spend nearly all day on the phone because people were put through and expected to talk to you and get an answer or get back to them if they left a message. The amount of calls, letters and emails grew significantly until it was unmanageable...We therefore had to make it more rigid with specified enquiry times and drop-in days to stop the phone ringing constantly...We just didn't have the luxury of time to just sit there for an hour investigating one person's request." (M2, P6)*

In the same respect, if a member of the public lodged a complaint, the response did not have to be immediate and, on some occasions, was never forthcoming:

*"The days where it's like, somebody writes in a complaint letter and you can put it in a pile somewhere and put it to one side, have gone." (M3, P1)*

Each set of museum participants recognised that these techniques were useful in their time. With the advent of social media, and an openness to both the public and other museum stakeholders, questions that are asked and answered became easily viewed, shared and collaborated on. Complaints or problems that could once be 'hidden' are now available for anyone to see. The affordances offered by developing social media interactions, provided a level of candidness and relationship building that had never been experienced before. As one participant commented:

*"I have also used Twitter to advertise institutional events - tweeting directly to the community groups, media outlets and other cultural organisations...This approach was particularly successful for the events we ran with community groups..." (M1, P3)*

The use of Twitter, in this example, to focus on specific groups and institutions illustrates how the act of tweeting can now engage communities directly. Another participant stated:

*"I just started a professional Facebook page because of the number of people who wanted to engage with us via Facebook...in some ways that was the only way to contact them". (M1, P6)*

The use of social media technologies presents a method for individuals to collaborate on an area of interest, whether they are employees of an organisation or members of the public. It could be considered then that engaging the public is highly advantageous to museums.

As the findings of my research stemmed from initial questioning relating to crowdsourcing, it was beneficial to find out how museum participants viewed the phenomena itself, and how it fitted in to their understanding of what they, and their organisation, do.

## 6.3 Crowdsourcing in the museum

My research question focused on theories that emerged from the impact of crowdsourcing on heritage personnel and how it helped them protect, preserve and promote national heritage. However, it was important to understand what they felt about crowdsourcing and what it meant to them as individuals, regardless of whether their organisation was engaged with dedicated crowdsourcing projects or not. The responses provided by the study participants to questions on and around crowdsourcing illustrate that no single definition of the phenomenon can be presented. Some examples of responses received when questioning the level of crowdsourcing engagement are:

*"The interesting evolution from 6 months to a year, is that Facebook is almost taking on crowdsourcing de-facto rather than by design. So what will happen is that we will post something about a group of guys in the Falklands, some pictures of people, and we'll get half a dozen people saying 'I was there' or 'Oh, that's so-and-so'...[this is] engaging a community to share their knowledge..." (M2, P2)*

*"The public interaction and how they interact with us is what we're working on. I guess we're crowdsourcing on a daily basis right? Gathering things from the public and then giving them things we are interested in, in return." (M2, P6)*

*"You mention crowdsourcing and we have a large project around this happening here now as you may be aware. However, I think the term is not really appropriate. It's more of knowledge sharing than asking the public something for nothing." (M1, P14)*

*"The more opportunities that we give members of the public to find us, the more likely we are to enjoy the benefits in terms of increased involvement with the museum, particularly once we start launching our crowdsourcing programme to, at its most practical level, get more visitors through the door". (M3, P1)*

Crowdsourcing, in whatever guise it is considered, has different meanings to different individuals; even those within the same organisation. Whilst some participants recognise highly publicised, specific projects as crowdsourcing initiatives, many still consider simple interactions between themselves and the public over social media to be equally determined as a form of crowdsourcing. Despite any naming convention, what all of the museums are trying to do is engage the public in a collaborative manner to share knowledge. This collaboration allows them to build on collections and add rich, descriptive narrative to existing objects.

As a means of exploring knowledge, crowdsourcing, in any form understood by the participants, is well suited to gathering additional data with which to enhance and enrich existing heritage collections. Knowledge sharing, and the addition of rich, descriptive stories, was at the heart of the engagements that they had with the public. As one said:

*"At the end of the day, for example, our medal room is just basically a room full of really shiny objects. That's not what makes it interesting. What makes it interesting is the story of the people that held on to those medals." (M2, P2)*

Thus crowdsourcing enables heritage professionals to add value to artefacts. It permits the story of these items to be told, from a myriad of perspectives. No two stories are alike, as no two individuals are, and as such, the gathering of interpretations is a challenge for curators and historians to deal with, but can prove highly rewarding in furthering knowledge and understanding.

Prior to my research, I expected to find a level of deprofessionalism that museum participants would feel surrounding the crowdsourcing phenomena. This was confirmed by one participant's comments relating to the preliminary perceptions that the curators had of social media engagement:

*"Initially the curatorial team were very anti the whole [social media] idea, thinking the public would attack them for their knowledge or try to undermine them." (M3, P1)*

I considered that these academically qualified professionals might feel disillusioned that their wealth of knowledge could be called into question by the public. This assumption was confirmed by one participant discussing the initial perception of crowdsourcing:

*"At first I was a little miffed that my judgment had been called into question. I think that's an understandable reaction...that being said, I did take the point that it was something that I needed to research. Reluctantly, I went off and did some digging and, much to my surprise, the outcome was that there was indeed a discrepancy in some exhibition material that we had, and it was subsequently corrected. I suppose at that point, I thought there may be a bit more to all this social media lark". (M1, P5)*

It can be understood that inviting the public to collaborate on collections items or transcribe historical documents may undermine the professional status of curators, historians, and the like:

*"What is a curator now? It has changed through contemporary life facilitated by social media such as Twitter, Tumblr, and Myspace back in the day. This will have an impact on museum curators - as an expert in a museum - as if my word were gospel...my ideas/opinion is informed of course, but it's still an opinion and can be challenged, informed or not." (M1, P10)*

However, expertise of such professionals still appears to be required, even if to verify or contradict assumptions made by the public. Participants were happy to be challenged and to fill the gaps in their own knowledge. Given the frequent issues with funding and staffing that museums face, they recognised that harnessing crowdsourcing as a means to achieve goals and projects that are beneficial to the institution, should be an area that is embraced:

*"I don't really feel challenged. I can only think that expanding one's knowledge is a good thing! I am not the expert on everything within my area, and as such am always keen to hear from those that are subject matter experts, whether that be internal or external to the museum." (M1, P14)*

In fact, the participants of this study appeared to have a feeling of increased professionalism that emerged from the rich data provided through public collaborations and knowledge sharing. This is in line with an understanding that a professional understanding does not necessarily always emerge from the museum, but also from the public engaging with the same:

"...*there's a woman in the Great War Forum who her specialist interest is concert parties at the Western Front. And she's got this wonderful collection of photos and stories about concert parties, which were a thing that happened. Soldiers would dress up and they would do these concert parties...she's not an historian, not a professional historian you know, it's her thing and you know everyone's aware of more examples of that..." (M1, P2)*

This acknowledgement that there are niche subject experts contained within the engaged public is something that museum participants concede and feel can add value to the collections:

*"[It's] a specialised thing which will only ever have a niche because it's quite hard to do, it requires quite a lot of dedication, there's quite a steep learning curve...it's a statement of intent you know, that [this] is how we want to do things [with the public]." (M1, P2)*

There is also a feeling that for the more general levels of detail surrounding objects or collections, often the public provide the best option:

*"People have a lot of collections and subject knowledge to contribute"*. (M1, P5)

The study participants recognised that overall knowledge held by curators and historians is extremely valuable, but the intricate understanding of specific subject matter or objects was an area more likely to be fulfilled by the public through their niche level knowledge and expertise:

*"...and generally I think, from social media, that we're very much aware of the expertise of some people. If it's paintings by Matisse or Ming Vases, well then they really should have the expert in the National Gallery...we can have the expert on the First World War and the big picture...but for all that mass swathe of detail? No." (M1, P2)*

These shifting paradigms of engagement and knowledge exchange surrounding museums mean that the public are now well versed in participating in shaping collections, along with stimulating cultural exchanges (Russo 2011). Social media technologies therefore present a method for individuals to collaborate on an area of interest, whether they are employees of an organisation or members of the public.

## 6.4 Building a museum community

The museum community revolves around interactions with, and acknowledgement of, the message presented by the museums, and why they were seeking engagement with the public. Communities are developed in order for participants to access information. The museum participants recognised that there was a need to build a form of community around their organisation. This came across quite strongly through the interviews:

*"I think if you build the community and you build the relationships, you don't need to ask people to do it, they will just do it." (M2, P7)*

Study participants observed that the public are keen to integrate with their specific museum of interest. They have a sense of belonging to, and being part of, the movement of that museum, and thus they are willing to contribute without the museum finding it necessary to constantly be asking for their assistance or comment. This foundation was allowing the museums to develop their own form of interest communities surrounding their organisation. The willingness of participants to take action to ensure that data are accurate was illustrated by another participant:

*"There was additional information about particular objects, corrections, lots and lots of corrections, so we had some people, probably best referred to as unsolicited volunteers, that's how they acted, they'd go through hundreds and hundreds of First World War tank photographs and identify the individual tank and that sort of thing, and they all had their areas of expertise." (M1, P4)*

When the public become part of the museum community, the participants noted a level of appreciation from the public when the museum were including them in collaborative activities:

*"What we do is we go through and look at dates that are coming up and what we can say about each of those and what we can put up [on social media] as a way of stimulating conversation. It's a way of engaging with that community who are interested..." (M2, P2)*

Thus the response from the museum participants suggests that they feel interactions with the public help to build communities and engage their audience more deeply, promoting longer term relationships:

*"So we knew we were on to something, and all of these photos, even right up to the current day...there's a small active community [around] that project, and those, every single one of those photos have some kind of comment." (M1, P2)*

It should be noted, however, that the participants were aware that the community was built around interpretations of contemporary historical events and memories, where 'living memory' could be best utilised to contribute to a story:

*"And we have certainly noticed that there is a big difference between interactions with something from 1960 and something from 1860. So much more is gained from living memory stuff. We and they [the public] get so much more out of it. No-one is around now who was there in 1860 but from 1960, if we can have people who were there talking about it, then that really stimulates conversation and engagement and the interactions are so much higher". (M2, P2)*

The ability of heritage personnel to collect contemporary stories, is what allows the deepening knowledge and understanding of items within the collections, thus enhancing them for future publics. This provides a collective engagement with memories between the organisation and the public, extending reach and building loyalty. By building collaborative and cooperative environments, the use of social media by museums provides a platform for developing such allegiance between an organisation and the public:

*"We posted a potential 100 objects that we were going to put on display. We put those objects on Pinterest and on Flickr, as well as on our main website, and we actually asked members of the public to vote for which objects they wanted to see on display...we had over 52,000 votes." (M3, P1)*

Providing the community with items from the collections that they desire also helps to continue to build engagement and loyalty:

*"...and we're prepared to give them stuff, you know, so we've put 10,000 photographs on there [the dedicated website], which are of immense interest to a particular community of people, and we've said 'yes, take them, use them, do what you like'." (M1, P6)*

There also seems to be a need to seek a sense of understanding of objects from the near past. As the public see their, and their peers', comments and recollections of images and objects being included in anthologies, or simply re-shared around the community, there develops a sense of belonging. Externally, these ties can be illustrated by a deepening attachment between the public and the museum, often resulting in the public 'stepping in' to resolve problems or questions asked by others:

*"Often, whilst I've been considering how to respond to a question, someone has answered it almost immediately. There is a huge amount of knowledge outside of the museum..." (M1, P14)*

It would appear therefore, that at times, museum participants find that they are purely observers of knowledge exchanges happening around their institution:

*"But also we had individuals who were very keen on the project, acting as ambassadors for us...and some of them were very passionate in their responses...so, again, it was another example of how the public can come to your defence..." (M3, P1)*

The participants also considered that there are many subject experts available within the public and they witness those levels of knowledge in response to specialist questions being asked:

*"So there are specialists out there and the emphasis is somewhat shifting, so you have difficulty when someone comes with that specialist question...people who can answer right off the top of their heads as they have twenty years’ experience of that subject..." (M2, P6)*

This sense of belonging surrounding the museums and ultimately can lead to virtual teams emerging. Virtual teams can form and disperse quickly, and can be located anywhere in on the globe. It must be noted that these virtual teams do not necessarily include the same individuals each time, but are fluid, interactions with whomever is the most knowledgeable about a specific interaction or request. Heritage personnel say the formation of these teams is evidenced by the repeated interactions and collective engagement they experience, often seeing the same 'names' appear on social media feeds and forums. This leads to a self-reinforcing community, moving from simply socialising and communicating together, to partaking in more defined action, and even exerting an element of control (Gupta & Hee-Woong 2004). The ability for individuals to engage not only with heritage personnel, but also to develop a 'dialogue' between one another, defending the community when appropriate, reinforces the community bond. This is something that the museum personnel are witnessing first hand.

Communities also build influence (Dholakia et al. 2004). This can be as simple as organically growing an interest area around the museum or a collection, through to driving the physical collections that curators and historians present to the public (Dobreva et al. 2015). When asking the audience for their thoughts or feedback on artefacts, heritage personnel are creating a dialogue in which they expect opinion and guidance from their community, to help direct their resources. This was particularly evidenced as follows:

*"Things we display because we like them may not always be what the public want to see or are interested in. There is a painting that it is felt should always be on display and the art department love it, but it is not of interest to anyone outside of that department. We need to be in touch with the public to understand what they want and do not." (M1, P10)*

Having an artefact, or piece of art, that one is passionate about is clearly important to museums. The issue arises when the public have no interest in that particularly item or collection and are requesting something entirely different. If the museum simply ignores the requirements of their audience, then that audience will soon lose interest. Naturally, museum personnel appreciate that they will never satisfy the needs of all individuals, but understanding what the majority - or the majority that respond to the request - want, is a step forward in understanding their audience and building rapport.

For some participants, digitising content was a primary method of building and engaging with new audiences along with existing global communities built around their institution:

*"The thing that potentially makes a digital museum different from a physical one is it can be a place for community...particularly when you're a national or international museum, then that community can never exist anywhere else but you can provide, acting as a catalyst, a kind of linking place for all these people that can only be virtual." (M1, P4)*

Digitising content and putting it on the museum website for the public to view, comment and re-contextualise it, provides a globally distributed audience with a means of engaging with content contained within the physical museum, by permitting them to interact with the materials that they may otherwise not be able to do in a traditional museum setting. Allowing the audience to conduct a virtual visit to the museum through digitisation of collections, was another area that participants were engaged with:

*"...in terms of the imagery, [digital pictures] they are put on the website and they are captioned as they would be for exhibitions. The idea would be for us to give a virtual tour around the exhibition so that people could sort of click on points of interest and have that information...We are currently working with [company name and location] who have actually mapped both sites, and have actually walked around both sites, so we hope this autumn, to go live with a virtual map of the museum as it was in April. So we anticipate that there will be additional benefits to us in that not only will it increase footfall to those sites, but also it will increase loyalty to the actual museum...the museum has fans across the globe, some of whom will never come and visit us...so we need to cater for those individuals." (M3, P1)*

Digitisation also allows museums to present artefacts and collections that may not currently be available in the physical museum space, allowing them to reach new audiences. Opening up items that are in archives promotes further interaction. As another participant commented:

*"...so, it's more important for us to spend a day digitising a couple of albums, than to sit there answering half a dozen enquiries as, potentially, it's got a much broader reach." (M2, P3)*

Content digitisation is an area that participants in all three museums within this study were engaged with to some degree:

*"You know, everyone is doing digital these days so why start from ground zero? Why start from the beginning when there are systems and tools out there already, and we can build on existing expertise, learn from what everyone else is doing. There is so much going on." [M2, P6]*

The study participants were fully aware of the different digitisation projects that were happening in other similar institutions and would draw upon the experiences of others in a similar field.

Listening to the audience helps build loyalty and also aids the growth of the community, through the recognition of the role that it plays in working cooperatively with the museum. Active community participants are keen to include others that share a similar interest, whether those participants are museum stakeholders themselves or members of the public. As participants engage with the stories, they also commonly share them, often adding information in the process. This knowledge sharing through museum communities has promoted a variety of engagement types, including learning. As one participant concurred:

*"...we get involved with formal and informal learning programmes, outreach, things like that." (M2, P3)*

Learning that takes place spontaneously, outside of traditional educational institutes, is referred to as informal learning(Livingstone 2001):

*Social media allows people to ask questions that occur to them that may not have occurred to us to explain." (M2, P1)*

Informal learning can occur both within the boundaries of the museum and through social media interactions, allowing it to span a global audience, providing an extended reach, and as such, engaging more audience members. Informal learning is not limited only to the public, but is also shared by the heritage personnel themselves, both individually and throughout the organisation as new information emerges and is disseminated:

*"You find things that pique your interest. This is where informal learning comes in. It's picking up things from around the world, like Brazil and India. The collection is so varied and in terms of how we interpret that, the stories provide a wealth of variety." (M2, P3)*

It would appear that the key to forming a strong community is understood by heritage personnel as developing loyalty, a sense of belonging, providing a means of informal learning, and offering an extended reach for, primarily, contemporary memories.

*“There is this community of people with living memory out there who will interact with us and share their stories..” (M2, P6)*

By providing a variety of methods for individuals from the public to engage with them, the participants are observing a sense that the public feel part of a virtual community. This increases the bond between the public and their institution by virtue of content of interest. By their very nature, virtual communities are flexible places that members can dip in and out of. They allow for an open, yet selective, forms of communication and sharing, utilising the affordances currently offered by social media. Community members choose what conversations to join, and when or how to offer up knowledge. It is this building on close ties that link the individuals within the community to the museum that promotes reciprocity in sharing both information and experiences. The participants felt that to maintain and strengthen the community, they needed to contribute to knowledge sharing, not just be receipients of the same. This engagement, that comes through the motivation of the individuals within the community, is crucial in maintaining the network and allowing a flow of knowledge to happen. The way in which social media has evolved, from its original, conceptual idea, to the tools that we use as part of our everyday lives is what allows such new levels of engagement and community that museum personnel are seeing.

One of the primary forms of engagement that museum stakeholders are observing is the exchange of ideas between them and their audience. The public are no longer purely observers of museum collections, but are active participants in building and evolving those collections. Interpretation is at the key of this engagement, primarily surrounding the sharing of stories. As one participant stated:

*"It's like when we collect items for the archive and we already have like fifty to one hundred accounts of D-Day in diaries, and so forth, so we could say no [we don't want your account] because we already have a lot, but is this story different? None will be the same as they are all written by individuals. So how do people understand that this piece of history is from that perspective? There's not the only truth, there are vessels of the story, of people's story. We hold all of those different pieces of history and it's our duty not to show one element of D-Day but to present these eighty different interactions with that event. So why is one person's opinion about a tank or a machine gun not as valid? They also have their interpretation of the truth." (M2, P6)*

Museum personnel have recognised themselves as collectors of these interpretations of stories. From my findings, almost all participants considered their collections as a range of objects, surrounded by a variety of interpretations, which they, as the professionals, are required to 'sort' and verify where possible:

*"We want you involved. We want you to help us make this stuff. We want to create a genuine dialogue between how we tell history, how history's created, and between academics, who are the traditional guardians of historic thought, and public stories, who are guardians of that interpretation. To create a kind of genuine dialogue and relationship. That's what motivates me." (M1, P2)*

The engagement and interpretation now emerges from social media interactions. The building of virtual communities, comprising of both amateur and professional connections, is what now appears to be driving museum collections. It is social media tools such as Twitter and Facebook that are at the forefront of building engagement between museum personnel and the public.

Whilst some organisations have decided to pursue dedicated systems with which to build interpretations and collaborations with their audiences, all that I encountered as part of my study are also working with relatively well known social media technology - Facebook and Twitter being the primary ones - running on platforms that the public are familiar with:

*"Because people know how to use them [social media and smartphones], because they use them all the time, they don't have to learn something new." (M1, P11)*

They are aware that asking their audience to 'learn' a new system can yield resistance and poor response rates, as well as only appealing to certain members of the community:

*"...is a specialised thing which will only ever have a niche because it's quite hard to do, it requires quite a lot of dedication, there's a steep learning curve." (M1, P2)*

Yet to encourage collaborations through known technologies - smartphones, tablets and PCs - offers the greatest results. Utilising technology that the public are already engaged with encourages greater uptake:

*"...we've just been given a grant [from organisation] which will allow us to Wi-Fi our entire London site and allow free public access...so that we can then encourage people to bring their own hardware." (M3, P4)*

From the perspective of the museum personnel, the knowledge that they gather clearly adds to their understanding of their artefacts and collections, and helps provide a better interpretation back to their audience and the public, they are also willing to spend time and effort assisting individuals in sourcing information that is relevant only to them, and of no real interest to the mass population:

"*It is odd. It surprises me that I'm so open at times." (M1, P10)*

In equal measure, they are providing the public with articles and item stories that they feel would be interesting to them, perhaps as a curator or historian themselves found it when digitising an item and felt it would make a good story to tell:

*"I think social media for us is a great win as we can say 'hey, I was looking in a diary yesterday and found this great piece of information' and then we can share it as it's interesting to us, and is likely to be interesting to the public...It's trying to tap into stuff we know is great and sharing that excitement and sharing it that way rather than waiting for the public to ask us for something." (M2, P6)*

This diversity of interests and helping to address knowledge gaps(Srinivasan, Boast, Furner, et al. 2009), both internal and external to the museum, are key to ensuring that the museum community is maintained and developed. However, despite many good intentions, there are a number of challenges for museum personnel to understand in order for knowledge sharing to be incorporated fully into their daily roles. Time limitations (Table 8, OC:6) are something that museum personnel agree is an issue that there appears to be little resolution to:

*"...our enquiry services [have] been slimmed down. I think they've got six months' worth of backlog of enquiries that they're not getting to. Or a lot of enquiries, but that's probably an exaggeration. Six weeks [name of colleague] said. It's a frightening amount, because they get thousands every month." (M1, P6)*

The advent of social media has meant that they are often required to engage with the public in addition to their normal duties, those of curation or archivist. There are a number of aspects that the challenges of time limitations raise. Firstly, the time needed to engage with, and respond to, the public:

*"There is an increased pressure on many of us now, myself included, to engage with the public above and beyond our daily tasks. This can be very time consuming whilst a question or piece of information is investigated/verified." (M1, P12)*

Museum personnel found, that in general the public were reasonably accommodating to time pressures that they were under when asking questions or providing information:

*"At times a posed question can be very simple to answer and take a matter of minutes for constructing a response. At other times, and increasingly more often, it takes quite some time to produce a response or verify information received." (M1, P12)*

However, many participants felt that due to the very nature of social media, there was an expectation of a 'quick answer' and as such, they put themselves under undue time pressures to provide such responses:

*"Enquiries that used to be handled through our website, and as such had an often protracted lead time, are now instantaneous. The public are willing to wait, for a while anyway. However, there is an assumption by the public, I believe, that using social media is a 'quick route to an expert' and as such, a reply should be immediately forthcoming." (M1, P9)*

These perceptions of social media engagement being 'now' and 'immediate' can lead museum personnel to disengage with tools such as Twitter and Facebook, for fear that they cannot meet the demands of the public and still be able to focus on their main areas of work. The requirement for museum personnel to verify information received, particularly if that information is then added to a collection or artefact, "often makes more work, not less" (M1, P9). However, it could be argued that the same could be said of any information provided to a museum, not just that which is obtained over social media.

Through social media, the ability to share knowledge quickly between parties can clearly be considered a positive enterprise, it also does bring with it a level of uncertainty that museum personnel are feeling (Table 8, OC:8). The scrutiny that they feel has intensified from increased use of social media technologies, and closer engagement with the public. This can result in the fear of making a factual error either in response to a question or when adding information to a collection:

*"We usually stick to scripted narrative, safe and easy, or try to conceal marketing for an exhibition with some mildly engaging photos, sometimes, but rarely, with a question seeking engagement. Argument is either not enough time, or not prepared to engage outside of the script for fear of making a factual error." (M2, P1)*

However, for many participants, making an error was simply a mark of being human and they felt that the public would regard them in a better light if they simply declared their error, corrected it and moved on:

*"...it's all about acknowledging these sort of things which is good also to say 'hand up yeah, we made a mistake here'. Our collections records aren't always accurate, it's because people have been entering this material for years...It’s letting people know that if they correct something, then we can put it into the actual collections record and it makes the collection stronger as well." [M1, P1]*

Admitting mistakes is something that most participants feel comfortable in doing. They believe this leads to a better sense of community and engagement, along with retaining their professional position in acknowledging and correcting errors:

*"The first thing that is key is that when someone has corrected something we've said, we would always acknowledge that. It is very important to us that our professional gravitas is diminished if we don't admit our mistakes." (M2, P2)*

Showing the human side to the museum is something that all participants agreed was what encouraged the continued engagement. It would appear that, through social media, the former barrier that a museum, and its personnel, were in some way authoritarian and aloof, had been removed:

*"...I've been doing [social media] in order to be able to communicate that enthusiasm to someone else. That doesn't mean that I've had to be an expert in any of them, but I've had to care enough to get that across, and I think, you know, people's enthusiasm for the things they do is incredibly appealing..." (M1, P5)*

Recognising the development of a community of interest around the organisation, also allowed me to consider how the participants themselves engaged with one another, other departments, and management.

## 6.5 Inter-departmental collaboration within museums

Within the museums that formed this study, it became obvious to me that there was a high level of inter-departmental collaboration, which I observed as an existing community of practice. Within every organisation there are informal networks of individuals who will share a variety of information, build relationships with their peers, and communicate with one-another:

*"I regularly send through updates from the Research Department for my colleagues in Digital Media to upload onto our institutional social media outlets..." (M1, P3)*

In the case of my study, the observation of a community of practice centred on engaging the public around the museum offering. The engagement was 'about' something, which is one of the differentiators of a community of practice. The manner in which, and understanding of how, the museum audience were targeted through social media was evident throughout interviews with participants. There was a shared understanding on the direction the museums were moving in relating to engagement through social media, along with the need for new and continuing forms of interaction to be developed. From discussions with the participants, and the manner in which they interrelated and spoke about one another, their roles, the collections, and their institution, I could see there was a clear practice evident:

*"It can take some time to go and find the answer to enquiries...we have to involve other departments and collaborate on the response." (M2, P3)*

The organisations themselves have developed close working practices that can be identified within the community of practice framework. It could be seen from the manner in which participants interacted and shared understanding of the working practices of their museum that a flexibility had evolved within each of their roles, often crossing boundaries of practice with their peers:

*"We're working with some of the historians in that department to produce these articles, and they've been writing loads of them. Although my team also puts together some and we then send them over for them to fact check." (M1, P1)*

In this example, social media teams were clearly engaged with historians to promote collections. Conversely, curators and historians often took the role of social media advocate in communicating with the public. As one participant explained:

*"I have also used Twitter to advertise institutional events - tweeting directly to community groups, media outlets and other cultural organisations...There is an increased awareness of my role externally due to my Twitter following, which, if anything, has been very positive in terms of connecting with people." (M1, P3)*

Rather than this being seen as infringing on their colleagues' area of expertise, it was more often welcomed and embraced as building the networks of communities that the museums desired with their public. This produces a degree of autonomy and control over the way in which heritage stakeholders engaged with one another on a day-to-day basis, building the shared practice.

Whilst acknowledging that a community of practice was evident within the study organisations, I began to think about the networks surrounding the public who are engaged with museums from a shared interest perspective. These collaborative groups are commonly known as a network of practice, which has developed around the interest in the organisation, and its collections. However, what was evident from my discussions with the museum participants was that the form of network of practice that they were describing was extending existing academic understanding of electronic networks.

## 6.6 Museum networks of crowd

The participants of this study all agreed that the public are keen to share and collaborate. Indeed, there is a mutual desire to collaborate and enhance knowledge and understanding of museum collections from both sides - the public and the museum personnel themselves. Collaboration is a method in which tasks which one person alone could not accomplish, can be achieve through cooperative behaviours, often between geographically distributed individuals (Hoadley & Pea 2002). These tasks need not be major projects but can be as simple as reaching out to find additional facts about an artefact or image within a museum collection. Once the knowledge and understanding of a museum professional is exhausted, the ability to reach out to the public allows many new 'minds' to join the discussion and impart new information or understanding.

The abundance of knowledge sharing statements made by participants illustrated that the public are highly engaged with them and keen to share their own stories and artefacts relating to museum collections:

*"...it's contemporary collecting through social media. Engaging a community to share their knowledge and understanding of an event or period of time, which is where we are at, at the moment. So we are aware that we don't know everything and there are a lot of gaps out there, and there are a lot of people who do know those gaps and they are keen to tell us." (M2, P2)*

The public have an ardent interest in being involved with the museums and sharing their expertise. Museums are already established users of volunteers and inherently public facing, so the idea of engaging those virtual volunteers to assist with knowledge acquisition and dissemination, seems a natural progression. The engaged public have been acknowledged by museums as supplying vast amounts of contemporary understanding to events in history and artefacts within collections, many of which the museums themselves would never find out about without the benefit of this global resource network. An example given is:

*"For example, there was a [artist name] painting of a coastline - the Southern coast - and in it he had drawn an acoustic mirror - a primitive, early warning device a bit like radar. It was drawn from the side and in profile, so no-one noticed it until someone contacted us to say that it was in the picture. No-one had spotted it at all!" (M1, P10)*

In that example, the picture had been in the gallery for many years and none of the curators had noticed the object within it. The knowledge received from the member of the public, over social media, presented the image, and the artist, in a new context. This community engagement leads to high levels of knowledge exchange, particularly around the contemporary collections that the study museums held:

*"...in the more living memory stuff...we are not the most knowledgeable people around and I think we, and our curatorial team, would probably admit that. The further you go back in history, the more likely we are to be the most knowledgeable people around." (M2, P2)*

This participant's response is indicative of most of the museum personnel interviewed. They appreciated that they had 'historic expertise' but when dealing with contemporary history, that of 'living memory', the experiences of those involved directly or their families, was an area that they acknowledged was where they lacked expertise. The ability to collect those stories and narratives directly from the participants or their peers was particularly important. It was also evident from the responses provided by the participants that there was recognition of the expert-level knowledge that could be found within the community, or network of crowd, surrounding their organisation:

*"The public have an abundance of knowledge, much to many curators' surprise! There are some with expertise that would rival any of ours in specific areas. These people are often quite active contributors to information around our collections, and freely let us know details that would take us some time to uncover ourselves." (M1, P9)*

Experts can clearly be found not only within the organisation - in the form of curators, historians, etc. - but also from within the public with which they engage. Not only do the public provide knowledge, they are also active in taking action when required. This is commonly referred to as 'citizen science' and was evidenced through two specific crowdsourcing initiatives undertaken by museum 1 (discussed in Chapter 7).

The public are also keen to share information in general, not waiting for the museum to make specific requests. This leads to an increased flow of knowledge between the parties. As one participant explained:

"*Our social media presence, Twitter, Facebook, Instagram, YouTube...has greatly assisted in building up the public's confidence in our expertise level. It's on social media where we get the most historical engagement. People ask us specific questions expecting that we can answer with an authoritative voice. We get questions from people all over the world about the topics/activities that we post about. Social media allows people to ask questions that occur to them that may not have occurred to us to explain." (M2, P1)*

Allowing the public to 'talk' to the museum through social media engagement, provides a wealth of information that the participants, and museum themselves, may not have ever considered. It also provides for the public to engage directly, as the following participant observation illustrates:

*"Often, whilst I've been considering how to respond to a question, someone has answered it almost immediately. There is a huge amount of knowledge outside of the museum". (M1, P14)*

This example shows that when a member of the public poses a question, the engaged community, or network of crowd, surrounding the museum can often provide the solution, without the necessity for a 'professional' from within the museum to become involved.

The museums also chose to engage with social media platforms being utilised by the public, such as Twitter and Facebook. These platforms were 'open' with all knowledge freely visible to any individual who chose to follow or interact with them. They are also well known to many of today's public:

*"Because people know how to use them, because they use them all the time, they don't have to learn something new." (M1, P11)*

A generalised exchange of knowledge between the public and the institutions appears to have been taking place. However, in the case of the participants of this study, the knowledge giver could be seen to be either the public or museum stakeholders. The majority of exchanges through social media are direct, and reciprocity is not a specific requirement for sharing:

*"Many of us contribute to the [crowdsourcing project] site as we discover more about histories of those Armed Forces personnel involved, so it's very much a knowledge capture." (M1, P14)*

There appeared to be no reluctance on the part of any participant to contribute additional knowledge to further the understanding of an artefact or person.

The previous sections discuss contentions in literature surrounding the impact of crowdsourcing on museums, and my observation of emergent networks of crowd surrounding the same. The following section looks at how museums have evolved through their use of social media.

## 6.7 The evolving museum

Museums themselves are changing. Whilst they are still viewed as holding a level of authority in both their understanding of their collections and their responses to the public, the place of the museum in society is evolving; their identity is changing. The manner in which museums produce and promote collections, and handle archives, has changed significantly through the increased use of the Web and social media specifically.

Although museums have evolved significantly from their foundations, they are still widely recognised as academic guardians of history. They present an interpretation of historical events and time periods through interaction with their collections. More frequently, though, whilst preserving those historical artefacts and memories, museums are reaching out to the public to obtain the information they know:

*"...it's a genuine effort, a collaborative effort, to try and get people who know about this stuff to, you know, to add it to the site and to really make a shared piece of history." [M1, P6]*

Reaching out to the public has helped museums to build interpretative content around their collections; to enrich the artefacts with the associated stories. This has helped museums to develop into a form of knowledge hub, gathering and re-sharing knowledge and expertise that comes from within and through the communities that engage with them. The museum audience themselves have also diversified offering a variety of existing expertise and knowledge to the museum. Yet surrounding the increased access to collections and stories, comes a fear of controversy and an element of needing to now be 'politically correct' (Table 8, OC:10):

*"We get a lot of controversial comments about those [ships] on Twitter and our policy is that we have to have a line about each one and we have to tell them the truth. I am tempted sometimes to go into specifics, but I can't." [M2, P7]*

There is a fear expressed by nearly all participants that they need to be very careful what they say and how they respond to questions or queries when the world of social media is watching. At times this feels stifling for them and they find it difficult to deal with the museum stance of not responding or providing a simple one-liner to close the conversation.

*"Like many institutions, ours is afraid of taking any controversial stands on subjects..." [M2, P1]*

It is understood by all participants that they are representing the museum when they are engaging with the public. Care needs to be taken in providing responses to questions, particularly those of a slightly controversial nature. As one participant said:

*"...of course museums are highly political places." [M1, P10]*

However, not only do museum stakeholders need to take care that their own responses are non-political, there is a genuine concern over what can be exhibited within collections. It is often felt that controversial materials have a place in the museum - an example being the Imperial War Museum's Holocaust Exhibition - but care needs to be taken with how to present, and provide dialogue, to such collections. Two notoriously political cases were housed at the Smithsonian Institution - the aircraft, Enola Gay that dropped the atomic bomb on Hiroshima, and the Science in American Life exhibition. These displays prompted many questions on what should be displayed, what do the public want to see, and what impact will these collections have on the museum community. Clearly, the notoriety of these exhibitions is not something that the museums I engaged with wish to court. A note of caution surrounding social media use was expressed by one participant:

*"...in the current climate, one ill-advised [social media] post can mean you're looking for a new job! Everything is so scrutinised now that any spontaneity has gone..." (M2, P1)*

Confronting the negative consequences of their actions is something that people are generally socially uncomfortable with, preferring to focus on the positive. Experiencing a negative affect through an exhibition, could potentially undermine future motivation to visit a museum. This makes social media a double-edged sword. On the one hand, it provides the technology to engage with a multitude of knowledge external to a museum and its collections. On the other, a poorly worded post or response can be seen by hundreds, if not thousands, of individuals in a very short space of time, which can cause a myriad of problems both for museum participants and the organisations that employ them.

A further issue that many participants experienced with involvement with social media was response times. As one participant stated:

"...w*e often get comments that require a response. But the details for the response need to be requested from one of the specific experts, which means a lot of chasing around to find answers before being able to post, what is supposed to be, an immediate response. Nearly every position in the institution has, at some point, had to spend some time providing me with a response to a question on social media. If you can't keep up and respond to everything, you shouldn't be on social media." (M2, P1)*

Taking time to formulate an accurate, comprehensive response can be challenging but ultimately seems to be beneficial to museums. owever, However, sometimes being highly responsive can become a burden:

*"The problem that I am finding is that, because social media is an immediate tool, once a response has been sent, very often the person posing that original question/query, immediately comes back with something else for me to work on. This is highly unlikely to happen in a face-to-face situation but is commonplace on anonymous networks such as Facebook and Twitter. It is almost as if they have your attention and thus can now ask as much as they want, expecting a reply each time...I think often the public forget we have our own daily workloads to also complete." (M1, P12)*

Balancing engagement and responses with the public, alongside the main duties required of the study participants, was something that many felt had not yet been an area that was resolved, and nor were they even sure how to resolve it. That said, all agreed that building collaborative engagement and community networks aids further understanding of artefacts and collection items, allowing living memory to be incorporated into museum offerings, providing rich, diverse collections.

One of the biggest issues that all museums within this study faced was budgetary constraints. It would probably be surprising for those in M3 that their peers in M1 were also facing issues with staff numbers and technology costs. Staffing, and most specifically that of the curator or historian, is not only affected by budgets, but also by natural progressions such as employees moving to a new role or retiring:

*"Fewer curators now anyway in this and other organisations. Social media is not the only threat to expertise levels, as experienced staff leave or retire." (M3, P2)*

This is the case, however, with almost any organisation. Capturing the knowledge of individuals is not always easy, as much can be tacit in nature and thus is lost with the departure of that member of staff.

One of the issues with social media engagement that can have a negative impact on those using it, is the lack of visible evidence of its impact on the organisation from a financial perspective. When management consider the time that staff should be engaged on such knowledge sharing activities, the financial benefits of time spent need to be assessed, often resulting in an inclination to not be as fully supportive of additional tasks revolving around social media engagement:

"*Also, since it's hard to demonstrate a direct revenue stream coming in as a result of social media engagement, it's not seen as having a good return on investment, hence the marketing approach to the medium [by this institution]*." (M2, P1)

Consequentially, as well as being a useful set of technologies for museums to communicate and share knowledge with their audience, social media still poses numerous challenges that need to be addressed to ensure that the technology does not become all-encompassing and leave the actual role of curation as a secondary task.

## 6.8 Overview of findings

The findings in this chapter illustrate how the codes generated in Table 8 and Table 9 evolved. Through a deepening understanding of the way in which museum participants engage the public over social media, I have shown that the selective codes in Table 9 are linked to my new theoretical code of networks of crowd. In order for this theoretical code to be generated, an understanding of how and why museum participants engage the public was needed.

The development of an external community focusing on the collections and objects held by the museums was a vital factor for all participants. Already existing users of volunteers of many types, one interpretation of the codes could be suggested as extending the voluntary network into the virtual, through engaging with the public over social media. Voluntary contributors have provided a wealth of information to the museum participants. Likewise, museum participants have shown a willingness to provide both specialist and general information to their public.

Using technologies that the public are familiar with has allowed museum participants to capture their interest and promote engagement. Even where specific systems are required in order to engage, the public have been willing to take the time, and make the effort, to learn the technologies in order to take part. However, this is recognised as more of a niche-sourcing level of engagement that will only be of interest to a certain number of the populous.

Museum participants have seen a wide range of actions taken by the public community surrounding their organisation. Action can range from retweeting information through to helping the museums to make decisions on artefacts to display. Such actions allow the museums to better understand the requirements of their audience and help cater to them in order to build the community further and, of course, attract visitors and funding.

The professional status of curators would appear to be enhanced through their engagement with the public. Misconceptions of disappearing professional gravitas, or fear of errors, have largely been dispelled. There is an openness to the 'conversations' with the public that has inspired many professionals to engage further and offer information they find of interest, not waiting for specific requests.

Within the museums themselves, there was evidence of inter-departmental collaboration. Although not all was as successful as museum participants would have liked, there was clearly a feeling that exchanging knowledge, stories and expertise was essential in maintaining engagement with the public.

It is clear that crowdsourcing has significant benefits to increasing the knowledge and engagement between heritage organisations and their audience. However, one issue of having curators engaging with the audience over social media is that they are no longer involved in their main role – curation – but are also now having to devote time and effort to encapsulate their knowledge in a format that they can then disseminate over social media as appropriate. In many cases this may lead to them acquiring new or different skill sets which are beyond the remit of their primary function with the heritage organisation. This open boundary of technology use has deeper implications between not only the organisation and its audience, but also internally to the organisation between staff in a variety of roles such as curator, educator and technologist, and is an area that has little extant literature relating to heritage organisations.

## 6.9 Summary

Whilst it is recognised that social media alone will not produce valid knowledge exchanges, the relationship between the technologies themselves, and the way in which the audience engage with them through participation in communities and information sharing, allows them to become a valuable resource with which to capture and share knowledge.

The opportunities for all forms of crowdsourcing are growing and it will be interesting to see how museums harness these technologies to develop further dialogues with their audiences. Perceptions of crowdsourcing, its benefits and frustrations, vary between organisations, with much depending upon the social interactivity of those involved in the process.

Curators have been able to take on a more technological view of their role, but there is still a fine line between the fear of appearing unknowledgeable and the quest for continued knowledge growth. What has been shown through this research is that the participants did not feel any sense of deprofessionalisation from their collaborations with the public. In all cases, despite the limitations on their time and resources, participants felt that engaging with the public enhanced their understanding, allowed them to develop their collections, and build communities around their institution.

Crowdsourcing itself is pivotal in promoting the development of a community, or network, between museums and their public. It is the ability to reach out to the audience that allows museums to build engagements through such networks, thereby meeting their remit of protecting, preserving and promoting national heritage. The fluid nature of the interactions with the public allow for multiple individuals to engage with an artefact or image, and enhance contemporary understanding of the same. Without social media, this level of interaction and collaboration would not be possible. It is the extended reach, capturing the interest and imagination of those individuals located across the globe that permits such knowledge exchanges to take place.

Museums are still evolving and increased pressures to engage with the public can put a strain on existing resources. The acknowledgement by all participants in the study that social media is one of the primary methods of reaching new and existing audiences, mean that museums must consider how those interactions will fit in to the existing workloads of their staff.

The following chapter offers a discussion of the findings and how they relate to existing literature, particularly focusing on the observation of a significant level of community engagement, a network of crowd, that has emerged surrounding museum collaborations.

# Chapter 7. Discussion

"The only real valuable thing is intuition."

Albert Einstein

## 7.1 Chapter Overview

This chapter provides an analysis of the emergent themes from my findings, focusing on my new theme of networks of crowd. I discuss the differences between this new theme, and how it has extended and enhanced beyond the original concept of networks of practice, as perceived both by the museum stakeholders along with my own interpretation of the findings, positioned within the literature.

## 7.2 Social media engagement and the museum

Within the scope of this study, one of the primary elements that emerged from the coding was the consensus between all museum participants that engagement over social media was key to developing external communities of interest around their organisation. Social media, however, are a relatively 'new' set of technologies, that emerged during the mid-2000s (Boyd & Ellison 2008). The use of technology within museums was recognised in the early 1990's by Stam (1993, p.280) who proposed that "connections of the electronic variety" were the way to bring museums and their communities together. Simply having an electronic medium however, did not necessarily permit open collaboration. With the advent of social media, and an openness to both the public and other museum stakeholders, questions that are asked and answered became easily viewed, shared and collaborated on. The affordances offered by developing social media interactions provided a level of candidness and relationship building that had never been experienced before. The study participants are seeing increased sharing of knowledge through social media channels on an almost daily basis. This concurs with academic views of social media affordances, such as positioned by Poelhuber et al. (2011, p.104) who discuss that “social software...tools offer new interaction affordances as well as new forms of collaboration”. Procter et al. (2013, p.56) agree stating that by engaging with “volunteers’ everyday uses of social media…[a task is not]…experienced as additional work, it becomes a simple extension of their normal activities”. Such collaboration and interaction, along with a feeling of unity, help build strong community links between the study participants, their organisation and the public. O'Riordan et al. (2012, p.1) also suggest that social network sites have "affected social and cultural activities...and in particular the ways in which we discover, share and consume information goods." The theory of affordances (Gibson 1954) suggests that technologies are socially shaped through their use, rather than by the intentions of their inventors (Bijker & Law 1992). This can be seen in many of the common forms of social media used in today's society. For example, the micro-blogging site, Twitter, has developed into an open, collaborative forum between organisations and their audiences (Kierkegaard 2010), extending beyond its original design. With so much information available, much of it irrelevant to many participants (Tam & Ho 2005), targeting a message directly to an individual or community is more likely to elicit a response (Amaldoss & Chuan 2009). Gray (1989) concurs, stating that collaboration unites stakeholders to share visions or resolve conflicts. The study participants have used social media specifically to target niche expertise from within the public.

The changes that social media have undergone, from their original concept, is particularly well documented through disaster events. The increased use of Twitter to gather information during environmental disasters around the globe, is an area that has proved of interest to academics (David et al. 2016; Kireyev et al. 2009; Spence et al. 2015; Jung et al. 2015; Yamamoto 2015), illustrating the diversity of roles that evolving social media can take in communication and collaboration tasks. More common social media affordances were discussed by O'Riordan et al. (2012) through their study of three specific social media tools - Facebook, Twitter and YouTube. They noted that their findings appeared to illustrate that each separate social media channel was "evolving to replicate the features provided by other social networks" (2012, p.10). An example would be Twitter, where images can be posted and associated geographical points tagged with location data, similar to the 'checking-in' facility provided by Facebook. Although Harindranath et al. (2015) investigated the use of social media for digital activism, they also noted that there was a "widespread exchange of ideas facilitated by multiple platforms" (2015, p.7). My own observations of the platforms that museums are using to engage with their public concur with this view. Whilst each museum has, at the minimum, Facebook and Twitter with which to engage their audience, there are many other forms of social media used, dependent upon the information being presented or requested. These evolving social media channels are allowing for richer data to be captured (Agichtein et al. 2008) through global engagement opportunities, and targeted interactions to take place, directed at specific groups external to the organisations, or requests for specialised information from the engaged public. My findings concur with this literature through discussions that show the study participants have often engaged niche public in order to assist with highly specific tasks or requirements (see Findings chapter).

It is the way in which these social media tools are used, combined and re-worked that has captured the interest of scholars (Leonardi 2015; Budzise-Weaver et al. 2012; Rogstadius et al. 2013; O’Riordan et al. 2012; Harindranath et al. 2015). This provides a new way of sharing knowledge both within the organisation and externally to it, building on theories of social practice; utilising shared resources to build interpretations, coordinate activities, and develop relationships (Wenger 1998). The use of social media technologies presents a method for individuals to collaborate on an area of interest, whether they are employees of an organisation or members of the public.

## 7.3 Communities of practice within museums

It became evident, after a number of interviews with participants in each museum, as presented in Chapter 5, that they showed the distinctive characteristics of being members of a community of practice: the commitment to the *domain* of interest, building relationships with other members of the *community*, and developing a shared repertoire of *practice* (Wenger 2006). This came through in my coding as departmental/internal collaboration. Whilst the participants themselves did not discuss communities of practice, my own observations and notes acknowledged that such was apparent.

Every museum had a variety of informal networks that allowed individuals to share information that may be of interest to their peers. The difference between any informal network and a community of practice is that it is 'about' something specific (Wenger et al. 2002). The participants learn through shared practice and interact frequently. Communities of practice tend to be located within organisations, where stories or discussions shared by individuals help their peers to learn and adapt their own practices. By applying the indicators set Wenger (1998) as being indicative of a community of practice being formed, I was able to clearly identify its existence. The indicators included: “sustained mutual relationships”, “shared way of engaging in doing things together”, “knowing what others know”, “mutually defining identities”, “jargon and shortcuts to communication” and “a shared discourse reflecting a certain perspective on the world” (1998, pp.125–126).

Whilst these indicators are often more closely observed in an ethnographic study, they were still fundamentally present in the present study. In the case of the museums within this study, the practice is the centred around knowledge of artefacts and collections. This also provides an understanding of how the practice could be viewed across external organisations with a similar focus, such as galleries and archives. It could also be evidenced in the manner in which participants spoke about one another, that they provide support and internal knowledge exchange, as part of a social context. I would suggest that this illustrates the crossing of boundaries through shared artefacts, repertoire and facilities, all indicating that a community of practice has formed. This can be viewed as similar to the claims processors that Wenger (1998, p.47) discusses:

*"They act as resources to each other, exchanging information, making sense of situations, sharing new tricks and new ideas."*

This illustrates there is a social practice that is shared between employees, although not necessarily always for the good of the organisation. As Wenger himself explains, participants of a community of practice can work "with each other and against each other, with their employer and against their employer...colluding and colliding, conspiring and conforming, it is collectively that they make...what it is in practice" (1998, pp.45–46).

With the increase in shared information comes enhanced learning, which is a vital element of a community of practice (Lave & Wenger 1991). Within the museums, the exchange of knowledge and learning were continuing activities, significantly improved by the global reach afforded by social media. This wider community learning and development illustrates the social nature of the community of practice. It does not survive in isolation but is active across internal museum boundaries, such as different departments. As Wenger (1998, p.73) states:

*"The first characteristic of practice as the source of coherence of a community is the mutual engagement of participants. Practice does not exist in the abstract. It exists because people are engaged in actions whose meanings they negotiate with one another."*

“Mutual engagement” is one of the dimensions that Wenger (1998, p.73) considers defines a community. This mutual engagement can be between internal heritage stakeholders, or cross boundaries to external stakeholders located at other museums, though a mutual understanding and requirement to protect, preserve, and promote collections. MacDonald and Alsford (1991) stated that the formation of networks to allow joint collaborations, was the only way in which museums would reach their full potential. Research by Marty et al. (2013) showed that a support network provided for museum professionals to share both their common interests and ask their peers for advice, as well as a method to network with like-minded individuals, was well received within the museum community. This illustrates that communities of practice are not stand-alone communities but can exist as part of a wider community of practitioners working in similar organisations. The museum participants involved in my study are fully aware of what is happening in other, similar institutions to theirs, through community contact and openly accessible information on what similar institutions were doing. They would often draw upon references to the work that others have undertaken when considering new directions, or methods of engaging the public:

*"…everyone is now doing it [digitalisation] nowadays where they just toss something online, so we’re trying to do more behind the scenes investigation...." [M2, P6]*

It is this social sharing that binds together the different communities spread across heritage organisations. Naturally, each wants to lead the way or develop a method of reaching a larger target audience that their peers have not achieved, but there is also a fundamental understanding that learning from one another is an important step in managing such developments. A community of practice is therefore evident within the study organisations. This is further illustrated through my findings where study participants have positively illustrated their professional identity through their engagements with the public during the course of their daily duties, but also from their interactions with the Museum Community Network (Marty et al. 2013), where they can interact, and share practices, with other museum professionals located within organisations external to their own.

Having observed a community of practice as evident between the museum participants, I then considered how they collaborated with the public to engage and promote interest in their institutions.

## 7.4 Engaging a global public community and promoting an interest

The desire for museums to engage and promote, what they perceived to be, a community of interest (Wenger et al. 2002, p.43) or virtual community (Gupta & Hee-Woong 2004), was an area that came across quite strongly through the case studies. Building collections data through contemporary stories, or photographic images of personal accounts and events (van Dijck 2010), provides a link to the community and deepens the bond, extending reach and building loyalty between the public and the museum. The museum communities shared interests that could include members of the public who are experts on the Panzer tank or simply shared stories of wartime activity in their neighbourhood. These externally formed communities consist of individuals who are unlikely to know each other personally, but do share some form of identity, primarily surrounding the museum that they engage with and follow.

Providing a means of allowing global visitors to engage with the museum without the need to have necessarily visited it, is an area that has been explored through the medium of digital museums (Proctor 2010; Tang 2005; MacArthur 2007; Hargrave & Mistry 2013) providing extended reach and to give audiences a way of collating personal digital collections online (Marty 2011; Marty et al. 2011; Terras 2010). Virtual visits (Bell 2008; Bonfigli et al. 2004; Cunliffe et al. 2001) to a museum through digitisation of exhibitions, images and objects, was another area that participants were actively engaged in. This also enables archived collections to become accessible to the museum audience or to reach new audiences (Bakhshi & Throsby 2010). Owens (2014, p.277) suggests that "the single most important [reason to put digital collections online] is to make history and culture accessible so that we can invite students, researchers, teachers and the public to explore and connect with our past." Combining digitisation along with utilising existing technologies that their audience are familiar with (Marty 2011; O’Riordan et al. 2012; Murphy 2010), allows museums to engage more freely with their audience without their public needing to learn their way around a new system.

But what about engaging unknown individuals, such as the general public, to collaborate virtually (Sarker et al. 2000; Griffith et al. 2003; Hendriks 1999). The next section looks at the new phenomena that has emerged from this study: a network of crowd.

## 7.5 Networks of crowd

As my findings illustrated a resemblance to elements that are contained within a network of practice, I needed to consider exactly what the participants were witnessing, and whether that did indeed concur with current academic understanding of networks of practice (Brown & Duguid 2000; van Baalen et al. 2005; Agterberg et al. 2010; Wasko & Faraj 2005). A network of practice is based upon a shared interest and mutual desire to collaborate “where individuals working on similar problems self-organize to help each other and share knowledge” (Wasko et al. 2009, p.254), illustrating that "the common denominator of these groups - practice" (Brown & Duguid 2000, p.141) still remains. They are a virtual community allowing members to share knowledge through computer aided technologies.

Networks of practice can have enormous reach, extending both spatial and temporal boundaries. Vaast and Walsham (2009) provide the example of corporate lawyers, working for the same firm, but for different clients in globally located offices. Whilst they share many elements of practice, they will also have variations of the same based upon their locality and the contexts in which they engage. In the case of an external community, members are accustomed at understanding "that computer networks are also social networks spanning large distances" (Wellman & Gulia 2001, p.169). This understanding of the social nature of the Internet, allowing collaboration between anonymous participants, supports the emergence of networks of practice.

Teigland (2003) identifies that collaboration and engagement are the prerequisites required to form a community, whether that is internal to an organisation or external. The virtual communities observed in networks of practice generally consist of members who are loosely connected through a shared interest, but are unlikely to know each other physically. They may work for the same organisation in offices spanning the globe, or they may be engaged in the same business sector but work for completely separate organisations. The Museum Computer Network (Marty et al. 2013) is an example of the latter form of a network of practice. However, interest alone does not always mean that participants of a network of practice engage with others. Wasko et al. (2009) observed that there was little correlation between the individuals within the US federal law forum network providing help and their interest areas. What the study did show was that those providing the responses were either more senior lawyers or were sole practitioners seeking to enhance their reputations. Within my study, there is a strong suggestion from participants that no such enhancing of reputation seems to exist. As opposed to a forum where responses to questions and levels of interaction can be ‘measured’ through likes and status changes reflecting time as a forum participant, along with quality of responses, the engagement the museum participants experienced with the public appears to be an unconditional sharing of information of interest in order to simply better understand collections and artefacts. With the information provider infrequently receiving any kind of public acknowledgement through social media, it could be suggested that within the extended network of practice that my study participants are observing, enhancing of reputation would rarely feature.

The impact of knowledge and expertise sharing within a network of practice surrounding a museum initially appears to be the same as for many other kinds of organisations. Agterberg (2010) investigated an intra-organisational network of practice, observing that four main activities were taking place: "asking questions, responding to questions, providing unsolicited information, and observing an interaction" (2010, p.90). These four activities can also be observed through the museum participants’ responses to collaborative engagements with the public, along with one additional activity; that of direct action. Such direct action can include transcribing documentation or taking part in a dedicated crowdsourcing project. However, whereas Agterberg was examining the intra-organisational network of practice from the perspective of globally dispersed organisations requiring a form of management control, this study has shown that these activities are now also being witnessed outside of organisational boundaries, offering both a public-to-professional (museum participant), and public-to-public context. Whilst the differences are subtle, the findings of this study suggest that within the museum context, the network of practice has been enhanced and extended to non-organisational, external, public-driven networks engaged in crowd-collaboration.

Within the context of organisational networks of practice, an observation in extant literature is that the members do not interact with each other directly, producing a loosely coupled system. This type of social system is considered by Brown and Duguid (2000) to produce very little knowledge and not take any significant action. Van Baalen et al. (2005) concur with this understanding, but go further by stating that in order for a successful network of practice to form, a set of defined criteria must be met. However, my findings suggest that there are significant differences between the emergent phenomena observed by my study participants, and existing academic understanding of the properties and components of networks of practice. This led me to conclude that the museum phenomena were best served by being defined as an extended network of practice. In order to capture the essence of what the museum participants are witnessing first hand, I sought an appropriate naming convention: a 'network of crowd'.

A network of crowd is enabled through crowdsourcing, and is dependent upon appropriate information systems tools. The ability for individuals to make contact with professionals within museums has been successful through the remit of social media. Social media tools have provided a method by which the public can communicate with, and collaborate on, any number of tasks. These tasks can range from asking a question, to providing detailed personal accounts, or engaging in large-scale collaborative projects.

Prior to Web 2.0 technologies, specifically social media, the ability to engage and collaborate between museums and the public was far more problematical, as discussed in Chapter 6. It was the opening up of social media technologies to the public in the mid-2000’s that allowed the collaborative engagements that museum participants are now witnessing and, indeed, increasingly involved with. Wasko et al. (2009) commented that even when the technology exists with which individuals can collaborate on knowledge and information exchanges, they do not always do so. However, in the case of this study, the affordances offered by social media to both offer and question knowledge, have contributed to the emergence of a network of crowd, providing a means for the public to engage more deeply with their museum(s) of interest.

Whilst there are many academic studies on why visitors engage with museums (Marty 2008; Sheng & Chen 2012; Powell & Kokkranikal 2014), museum crowdsourcing (Oomen & Aroyo 2011; Hansen 2014; Earle 2014; Biella et al. 2015; Ridge 2013), engaging visitors through mobile technologies (Dowden & Sayre 2007; Lewis 2014; Weilenmann et al. 2013), informal learning by museum visitors (Hagedorn-Saupe et al. 2013; Lin et al. 2012; Russo et al. 2009), museum knowledge management (Moussouri 2012; de Rijcke & Beaulieu 2011; Noor et al. 2010; Biella et al. 2015) and building museum communities (Whitworth & Garnett 2011; Anon 2007), nothing that has emerged from my search of existing literature provides an understanding of the levels of knowledge sharing that my research participants are witnessing, nor have I found any reference to networks of crowd or any such similar terminology.

Certainly, when considering the context of non-profit organisations such as museums, and their engagement with their audience (the public), there are many academic studies focusing on visitor satisfaction (Goulding 2000; Powell & Kokkranikal 2014; Sheng & Chen 2012; Marty 2007a) or the production of dedicated systems with which to interact with the public (Whitworth & Garnett 2011; Correa et al. 2010). Fletcher and Lee (2012) provided an investigation of the use of social media by American museums, but found, on the whole, that the communication was primarily one-way, with their interviewees being managers of social media or marketing departments. Russo et al. (2008) discuss the concept of museums engaging in "participatory communication with individuals and communities of interest or practice" (2008, p.28) through their engagement with social media, something that my study participants have observed as happening now within their organisations, with significant levels of engagement being experienced.

In order to understand how networks of crowd differ from networks of practice, I looked at a number of previously defined elements that academic literature has afforded to networks of practice. Networks of practice are primarily inter- or intra-organisational groups of a closed nature, sharing a form of practice, often to resolve problems as a collective. Examples of such networks include the Accounting Education using Computers and Multimedia email list (Taylor & Murthy 2009), the SAP community network (Huang et al. 2012) and the Museum Computer Network (Marty et al. 2013) email list. Those networks of practice that are external to organisations and primarily populated by the public, commonly appear as discussion forums where users register in order to interact with postings on the site such as The Volvo Owners’ Club[[8]](#footnote-8).

Networks of crowd are open networks, where crowd-collaboration is the key, with participants often sharing no more than an interest in a specific subject area in order to engage. They may come from a diverse range of practices and organisations. Additionally, there is no requirement for a problem to be resolved in order for the public to offer their knowledge and understanding. Further, the manner in which collaborations take place is primarily through social media tools such as Twitter and Facebook. There is no requirement to ‘sign up’ to a specific forum or community in order to disseminate or acquire knowledge.

An interpretation of these findings suggest that literature on electronic networks can be extended through the emergence of the network of crowd. They also illustrate that many of the criteria associated with a network of practice are extended within the network that is being witnessed by the museum study participants. From the observations that the participants have made surrounding the type of interactions they are experiencing, and their discussions on crowdsourcing and collaborative engagement, the networks as perceived by them are dissimilar from the existing interpretations of networks of practice (Brown & Duguid 2000; van Baalen et al. 2005; Faraj et al. 2015; Agterberg et al. 2010) in scholarly literature.

The fundamental difference in the emergent network is that it is open and consists of members of the public who share a specific interest, whether that interest is related to an organisation as a whole, or to a specific part of an organisation, or simply to a specific item. For example, in order to build a form of community of interest around the museums, there has to be engagement between the public and the museum participants. To allow knowledge sharing between all museum practitioners, a community of practice evolved, focusing not only on internal collaborations but also on gaining better understanding of collection items through the public community that has evolved around the museum. The choice of technologies upon which to engage are also crucial to building collaboration, knowledge sharing, and taking action. The inter-relational manner of these substantive codes are what allowed me to consider them collectively and understand what the participants were witnessing.

The following sections look at specific areas of difference between the new phenomena of networks of crowd and that of networks of practice, and discusses the observations made by both the study participants and myself as the researcher.

### 7.5.1 Sharing knowledge

The recognised expertise of the public has been discussed within my findings chapter. The acknowledgement by the study participants that the public hold a vast amount of expert level knowledge, contradicts Keen's (2007a) view of the 'cult of the amateur', showing that as social media use has increased around heritage organisations, experts can be found increasingly from within the public. Indeed, de Rijcke and Beaulieu (2011) provide an interesting example of a museum actively seeking knowledge from the public. An object was selected from the Tropenmuseum collection specifically as not much was known about it, "and the intention really is to learn from users" (2011, p.678), which was successfully achieved. In acknowledging that museum personnel are not the overriding experts, barriers relating to knowledge acquisition and dissemination have been broken down, both within the museums themselves, and also surrounding the public that they engage with.

Focusing on online discussion forums dealing with US federal law, and extending Brown and Duguid's (2000) definition of networks of practice to "electronic networks of practice" Wasko et al. (2009, p.255) investigated a number of hypotheses. One of the results of their investigations showed that there was a generalised exchange of knowledge by a critical mass of individuals who provided the majority of responses within the network. This is contrary to the network of crowd where the open nature of the knowledge exchange through social media (as opposed to the more 'closed' nature of a forum that one must join to participate in), meant that responses could come from either museum professionals or other members of the public. There is no reason to assume that in a network of crowd, certain individuals were responsible for the majority of answers. Whilst study participants did notice that, on occasion, responses were from members of the public that they had interacted with or seen responding before, these interactions were not significant enough to suggest that the individuals were the main contributors. Indeed, the participants quoted examples of specific individuals within the public who had very detailed knowledge within certain areas, where it was more likely that they may engage with questions or discussions, but that was not to say that no other member of the public would also become involved. There is no empirical evidence from my study that contributions were from a core group of public.

Equally, verification of individuals within the museum network of crowd did not appear to affect how their knowledge contribution was perceived. In Ma and Agarwal's (2007) study of online communities, it was suggested that where community members verified their identities, other members of the community were more inclined to engage in knowledge sharing. In the case of changes to collection objects, the museum participants did engage the network individual further to confirm the information provided prior to making any change. However, this verification was not provided to other members of the network. Thus there was no evidence of any increase or decrease in knowledge sharing and engagement in my study linked to whether individuals were verified or not.

Additionally, in Wasko et al.'s (2009) study, there was little correlation between the individuals within the network providing help and their interest areas. What the study did show was that those providing the responses were either more senior lawyers or were sole practitioners seeking to enhance their reputations. With the network of crowd, there is a strong suggestion from participants of my study that no such enhancing of reputation seemed to exist. The engagement they experienced with the public appears to be an unconditional sharing of information in order to better understand collections and artefacts. With the information provider rarely receiving any kind of public acknowledgement through social media, it could be suggested that in a network of crowd, enhancing of reputation, or social capital (Preece 2004), would rarely feature.

### 7.5.2 The public taking action

Within the museum context, there have been many examples provided within the findings chapter, to show how significant action can be taken by the museum public. One of the museums within this study introduced a large-scale crowdsourcing project to gauge the appeal and involvement of the public community surrounding their organisation, prior to launching a major collaborative project with a partner organisation. The first project focused on transcribing unit diaries from those soldiers at the front during the First World War[[9]](#footnote-9), and was a 'test bed' for how engaged the public would be in such a niche area. It proved very successful with the Blog relating to the site announcing that over ten-thousand ‘citizen historians’ had signed up in the first eight weeks since the project launched. Up to the end of March 2014, the effort put in by the crowdsourcing community equated to one person working forty hours per week for four years. This established that the public were engaged as a networked community around their organisation and were willing to take action and produce large volumes of work. Volunteers also became moderators on the discussion forum, taking on additional roles and managing questions asked by others within the community. The community, as a whole, were prepared to dedicate both time and effort to transcribing the diaries. One study participant acknowledged that the project involved a steep learning curve and was quite a niche area for the public to be involved in. Despite such hurdles, the participant considered that the uptake by the public was good and individuals were prepared to put in the effort to learn the system. It also showed that the museum themselves are engaged with the community. This project was clearly centred around the public taking action to transcribe written content, and somewhat less about knowledge sharing - although that would still be a sub-set of the process itself.

The willingness of participants to take action to ensure that data are accurate was illustrated by another participant. The public were asked to examine hundreds of photographs of First World War tanks and identify the individual tanks. The participant clearly saw and recognised the levels and areas of expertise of members of the public engaged with that project. This would appear to illustrate the desire to participate by taking action, which is an area that has been extensively explored in academic literature (Zheng & Yu 2016; Harindranath et al. 2015; Wiggins & Crowston 2011; Malone et al. 2009; Schauer et al. 2015; Kollock 1999).

From my discussions with the study participants, I would also suggest that action does not have to be such a large-scale undertaking as assumed by the example above. It can also be through lower-level engagement. An example being of one of the museums posting images on Pinterest and Flickr of a potential one-hundred objects that they were going to put on display. They then publicised this to the public and asked them to vote for which objects they wanted to see. The public responded with over fifty-two thousand votes. This example was particularly interesting as the museum participant expected certain objects to be included in the top ten of items that their audience wanted to see at the museum. Much to their surprise, none of the top ten objects the public chose were items that the museum is renowned for displaying. This allowed them to make considered decisions about their exhibitions based upon their audience feedback, and not on what they 'thought' the audience wanted to see. If it were not for the action taken by the public in responding to the request for their input, the museum would have continued focusing on collections that their audience were not as actively interested in, or engaged with.

### 

### 7.5.3 Sense of urgency

With social media openly available to the masses, levels of interaction using such technologies have increased (Fischer & Reuber 2011), providing a means to ask questions to seek confirmation of knowledge at any time. As one participant observed, the public ask questions as they occur to them, even if it’s not occurred to the museum that something may require clarification.This example illustrates that there is no longer a requirement for a sense of urgency – or time limit - in order for the public to engage with the museum, and vice-versa.

My own observations of questions raised by the public over social media, and responses given by the museums within this study, provided an understanding of the vast variety of information sought. Rarely did I observe a request with any ‘deadline’ associated with it. One study participant observed that some questions the public ask are relatively simple and take a matter of minutes to respond to. Increasingly though, the participant noted that it can take some time to produce a response or verify information received. Many interactions were observations, images and confirmations. The fact that the public can ask a question of museums purely 'out of interest', without a specific deadline or requirement for an answer, illustrates that no sense of urgency needs to exist for the interaction between the museum network, and the institution itself to happen.

However, a sense of urgency could be beneficial for specific crowdsourcing tasks. In the case of projects with defined timescales, encouraging a sense of urgency to complete the task may help get the task accomplished by exerting the pressure of a deadline (Quintane et al. 2013; Gallaugher & Ransbotham 2010; Partington 1997). At the time of this study, none of the museums were engaged in time-limited crowdsourcing projects, so there was no sense of urgency in requiring the public to provide information within set timescales.

### 7.5.4 Fragmented awareness

The notion of fragmented awareness, or knowledge gaps, asserts the belief that there is a person, or people, beyond ones existing network that will have information or solutions to problems (van Baalen et al. 2005). Whilst acknowledging that fragmented awareness is still a valuable aspect to building a public network, my research shows that in the museum context, it does not necessarily always necessitate there having to be a 'problem' to find a solution to. The coding undertaken for this study provides many open codes referencing knowledge gaps and increasing understanding.

An example of fragmented awareness that led to a more comprehensive, and differing understanding, of an artefact was provided by one participant. Initially, he was rather sceptical of social media and someone irritated that his knowledge had been called into question regarding some exhibition material that was on display. However, after doing some research and checks, he found that the information that had been received from the member of public was indeed correct. It was at this point that he realised that the interactions between the public and museums over social media could be beneficial. This illustrates that fragmented awareness was used to allow the member of the public to provide additional information relating to an artefact that subsequently enabled a correction to be made to the understanding by the museum. It should be noted, however, that there was no sense of urgency illustrated.

Participants noted that fragmented awareness was also useful in public-to-public exchanges. There were times where they were considering how to respond to a question when another member of the public answered it almost immediately. This example shows how the engaged community can provide a solution to a query, without the requirement for a museum professional to be involved. Again, it should be noted that there appears to be little sense of urgency around the question/answer scenario. The dispersed nature of the museums did not appear to be "hampering solutions to...problems" (van Baalen et al. 2005, p.310).

A number of examples of knowledge being presented by the public without the museum asking for help, or having a specific problem, have been previously provided within my findings chapter. I can therefore conclude that whilst understanding that there are gaps in knowledge, this is not a requirement for a network of crowd to form. The ties between individuals are strengthened through their commonality of interest in the museums themselves, not through the need to solve specific problems or knowledge gaps.

### 7.5.5 Knowledge broker

Knowledge brokers have been defined by Davenport and Prusak (2000) as those individuals that connect knowledge suppliers with those requiring it. Alternatively referred to as "boundary spanning individuals" (Tushman & Scanlan 1981, p.83), these persons understand where to seek knowledge, particularly beyond the boundaries of their own institutions. Corporate librarians are an example of knowledge brokers, uniting not only people to text, but also similar minded individuals across organisations. Similarly within commercial businesses, the manager is often considered to take on the role of a knowledge broker, or 'gatekeeper', gathering knowledge and filtering it out appropriately to members of their team (Davenport & Prusak 2000).

Within the museums that formed the case studies for my research, it could be noted from participants' responses, that neither managers nor librarians were involved in uniting individuals in order to share knowledge. Indeed, no single person, or group of persons, could be identified as a knowledge broker, suggesting that such an individual is not required by museums for internal and external associations. Whilst, for some organisations, the primary remit for engaging the public is provided by the social media department, the nature of such engagements is diverse and often down to the specific individuals that wish to be involved.

It would appear that the use of social media has enabled both internal museum stakeholders and the public to connect, view, share, and challenge knowledge. No specific individual is required to be in situ within the museum for this to take place. Even in early days of social media engagement, it was often museum stakeholders who identified themselves as being from a specific institution and encouraged subsequent dialogue, as opposed to this functionality being initiated from a centralised department, or dedicated individual.

However, concurring with van Baalen et al.'s (2005) findings on knowledge brokers within networks of practice, I would argue that the need for a more centralised approach may become a requirement as the maturity of knowledge sharing collaborations are reached within the museum network. For example, individual contact may not be as easily achieved due to the levels of interaction now afforded by social media and, as such, it may become the sole remit of one specific department - the social media team, for example - to now coordinate responses with internal members of staff, and provide those responses to the public. One participant illustrates an example of why this could be the case when commenting that social media is a fast route to an expert, and often questions are just asked without much thought for the effort that goes into a reply. Often, even when the participant has replied, another question will be asked almost immediately, suggesting that the member of the public feels they have the undivided attention of the museum stakeholder to ask as much as they want. If the museum had a form of knowledge broker in place - albeit perhaps defined as the social media department or personnel - then that level of response expectation could be removed from the participant and providing a buffer between them and the public which, potentially, could dissipate the connection to ‘the quick route to an expert’.

### 7.5.6 Knowledge portal

A knowledge portal is an Internet technology platform that has the ability to "bridge structural holes and contribute to the emergence of a network of practice" (van Baalen et al. 2005, p.306), providing indirect links between the knowledge requests and those being received in return. Burt (1992) suggests that bridging these gaps, or structural holes, between two individuals through a connection formed by an individual known to both (a knowledge broker), allows better knowledge exchange to take place.

Contrary to this argument, Nooteboom and Bogenrieder (2003) suggest that retaining structural holes is useful in providing both a problem to be overcome, and an opportunity to share knowledge to do so. Having a level of cognitive difference is beneficial to knowledge collaborations. Within the museum network, structural holes are clearly evident from the participants' discussions. A participant may be collaborating with two members of the public on a specific task or information request. This puts the museum participant in an advantaged position (Hanneman & Riddle 2005).

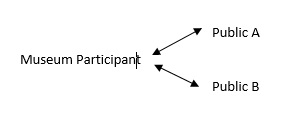


Figure 11 Illustration of a Structural Hole

It can be seen from the basic example in figure 11 that the museum participant has a two-way link for gathering and sharing information with Public A and B, but that Public A and B are not connected. This lack of connection between Public A and B is a structural hole. In order for knowledge exchange to happen in the museum network of crowd, there is no requirement to bridge the structural holes between the members of the public that participants are engaging with.

In their study of a US federal law forum, Wasko et al. (2009) also observed weak relational ties in the network, similar to the structural holes mentioned above. Although I undertook no direct investigation of this area within my study, it would appear that the same could be observed in the network of crowd where multiple, anonymous individuals, sharing no direct connection that study participants have observed, can provide responses or impart knowledge. Wasko et al. (2009) did, however, observe that members of the forum had strong relational ties to the network itself. It could be considered the same is applicable to the network of crowd. The study participants noted that an association to the museum of interest did encourage the public to engage with knowledge sharing and information offering within that specific form of community.

Van Baalen et al. (2005) also assert that having a knowledge portal in place provides for a more efficient manner "to transfer and exchange knowledge" between participants, along with a "reciprocity in knowledge sharing" (2005, p.306) which, in turn, leads to a network of practice being formed. In the case of the museums engaged with this study, the knowledge portals that were in place consisted of the social media platforms being utilised by the public, such as Twitter and Facebook. These platforms were 'open' with all knowledge freely visible to any individual who chooses to follow or interact with them. As one study participant commented, the public know how to use them and so they use them all the time without having to learn something new.

Additionally, the large museum (M1) had a separate, dedicated knowledge portal to crowdsource information on a specific project they are currently undertaking. The portal is open to the public to upload and add their contributions to, along with museum stakeholders, and is available to specific museum participants and academics (upon request) to interrogate the data. The two remaining museums had no such dedicated platform at the time of this study.

The exchange of knowledge between the public and the institutions was freely taking place, contrary to Kollock's (1999) assumption that this form of exchange is a greater risk to the knowledge giver. It therefore appears that a dedicated knowledge portal, as discussed by van Baalen et al. (2005), to remove the need for direct links between the knowledge sender and receiver and encourage reciprocity in knowledge sharing, is not a requirement in the museum context. An existing form of portal is currently available through social media technologies and it is this technology that leads to the emergence of the museum network of crowd.

In order to understand how networks of crowd enhance and extend existing understanding of networks of practice, I compared a number of previously defined elements that academic literature has afforded to networks of practice within a closed inter- or intra-organisational context, to the emergent network of crowd which operates in an open, non-organisational context. The differences that were observed in the emergent network of crowd, as opposed to a network of practice, are presented in Table 14.

Table 14 Comparison between an emergent Network of Crowd and a Network of Practice

|  |  |
| --- | --- |
| **Network of Crowd  (non-organisational, open)** | **Network of Practice (intra-/inter-organisational, closed)** |
| Significant levels of knowledge sharing are available within a network of crowd. | Little knowledge is produced by members. |
| Positive actions can be taken by members of a network of crowd, often to influence or support museum decisions. | No significant action is taken by members. |
| Through the use of social media, there is no requirement for a time-limit on responses for members to engage with their chosen institution(s). | A sense of urgency is required to tackle specific problems. |
| Recognising knowledge gaps assists with leveraging engagement, but is not a prerequisite for knowledge exchange to occur. | Fragmented awareness in a dispersed industry is a prerequisite for the network to form. |
| Knowledge is provided to a variety of individuals within the museums and subsequently disseminated by them as appropriate. | A form of knowledge broker is required to acquire and disseminate knowledge. |
| Knowledge that is shared in a network of crowd is frequently commented on, and added to, by other members of the network, and is not just directed to museum professionals. | Members rarely interact directly with one another within the network. |
| Social media act as the knowledge portal, allowing the exchange of knowledge to occur between museum professionals and the public without the necessity of developing a dedicated portal. | To develop a dedicated knowledge portal, an active knowledge broker is required. |
| Knowledge sharing is achieved through existing technology in the form of social media systems. No dedicated system is required. | Reciprocity in knowledge sharing is achieved through a knowledge portal |
| Almost no ability to develop social capital | Potential to enhance reputation (build social capital within the network) |

These findings suggest that literature on electronic networks can be extended through the emergence of this new variety of network.

## 7.6 Contributions of the study

Acquiring knowledge through collaborative engagements, or crowdsourcing, with the public is facilitated by the development of interest communities around museums. Communities, no matter how closely or loosely connected, sharing an interest, are the foundation of the emergent networks that heritage personnel are observing. The development of these electronic networks, through the contemporary use of social media, has allowed the formation of networks of crowd, functioning at a level where individuals can now interact directly if they so desire, and produce large quantities of knowledge. No longer do museum personnel have to reach out to their public to encourage engagement. Engagement is happening on an almost daily basis, without the need for specific requests, projects or assistance calls from museums. Indeed, this level of engagement is being reflected in crowdsourcing activities in general.

The affordances offered by social media have allowed the definition of 'expert' and 'amateur' to become less clearly defined. Whilst acknowledging the position of museum participants as those providing verified knowledge, one also needs to acknowledge that many of the public that they engage with are also considered experts in their field.

Initially my research appeared to challenge contentions in literature surrounding the activities and actions of members of a network of practice. However, through developing and refining my coding using networks of practice as the conceptual framework, I have provided insight into the way in which museum participants understand the collaborations they are experiencing with their publics, through the diverse knowledge exchanges afforded by social media. Recognising that there were significant differences between what the study participants were witnessing, and what was academically understood to be defined by a network of practice, provided me with realisation that what the participants were experiencing was a new phenomenon: a network of crowd.

The contributions to knowledge that I am therefore making are:

* Presenting a new form of non-organisational network of practice: a network of crowd, which extends understanding of networks of practice to community context participants; and
* Offering a variance of the online community, formed around an interest in an organisation, but lacking the formality of forum-style hierarchy or trading in social capital.

My findings suggest that networks of practice (Brown & Duguid 2000; van Baalen et al. 2005; Wasko & Faraj 2005; Wasko et al. 2009; Agterberg et al. 2010), as currently understood in academic literature, have been extended and enhanced through the emergence of the network of crowd (Table 14). This non-organisational network has formed from the observations by the study participants of how their audience are now engaging with them over social media. This community context provides for the development of a specific type of engagement closely linking organisations to their public, where an alignment of interests is developed and expanded, recognising external expertise within the public, and perceiving it as having value alongside that of the organisational professionals themselves.

The emergent network of crowd suggests that a diverse type of online community has been formed. The fact that the audience is already part of an elective community, sharing a common interest in the subject matter and a shared desire to achieve objectives, certainly helps with knowledge sharing opportunities (Ridge 2013). The participants within my study are aware of the excellent opportunities afforded to them by a highly engaged audience, and are working hard to maintain levels of engagement that their public desire.

The traditional form of online community is often understood to contain core members (Farzan et al. 2012; Chen et al. 2016) that contribute the majority to the community, along with more peripheral members, or lurkers, (Nonnecke et al. 2006; Zhang et al. 2007) who may just observe interactions but never get involved to the level of answering questions. Bautista (2014) observes that traditional communities of interest are hierarchical in nature and often members can feel social pressure to contribute and participate. However, the interest community surrounding a network of crowd is perceived as highly engaged by the study participants but without the pressures associated with more traditional communities and forums. This community appears to be comprised of many individuals who both ask and respond to questions, whether such questions are posed by other members of the public, or by the study participants. Questions and responses are viewed on the specific social media that the public are engaged with. This allows other contributors to become involved if they have additional information to offer. It also means that those without additional offerings are not obvious or noticed by other members of the network. However, it also makes identifying any specific type of community member, such as a leader or senior contributor, very difficult as there is such fluidity of individuals and engagement.

Benefits of participation in collaborative projects are often understood as perceived values such as self-image, contribution to collective knowledge and recognition within the community (Wasko & Faraj 2005; Lesser & Prusak 1999). A difference in the network of crowd is that these values, or social capital (Preece 2004; Faraj et al. 2015; Wasko & Faraj 2005; Beck et al. 2014; Wang & Noe 2010), do not appear to feature very highly, if at all. This is primarily due to the manner in which the knowledge is shared. Majchrzak et al. (2013) observe that the affordance of networked-informed associating leads to increased social capital, and thus positive, productive knowledge sharing conversations take place among the community, through social network engagement. More usually in an online community, members join and ask questions or respond to those already asked. Types of questions are often sorted into headings and sub-headings, helping members focus on their levels of interest and knowledge. This level of interaction begins to build social capital. Social capital within an online community can often be presented as an individual becoming a senior member or leader (Faraj et al. 2015; Ganley & Lampe 2009) of such community. Within the online community that has emerged, there appears to be no specific manner in which to enhance social capital amongst the community peers in order to build reputation. This is primarily due, again, to the nature of the interactions being openly available over social media with any member of the public or study participants able to provide an answer. Thus interactions through these forms of social networks involve a vast assortment of audiences including academics, historians or simply interested parties wishing to learn about objects within collections (Marty 2008). With so many potential suppliers of information, building reputation would be difficult to achieve as questions posed can be so varied. Within the traditional online community, or forum, it is easier to become a 'subject expert' by responding to specific lines of questions which are categorised within the community itself. This is contrary to the way that the network of crowd functions.

A final observation from my research reveals that crowdsourcing is more frequently being considered an “umbrella term” (Howe 2008, p.280) for engaging the public in collaborative endeavours. Whilst the study participants recognised that crowdsourcing is a term that can still be applied to large-scale tasks requiring a specific outcome, it is more commonly associated with daily interactions with the public over social media, primarily surrounding knowledge exchange.

## 7.7 Summary

Social media are providing new ways for organisations and their public to communicate. Faraj and Azad (2012) present the lens of affordances as the "bridging concept that conceptually links between design and use of technology". This seems particularly true of social media, where the design of technology such as Twitter - originally intended as a micro-blogging site - has extended to one that now offers collaboration, knowledge exchange, marketing, and many more varying narratives available to its users.

My findings suggest that through the use of social media, electronic networks of practice have been extended and enhanced from their original interpretation. By presenting an emergent network of crowd, as perceived by museum participants, it can be understood that the engagement that these organisations are having with their public is significantly enhanced from the levels expected from a more traditional network of practice (Brown & Duguid 2000; van Baalen et al. 2005), where levels of management control may also be a required (Agterberg et al. 2010).

Study participants are engaged in an ongoing process, providing high levels of interaction and knowledge sharing with their public, built on the continual development of the communities around their institutions. These networks, or communities, are also changing. There is little room for building social capital between the members of the same, so the very nature of the community is an emergent one, within which the offering and receiving of information appears to be open and altruistic in nature. The fluidity of both community members and interactions also shows a divergence from the more traditional online community where hierarchical structures can be evidenced.

# Chapter 8. Conclusion

"We cannot solve our problems with the same

thinking we used when we created them."

Albert Einstein

## 8.1 Chapter Overview

This chapter provides a summary of my research and revisits my research question and the aims of this study. It also discusses implications to both theory and practice surrounding the emergence of new forms of networks of practice.

I commence with a summary of my findings and conclusions relating to my research question, identifying my contribution to knowledge. I also present limitations of my study and suggest further research that may be undertaken.

## 8.2 Summary of findings

The primary question for my thesis has been: What theories emerge when heritage professionals engage with crowdsourcing in order to protect, preserve and promote National heritage? The answer is the nascent theoretical contribution of a network of crowd, formed through developing communities around heritage organisations where a shared interest in the artefacts and collections is established. This network provides an extension and shift from the somewhat narrower, internal, organisational focus of networks of practice, and extends the same to a broader, open, non-organisational network of the engaged crowd.

Acquiring knowledge through collaborative engagements, or crowdsourcing, with the public is facilitated by the development of interest communities around museums. Communities, no matter how closely or loosely connected, sharing an interest, are the foundation of the emergent networks that heritage personnel are observing. The development of these electronic networks through the contemporary use of social media, has allowed the formation of networks of crowd, functioning at a level where individuals can now interact directly if they so desire, and produce large quantities of knowledge. No longer do museum personnel have to reach out to their public to encourage engagement. Engagement is happening on an almost daily basis, without the need for specific requests, projects or assistance calls from museums. This concurs with the definition of crowdsourcing as an “umbrella term” (Howe 2008, p.280) for collaborative activities involving the public, most commonly over social media.

The theoretical codes generated from my analysis of interview data, suggested that existing understanding of networks of practice (Brown & Duguid 2000; van Baalen et al. 2005) can be extended and developed to better understand the levels of engagement that museum personnel are witnessing. The affordances offered by social media have allowed the definition of 'expert' and 'amateur' to become less clearly defined. Whilst acknowledging the position of museum participants as those providing verified knowledge, one also needs to acknowledge that many of the public that they engage with are also considered experts in their field.

## 8.3 Contribution to knowledge

My research appears to have challenged contentions in literature surrounding the activities and actions of members of a network of practice. Using grounded theory as my approach, I have provided insights into the way in which the formation of such networks are being observed by museum participants, through the diverse knowledge exchanges with their audiences over social media.

The contributions to knowledge that I am therefore making are:

* Presenting a new form of non-organisational network of practice: a network of crowd, which extends understanding of networks of practice to community context participants; and
* Offering a variance of the online community, formed around an interest in an organisation, but lacking the formality of forum-style hierarchy or trading in social capital.

My findings suggest that networks of practice, as currently understood in academic literature, have been extended and enhanced. That is not to say that there are networks of practice that adhere to current interpretations and understanding. However, from the perspective of the interactions and collaborations as witnessed by the study participants, the networks that are engaging with their institutions provide large quantities of knowledge, and are external to organisational boundaries. This knowledge can be in the form of transcription, editing, providing unsolicited information, responding to questions, posing questions, or simply sharing resources. Equally, the communities that are engaging with the organisations are not gaining any of the traditional community rewards, such as increase in social capital or recognition of participant’s value to the community. This is primarily due to the fact that the community is social media based, as opposed to a dedicated forum where members register and can build social capital. Members of the new community are contributing based upon an openness and willingness to share knowledge for the ‘greater good’ of the organisation that they engage with, and any other interested parties.

Furthermore, a possible interpretation of my understanding could be that museums offer a unique opportunity to contribute to knowledge and comprehension through open, two-way sharing. Such sharing is not necessarily based on any need or timescale, but more on interest and discovery. However, this could also be the case for many other non-profit organisations who are versed in using volunteers as part of their workforce. It is relatively plausible to extend my findings to other types of museums such as those dedicated to a specific locality or non-military collections. Once again, I consider that a proviso would be that there is still information to be unearthed - living history stories - in order for a similar style museum network of crowd to emerge. That is not to say that there are new findings surrounding ancient historical collections that could yet be unearthed, but dealing with living memory events is likely to provoke higher levels of public interaction.

## 8.4 Observations

Through analysis of the data collected during my research, I have found that there are many differences in the way museums collect and disseminate knowledge, that are less likely to occur within the commercial world. It would appear that non-profits are sensitive to working with their audience in order to include them in a variety of decisions relating to artefacts and collections, along with incorporating new information received with a view to correcting and growing understanding. This is similar to the open source community (Chen et al. 2016) whereby contributions are actively welcomed in order to produce better software, and innovations are openly shared amongst the community.

Knowledge sharing between the public and organisations is far less visible in the commercial arena. Academic research centred around commercial businesses primarily discuss internal knowledge sharing or cross-organisational knowledge dissemination (Dyer & Nobeoka 2000; Swart & Kinnie 2003; Rode 2016; Roth 2016). Although the ability to share internal knowledge such as skills and reputation, has significant impact on competitiveness and performance within the market, there are still many barriers to its success (Riege 2005), and significant barriers to sharing outside of a commercial organisation (intellectual property, marketing strategy, competitive advantage, etc.). Levels of information that are shared by commercial businesses to the public are often centred around bug fixes, FAQs, and help forums (often populated by 'amateur experts' as opposed to organisational experts).

Crowdsourcing plays an important part in information gathering and dissemination by museums through social media. Strong ties developed between museum participants and the public allow for an open flow of knowledge to be achieved, without the need to offer reward or recompense of any sort. This is accomplished through the myriad of interactions that take place within the communities and networks that form around the museums.

By examining the current definition of networks of practice, to encompass the differences between existing interpretations and those emergent themes that have arisen through my research, one interpretation I have presented is that a new form of network has emerged: a network of crowd.

## 8.5 Limitations of research

In understanding the value that communities play in providing and disseminating knowledge surrounding museums, my research provides some understanding of the evolving nature of networks of crowd as perceived by museum participants, through modern social media technologies. Whilst areas of knowledge, crowdsourcing and communities of practice have all received much academic research through their various contexts, networks of practice, or electronic networks, appear to have received less attention, often focused on specific forums or group memberships.

The fact that my study centres around three Armed Forces museums located within the UK provides a limitation. The applicability of networks of crowd on other areas of heritage, both within and external to the UK, would provide new contexts to explore. Equally, to undertake a longitudinal study could provide better understanding of the impact of engaging the public as social media technologies mature, or new technologies materialise. Alternatively, it could be beneficial to gain access to the communities that are engaging with museums to assess why they are willing to provide so much information, often for little or no return on their investment.

Another limitation of the study concerns the network of crowd itself. The view of the community that has built around the museums, developing into the network of crowd, is one from the perspective of the study participants (museum stakeholders) and myself as the researcher. It would be interesting to engage with the network and find out more about the individuals involved in such and their levels of expertise surrounding their chosen museum(s). However, it is appreciated that this could be a very onerous and, potentially, extremely difficult task to achieve, as it relies on those network members wishing to engage with researchers as opposed to their true interest area, the museums.

A further limitation is through my chosen method of analysis. Grounded theory is an interpretative method and as such, my research is based upon my own interpretation of the transcripts of my meetings with museum participants. Coding transcripts is also a very personal process, using not only the words that have been transcribed, but memories of the people, location, feelings and emotions that were part of the meeting as a whole.

## 8.6 Further research

Building on the emergent themes and theoretical contribution generated by this study, would allow future researchers to widen the heritage study groups and investigate whether the findings of this study are visible across different organisations.

Some participants considered what it now meant to be a curator in this digital age. Many job descriptions for organisations external to the heritage sector now use curator as a title for a wide variety of roles. Future researchers may like to consider what it means to be a curator with the increase of specialised websites being self-published.

One implication for practice that has emerged from this research would be for local museums to gain an understanding of how to better position their interactions with the public. The enhanced view of networks of crowd that the study has afforded could be applied in order for them to further develop their own virtual communities and knowledge sharing opportunities.

It is an interesting observation that the freedom of information and willingness to share may be something limited to non-profit organisations such as museums and NGOs. The open nature of this form of information sharing is not something readily associated with commercial business and thus may be peculiar to non-profits.

## 8.7 Personal reflections

The research journey has been both an immensely rewarding one for me, along with a tremendous challenge. As a mature student who has worked in industry for many years, moving into the academic mind-set took a little while. Understanding the myriad of theories and methods by which research was undertaken took longer.

I found that my own business network was a valuable tool in providing me with starting points to reach those within the institutions that I wished to engage with. I was fortunate that organisations and personnel were willing to work with me, and openly share their thoughts and feelings. I have had the opportunity to learn from, and engage with, leading academics as I explored my research ideas and development. I have explored a variety of areas from technology acceptance, game theory and motivational theory, to social network analysis and knowledge management. I feel that I have grown both as a person and a scholar and hope that my contribution has added to understanding the diversity of electronic networks.

Completing this research has increased my confidence in my academic ability and also spurred me on to consider new lines of enquiry around subjects that I am deeply involved in – social media, online communities, and collaborative engagements. I have also realised that this is not the end, just the start of a new beginning.

# References

Achen, C.H., 2002. Toward a New Political Methodology: Microfoundations and ART. *Annual Review of Political Science*, 5(1), pp.423–450. Available at: http://www.annualreviews.org/doi/abs/10.1146/annurev.polisci.5.112801.080943 [Accessed September 26, 2014].

Acker, J., Barry, K. & Esseveld, J., 1983. Objectivity and truth: problems in doing feminist research. *Women’s Studies International Forum*, 6, pp.423–435.

Adair, B., Filene, B. & Koloski, L., 2011. *Letting Go?: Sharing Historical Authority in a User-Generated World*, Philadelphia, PA: The Pew Center for Arts & Heritage. Available at: https://books.google.co.uk/books?hl=en&lr=&id=1nw4QoWJa5UC&oi=fnd&pg=PT3&dq=adair+letting+go&ots=WK2aImR4e6&sig=ws8FsubMykfJKAcSEJMchUnMFSc#v=onepage&q=adair letting go&f=false.

Adamic, L.A. et al., 2008. Knowledge Sharing and Yahoo Answers: Everyone Knows Something. *International World Wide Web Conference Committee*, pp.665–674.

Agarwal, R. & Lucas, H.C., 2005. The Information Systems Identity Crisis: Focusing on High-Visibility and High-Impact Research. *MIS Quarterly*, 29(3), pp.381–398.

Agichtein, E. et al., 2008. Finding High-quality Content in Social Media. In *International Conference on Web Search and Data Mining*. pp. 183–193. Available at: http://dl.acm.org/citation.cfm?id=1341557&CFID=258789117&CFTOKEN=24893236.

Agterberg, M. et al., 2010. Keeping the Wheels Turning: The Dynamics of Managing Networks of Practice. *Journal of Management Studies*, 47(1), pp.85–108. Available at: http://doi.wiley.com/10.1111/j.1467-6486.2009.00867.x [Accessed December 1, 2014].

Aitamurto, T., 2016. Crowdsourcing as a Knowledge-Search Method in Digital Journalism. *Digital Journalism*, 4(2), pp.280–297. Available at: http://dx.doi.org/10.1080/21670811.2015.1034807\nhttp://www.tandfonline.com/doi/abs/10.1080/21670811.2015.1034807\nhttp://www.tandfonline.com/doi/pdf/10.1080/21670811.2015.1034807.

Alag, S., 2009. *Collective Intelligence in Action*, Greenwich, CT: Manning Publications.

Alam, S.L. & Campbell, J., 2012. Crowdsourcing Motivations in a not-for-profit GLAM context: The Australian Newspapers Digitisation Program. In *23rd Australasian Conference on Information Systems*. pp. 1–11.

Alavi, M. & Leidner, D., 1999a. Knowledge Management and Knowledge Management Systems: Conceptual Foundations and Research Issues. , pp.1–79. Available at: https://flora.insead.edu/fichiersti\_wp/inseadwp1999/99-34.pdf.

Alavi, M. & Leidner, D., 1999b. Knowledge Management Systems: Issues, Challenges, and Benefits. *Communications of the Association for Information Systems*, 1(February), pp.1–37.

Alexander, C. et al., 2008. Beyond Launch: Museum Videos on YouTube. Available at: http://www.archimuse.com/mw2008/papers/hart/hart.html.

Al-Hawamdeh, S., 2003. *Knowledge Management: Cultivating Knowledge Professionals*, Oxford, Oxon: Chandos Publishing. Available at: http://books.google.co.uk/books?hl=en&lr=&id=HfOiAgAAQBAJ&oi=fnd&pg=PP1&dq=al-hawamdeh+2003&ots=4VscY2l6qF&sig=BNGHdjsqirTh9n\_H\_YVLQ4oQB3U#v=onepage&q=al-hawamdeh 2003&f=false.

Allan, G., 2003. A critique of using grounded theory as a research method. *e-Journal of Business Research Methods*, 2(1), pp.1–10.

Allee, V., 1997. 12 Principles of Knowledge Management. *Training & Development*, 51(11), pp.71–74.

Alonso, O., 2010. Crowdsourcing for Relevance Evaluation. , (March).

Alvesson, M., 2003. Beyond Neopositivists, Romantics, and Localists: A Reflexive Approach to Interviews in Organizational Research. *Academy of Management Review*, 28(1), pp.13–33.

Alvesson, M. & Skoldberg, K., 2009. *Reflexive Methodology: New Vistas for Qualitative Research* 2nd ed., London: Sage Publications. Available at: http://books.google.co.uk/books?hl=en&lr=&id=32G4M7-20xgC&oi=fnd&pg=PP2&ots=G2JkofWwUD&sig=437shMs\_rQ-IIlHPlKWGJ80w7us#v=onepage&q&f=false.

Amabile, T.M., DeJong, W. & Lepper, M.R., 1976. Effects of Externally Imposed Deadlines on Subsequent Intrinsic Motivation. *Journal of Personality and Social Psychology*, 34(1), pp.92–98.

Amaldoss, W. & Chuan, H., 2009. Direct-to-Consumer Advertising of Prescription Drugs: A Strategic Analysis. *Marketing Science*, 28(3), pp.472–487. Available at: http://search.ebscohost.com/login.aspx?direct=true&db=bth&AN=43930812&site=ehost-live.

Amin, A. & Cohendet, P., 2004. *Architectures of knowledge: firms, capabilities and communities*, Oxford, Oxon: Oxford University Press.

Andermann, J. & Arnold-de Simine, S., 2012. Introduction: Memory, Community and the New Museum. *Theory, Culture & Society*, 29(1), pp.3–13. Available at: http://tcs.sagepub.com/cgi/doi/10.1177/0263276411423041 [Accessed January 5, 2014].

Anderson, C., 2009. *The Longer Long Tail*, London: Random House Business Books.

Anderson, M., 2009. Indianapolis Museum of Art Presented by Max Anderson. Available at: https://www.youtube.com/watch?v=DFC38pl1y8o.

Anderson, P., 2007. What is Web 2.0? Ideas, technologies and implications for education. *JISC Technology and Standards Watch*, (February), pp.1–64. Available at: http://www.jisc.ac.uk/media/documents/techwatch/tsw0701b.pdf.

Andrews, D.C., 2002. Audience-Specific Online Community Design. *Communications of the ACM*, 45(4), pp.64–68. Available at: http://dl.acm.org/citation.cfm?id=505275.

Annells, M., 1997a. Grounded theory method, Part I: Within the five moments of qualitative research. *Nursing inquiry*, 4(2), pp.120–9. Available at: http://www.ncbi.nlm.nih.gov/pubmed/9224048.

Annells, M., 1997b. Grounded theory method, Part II: Options for users of the method. *Nursing inquiry*, 4(3), pp.176–80. Available at: http://www.ncbi.nlm.nih.gov/pubmed/9335819.

Anon, 2007. Building an On-line Community at the Brooklyn Museum: A Timeline. In *Museums and the Web*. Available at: http://www.archimuse.com/mw2007/papers/caruth/caruth.html.

Anon, History of The British Museum. Available at: http://www.britishmuseum.org/about\_us/the\_museums\_story/general\_history.aspx.

Anon, 1998. Recommendation No. R(98) 5 of the Committee of Ministers to Member States concerning Heritage Education. Available at: http://www.kultura.ejgv.euskadi.net/r46-4874/es/contenidos/informacion/manifiestos\_patrimonio/es\_8658/adjuntos/DOC56.pdf.

Archak, N. & Sundararajan, A., 2009. Optimal Design of Crowdsourcing Contests. In *International Conference on Information Systems*.

Ardichvili, A., Page, V. & Wentling, T., 2003. Motivation and Barriers to Participation In Virtual Knowledge-Sharing Communities of Practice. *Journal of Knowledge Management*, 7(1), pp.64–77.

Arnold, H.J., 1976. Effects of Performance Feedback and Extrinsic Reward upon High Intrinsic Motivation. *Organizational Behavior and Human Performance*, 17, pp.275–288.

Askalidis, G. & Stoddard, G., 2013. A Theoretical Analysis of Crowdsourced Content Curation. In *The 3rd Workshop on Social Computing and User Generated Content*. pp. 1–11.

Atkinson, P.A., 1992. *Understanding Ethnographic Texts (Qualitative Research Methods Series 25)*, Newbury Park, CA: Sage Publications, Inc.

van Baalen, P., Bloemhof-Ruwaard, J. & van Heck, E., 2005. Knowledge Sharing in an Emerging Network of Practice: The Role of a Knowledge Portal. *European Management Journal*, 23(3), pp.300–314. Available at: http://linkinghub.elsevier.com/retrieve/pii/S0263237305000484 [Accessed November 25, 2014].

Baard, P.P., Deci, E.L. & Ryan, R.M., 2004. Intrinsic Need Satisfaction: A Motivational Basis of Performance and Well-Being in Two Work Settings. *Journal of Applied Social Psychology*, 34, pp.2045–2068. Available at: http://onlinelibrary.wiley.com/doi/10.1111/j.1559-1816.2004.tb02690.x/abstract.

Backman, K. & Kyngäs, H.A., 1999. Challenges of the grounded theory approach to a novice researcher. *Nursing & health sciences*, 1(3), pp.147–53. Available at: http://www.ncbi.nlm.nih.gov/pubmed/10894637.

Bacon, J., 2009. *The Art of Community: Building the New Age of Participation (Theory in Practice)* Kindle., O’Reilly Media Inc.

Bakhshi, H. & Throsby, D., 2010. *Culture of Innovation: An economic analysis of innovation in arts and cultural organisations*, London.

Baumard, P., 2001. *Tacit Knowledge in Organizations*, London: Sage Publications Ltd. Available at: http://books.google.co.uk/books?hl=en&lr=&id=5qoCEfSvPjoC&oi=fnd&pg=PR5&dq=Baumard+tacit+knowledge&ots=hQIfxDESpN&sig=dZtxn2KcpI6l90Pwk3fISNBS-h0#v=onepage&q=Baumard tacit knowledge&f=false.

Bautista, S.S., 2014. *Museums in the Digital Age: Changing Meanings of Place, Community, and Culture*, Maryland: Altamira Press.

Bavelas, J.B., 1995. Quantitative versus Qualitative? In W. Leeds-Hurwitz, ed. *Social Approaches to Communication*. New York, NY: The Guilford Press, pp. 49–62.

Beck, R., Pahlke, I. & Seebach, C., 2014. Knowledge Exchange and Symbolic Action in Social Media-Enabled Electronic Networks of Practice: A Multilevel Perspective on Knowledge Seekers and Contributors. *MIS Quarterly*, 38(4), pp.1245–1270.

Bélanger, F. & Crossler, R.E., 2011. Privacy in the Digital Age: A Review of Information Privacy Research in Information Systems. *MIS Quarterly*, 35(4), pp.1017–1041.

Bell, M.A., 2008. Viva Virtual Visits! Museums, Gardens, and Web 2.0. *Multimedia & Internet @ Schools*, (July/August), pp.38–41.

Bell, R. & Tight, M., 1993. *Open Universities: A British Tradition?*, Milton Keynes: Open University Press.

Benbasat, I., Goldstein, D.K. & Mead, M., 2014. The Case Research Strategy in Studies of Information Systems. *MIS Quarterly*, 11(3), pp.369–386.

Benkler, Y., 2006. *The Wealth of Networks: How Social Production Transforms Markets and Freedom*, Yale University Press.

Berg, B.L., 2001. *Qualitative Research Methods for the Social Sciences* 4th ed., London: Allyn & Bacon.

Berger, P.L. & Luckmann, T., 1971. *The Social Construction of Reality: A Treatise in the Sociology of Knowledge*, London: Penguin Books Ltd.

Bernstein, S., 2010. Rethinking Twitter with ConnectTweet. Available at: http://www.brooklynmuseum.org/community/blogosphere/2010/06/08/rethinking-twitter-with-connecttweet/.

Bernstein, S., 2008. Where do we go from here? Continuing with Web 2.0 at the Brooklyn Museum. Available at: http://www.archimuse.com/mw2008/papers/bernstein/bernstein.html.

Besaleva, L.I. & Weaver, A.C., 2013. Applications of Social Networks and Crowdsourcing for Disaster Management Improvement. In *2013 International Conference on Social Computing*. Ieee, pp. 213–219. Available at: http://ieeexplore.ieee.org/lpdocs/epic03/wrapper.htm?arnumber=6693335 [Accessed February 3, 2014].

Bhatt, G.D., 2001. Knowledge management in organizations: examining the interaction between technologies,techniques, and people. *Journal of Knowledge Management*, 5(1), pp.68–75.

Biella, D. et al., 2015. Crowdsourcing and Knowledge Co-creation in Virtual Museums. In *Collaboration and Technology*. pp. 1–18.

Bijker, W.E. & Law, J. eds., 1992. *Shaping Technology/Building Society: Studies in Sociotechnical Change*, Cambridge, Mass: MIT Press.

Bilal, D. & Bachir, I., 2007. Children’s interaction with cross-cultural and multilingual digital libraries. II. Information seeking, success, and affective experience. *Information Processing & Management*, 43(1), pp.65–80. Available at: http://linkinghub.elsevier.com/retrieve/pii/S0306457306000793 [Accessed May 1, 2014].

Blanchard, A.L., 2004. Blogs as Virtual Communities: Identifying a Sense of Community in the Julie/Julia Project. *Into the blogosphere: Rhetoric, community, and culture of weblogs*. Available at: http://blog.lib.umn.edu/blogosphere/blogs\_as\_virtual\_pf.html.

Blanchard, A.L. & Markus, M.L., 2004. The Experienced “Sense” of a Virtual Community: Characteristics and Processes. *ACM SIGMIS Database*, 35(1), pp.65–79.

Blaser, L., 2014. Old Weather: Approaching Collections from a Different Angle. In M. Ridge, ed. *Crowdsourcing our Cultural Heritage*. Farnham, Surrey, pp. 45–55.

Blohm, I., Leimeister, J.M. & Kremar, H., 2013. Crowdsourcing: How to Benefit from (Too) Many Great Ideas. *MIS Quarterly*, 12(4), pp.199–211.

Blumer, H., 1954. What is Wrong with Social Theory? *American Sociological Review*, 19(1), pp.3–10. Available at: http://www.ncbi.nlm.nih.gov/pubmed/25018575.

Boal, K.B. & Cummings, L.L., 1981. Cognitive Evaluation Theory: An Experimental Test of Processes and Outcomes. *Organizational Behavior and Human Performance*, 28, pp.289–310. Available at: http://linkinghub.elsevier.com/retrieve/pii/0030507381900015.

Bock, G.-W. et al., 2005. Behavioral Intention Formation in Knowledge Sharing: Examining the Roles of Extrinsic Motivators, Social-Psychological Forces, and Organizational Climate. *Mis Quarterly*, 29(1 - Special Issue on Information Technologies and Knowledge Management (Mar.)), pp.87–111.

Boggiano, A.K. & Ruble, D.N., 1979. Competence and the Over-justification Effect: A Developmental Study. *Journal of personality and Social Psychology*, 37(9), pp.1462–1468.

Bonfigli, M.E. et al., 2004. Virtual visits to cultural heritage supported by web-agents. *Information and Software Technology*, 46(3), pp.173–184. Available at: http://linkinghub.elsevier.com/retrieve/pii/S0950584903001265 [Accessed October 22, 2013].

Borchorst, N.G. et al., 2012. Bridging identity gaps - Supporting identity performance in citizen service encounters. *Computer Supported Cooperative Work (CSCW)*, 21, pp.555–590.

Bott, V., 1990. Beyond the Museum. *Museums Journal*, 90(February), p.28.

Bourdieu, P., 1989. SOCIAL SPACE AND SYMBOLIC POWER\*. *Sociological Theory*, 7(1), pp.14–25.

Bowen, G.A., 2006. Grounded Theory and Sensitizing Concepts. *International Journal of Qualitative Methods*, 5, pp.1–9. Available at: http://ejournals.library.ualberta.ca/index.php/IJQM/article/viewArticle/4367.

Boyd, D.M. & Ellison, N.B., 2008. Social Network Sites: Definition, History, and Scholarship. *Journal of Computer-Mediated Communication*, 13(1), pp.210–230. Available at: http://doi.wiley.com/10.1111/j.1083-6101.2007.00393.x [Accessed September 17, 2013].

Brabham, D.C., 2013. *Crowdsourcing*, Massachusetts: MIT Press.

Brabham, D.C., 2008. Crowdsourcing as a Model for Problem Solving: An Introduction and Cases. *Convergence: The International Journal of Research into New Media Technologies*, 14(1), pp.75–90. Available at: http://con.sagepub.com/cgi/doi/10.1177/1354856507084420 [Accessed March 22, 2014].

Brabham, D.C., 2010. Moving the Crowd At Threadless. *Information, Communication & Society*, 13(8), pp.1122–1145. Available at: http://www.tandfonline.com/doi/abs/10.1080/13691181003624090 [Accessed March 21, 2014].

Brambilla, M. & Bozzon, A., 2012. Web Data Management through Crowdsourcing upon Social Networks. In *IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining*. pp. 1123–1127.

Brophy, E. & de Peuter, G., 2007. Immaterial Labor, Precarity, and Recomposition. In C. McKercher & V. Mosco, eds. *Knowledge Workers in the Information Society*. Plymouth, UK: Lexington Books, pp. 177–191.

Brown, J.S. & Duguid, P., 1998. Brown\_Duguid\_1998\_Organizing Knowledge.pdf. *California Management Review*, 40(3), pp.90 – 111.

Brown, J.S. & Duguid, P., 2000. *The Social Life of Information*, Massachusetts: Harvard Business School Publishing.

Brown, R.D., 1989. *Knowledge is Power: The Diffusoin of Information in Early America, 1700-1865*, Oxford, Oxon: Oxford University Press. Available at: http://books.google.co.uk/books?hl=en&lr=&id=6lxsAyjNSxYC&oi=fnd&pg=PA3&dq=knowledge+is+power&ots=vkAS123WkU&sig=7L-l85RliKrlbsdbdWp2LTXSzbc#v=onepage&q=knowledge is power&f=false.

Brown, S.A., Dennis, A.R. & Venkatesh, V., 2010. Predicting Collaboration Technology Use: Integrating Technology Adoption and Collaboration Research. *Journal of Management Information Systems*, 27(2), pp.9–54.

Bryant, A., 2002. Grounding Systems Research : Re-establishing Grounded Theory. In *35th Hawaii International Conference on Systems Sciences*. pp. 1–10.

Bryman, A. & Burgess, R.G. eds., 1994. *Analyzing Qualitative Data*, Available at: http://books.google.co.uk/books?hl=en&lr=&id=7mmKAgAAQBAJ&oi=fnd&pg=PP1&dq=bryman+burgess+1994&ots=G9xmlfVli5&sig=ratAizjAiFZkeY-7B-24SL3VSG8#v=onepage&q=bryman burgess 1994&f=false.

Brzozowski, M.J., 2009. WaterCooler: Exploring an Organization Through Enterprise Social Media. In *Proceedings of the ACM 2009 International Conference on Supporting group work*. pp. 219–228.

Budzise-Weaver, T., Chen, J. & Mitchell, M., 2012. Collaboration and crowdsourcing: The cases of multilingual digital libraries. *The Electronic Library*, 30(2), pp.220–232. Available at: http://www.emeraldinsight.com/10.1108/02640471211221340 [Accessed November 4, 2013].

Buffardi, L.E. & Campbell, W.K., 2008. Narcissism and social networking Web sites. *Personality & Social Psychology Bulletin*, 34(10), pp.1303–1314. Available at: http://www.ncbi.nlm.nih.gov/pubmed/18599659 [Accessed December 13, 2013].

Burt, R.S., 1992. *Structural Holes: Social Structure of Competition*, Cambridge, Mass: Harvard University Press.

By, R.T., 2005. Organisational change management: A critical review. *Journal of Change Management*, 5(4), pp.369–380. Available at: http://www.tandfonline.com/doi/abs/10.1080/14697010500359250.

Calder, B.J. & Staw, B.M., 1975. Self-Perception of Intrinsic and Extrinsic Motivation. *Journal of personality and social psychology*, 31(4), pp.599–605.

Cameron, F., 2001. World of Museums. *Museum Management and Curatorship*, 19(3), pp.309–315.

Cameron, F. & Robinson, H., 2010. Digital Knowledgescapes: Cultural, Theoretical, Practical and Usage Issues Facing Museum Collection Databases in a Digital Epoch. In F. Cameron & S. Kenderdine, eds. *Theorizing Digital Cultural Heritage: A Critical Discourse*. Cambridge, Mass: MIT Press, pp. 165–192.

Carey, J.W., 1993. Linking qualitative and quantitative methods: Integrating cultural factors into public health. *Qualitative Health Research*, 3(3), pp.298–318.

Carletti, L. et al., 2014. Structures for Knowledge Co-creation Between Organisations and the Public. In *CSCW ’14*. pp. 309–312.

Carmen, C. & Jose, G.M., 2008. The role of technological and organizational innovation in the relation between market orientation and performance in cultural organizations. *European Journal of Innovation Management*, 11(3), pp.413–434.

Carnegie, E., 2006. “It wasn”t all bad’: representations of working class cultures within social history museums and their impacts on audiences. *Museum and Society*, 4(2), pp.69–83.

Carr, E.H., 1990. *What is History?*, New York, NY: Random House USA Children’s Books.

Carspecken, P.F. & Apple, M., 1992. Critical qualitative research: Theory, methodology, and practice. In M. D. LeCompte, W. L. Millroy, & J. Preissle, eds. *The Handbook of Qualitative Research in Education*. London: Academic Press, pp. 507–553.

Cepeda-Carrion, G., 2006. Competitive Advantage of Knowledge Management. In D. Schwartz, ed. *Encyclopedia of Knowledge Management*. Hershey, PA: Idea Group Reference, pp. 34–43.

Chan, C.M.L. et al., 2004. Recognition and participation in a virtual community. *Proceedings of the 37th Annual Hawaii International Conference on System Sciences, 2004.*, pp.1–10.

Chanal, V. & Caron-Fasan, M.-L., 2010. The Difficulties involved in Developing Business Models open to Innovation Communities: the Case of a Crowdsourcing Platform. *M@n@gement*, 13(4), pp.318–340. Available at: http://www.cairn.info/article.php?ID\_ARTICLE=MANA\_134\_0318.

Charmaz, K.C., 2006. *Constructing Grounded Theory: A Practical Guide through Qualitative Analysis*, London: Sage Publications.

Charmaz, K.C., 2008. Grounded Theory as an Emergent Method. In S. N. Hesse-Biber & P. Leavy, eds. *Handbook of Emergent Methods*. New York, NY: The Guilford Press, pp. 155–170.

Charmaz, K.C., 2011. Grounded Theory Methods in Social Justice Research. In *The Sage Handbook of Qualitative Research*. Thousand Oaks, CA: Sage Publications, pp. 359–380.

Charmaz, K.C., 2003. Grounded Theory: Objectivist and Constructivist Methods. In N. K. Denzin & Y. S. Lincoln, eds. *Handbook of Qualitative Research*. Thousand Oaks, CA: Sage Publications, Inc., pp. 249–291.

Chen, C.-J. & Huang, J.-W., 2009. Strategic human resource practices and innovation performance — The mediating role of knowledge management capacity. *Journal of Business Research*, 62(1), pp.104–114. Available at: http://linkinghub.elsevier.com/retrieve/pii/S0148296308000192 [Accessed July 20, 2014].

Chen, X. et al., 2016. Managing knowledge sharing in distributed innovation from the perspective of developers: empirical study of open source software projects in China. *Technology Analysis & Strategic Management*, pp.1–22.

Cheon, M.J., Grover, V. & Teng, J.T.C., 1995. Theoretical perspectives on the outsourcing of information systems. *Journal of Information Technology*, 10(4), pp.209–219.

Cherryholmes, C.H., 1994. More Notes on Pragmatism. *Educational Researcher*, 23(1), pp.16–18.

Cherryholmes, C.H., 1992. Notes on Pragmatism and Scientific Realism. *Educational Researcher*, 21(6), pp.13–17.

Chesbrough, H., 2006. Open Innovation : A New Paradigm for Understanding Industrial Innovation. In H. Chesbrough, W. Vanhaverbeke, & J. West, eds. *Open Innovation: Researching a New Paradigm*. Oxford, Oxon: Oxford University Press.

Chiu, C.-M., Hsu, M.-H. & Wang, E.T.G., 2006. Understanding knowledge sharing in virtual communities: An integration of social capital and social cognitive theories. *Decision Support Systems*, 42(3), pp.1872–1888. Available at: http://linkinghub.elsevier.com/retrieve/pii/S0167923606000583 [Accessed July 14, 2014].

Choi, J.H., Lev, B. & Kim, H.-L., 2014. Exploring Determinants of Knowledge Sharing in Social Network Practice. In *Proceedings of the Seventh International Conference on Management Science and Engineering Management*. Heidelberg, Germany: Springer Berlin, pp. 39–51.

Chow, W.S. & Chan, L.S., 2008. Social network, social trust and shared goals in organizational knowledge sharing. *Information & Management*, 45(7), pp.458–465. Available at: http://linkinghub.elsevier.com/retrieve/pii/S0378720608000888 [Accessed July 18, 2014].

Clarke, A.E. & Frieses, C., 2010. Grounded Theorizing Using Situational Analysis. In A. Bryant & K. C. Charmaz, eds. *The SAGE Handbook of Grounded Theory*. London: Sage Publications Ltd, pp. 363–397.

Clement, S. et al., 2014. What is the impact of mental health-related stigma on help-seeking? A systematic review of quantitative and qualitative studies. *Psychological medicine*, pp.1–17. Available at: http://www.ncbi.nlm.nih.gov/pubmed/24569086 [Accessed July 23, 2014].

Cohen, L., Manion, L. & Morrison, K., 2005. *Research Methods in Education* 5th ed., New York, NY: RoutledgeFalmer.

Corbin, J. & Strauss, A.L., 1990. Grounded Theory Research: Procedures, Canons, and Evaluative Criteria. *Qualitative Sociology*, 13(1), pp.3–21.

Correa, J.M., Leon, M. & Fernandez, L., 2010. Definition of a didactic model for digital media literacy by means of a community narrative of heritage reconstruction and interpretation. *Procedia - Social and Behavioral Sciences*, 9, pp.831–834. Available at: http://linkinghub.elsevier.com/retrieve/pii/S1877042810023487 [Accessed March 14, 2014].

Cowan, R. & Foray, D., 1997. The Economics of Codification and the Diffusion of Knowledge. *Industrial and Corporate Change*, 6(3), pp.595–622. Available at: http://icc.oxfordjournals.org/cgi/doi/10.1093/icc/6.3.595.

Cranfield, D.J., 2011. *Knowledge Management and Higher Education: A UK Case Study using Grounded Theory*.

Creswell, J.W., 2009. *Research Design Qualitative, Quantitative, and Mixed Method Approaches* 3rd ed., Thousand Oaks, CA: Sage Publications.

Creswell, J.W. & Miller, D.L., 2000. Determining Validity in Qualitative Inquiry. *Theory into Practice*, 39(3), pp.124–130.

Creswell, J.W. & Piano Clark, V.L., 2007. *Designing and Conducting Mixed Methods Research*, Sage Publications.

Cross, R.L. & Israelit, S., 2000. *Strategic Learning in a Knowledge Economy: Individual, Collective and Organizational Learning Processes*, Woburn, MA: Butterworth-Heinemann.

Crotty, M.J., 1998. *The Foundations of Social Research: Meaning and Perspective in the Research Process*, Allen & Unwin.

Cunliffe, D., Kritou, E. & Tudhope, D., 2001. Usability Evaluation for Museum Web Sites. *Museum Management and Curatorship*, 19(3), pp.229–252.

Cuno, J. ed., 2012. *Whose Culture? The Promise of Museums and the Debate Over Antiquities*, New Jersey: Princeton University Press.

Cutcliffe, J.R., 2005. Adapt or adopt: developing and transgressing the methodological boundaries of grounded theory. *Journal of advanced nursing*, 51(4), pp.421–8. Available at: http://www.ncbi.nlm.nih.gov/pubmed/16086811.

Danner, F.W. & Lonky, E., 1981. A Cognitive-Developmental Approach to the Effects of Rewards on Intrinsic Motivation. *Child Development*, 52(3), pp.1043–1052.

Davenport, T.H. & Prusak, L., 2000. *Working Knowledge: How Organizations Manage What They Know*, Boston, MA.: Harvard Business School Press.

David, C.C., Ong, J.C. & Legara, E.F.T., 2016. Tweeting Supertyphoon Haiyan: Evolving Functions of Twitter during and after a Disaster Event. Available at: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4809515/ [Accessed April 14, 2016].

Dawson, R., 2012. *Getting Results From Crowds: The definitive guide to using crowdsourcing to grow your business* 2nd ed., San Francisco, CA.: Advanced Human Technologies.

Deci, E.L., 1971. Effects of externally mediated rewards on intrinsic motivation. *Journal of Personality and Social Psychology*, 18(1), pp.105–115.

Deci, E.L., 1975. *Intrinsic Motivation*, Plenum Publishing Company Ltd.

Deci, E.L. et al., 2001. Need Satisfaction, Motivation, and Well-Being in the Work Organizations of a Former Eastern Bloc Country: A Cross-Cultural Study of Self-Determination. *Personality and Social Psychology Bulletin*, 27, pp.930–942.

Deci, E.L., 1976. Notes on the Theory and Metatheory of Intrinsic Motivation. *Organizational Behavior and Human Performance*, 15, pp.130–145.

Deci, E.L., Koestner, R. & Ryan, R.M., 1999. A Meta-Analytic Review of Experiments Examining the Effects of Extrinsic Rewards on Intrinsic Motivation. *Psychological Bulletinulletin*, 125(6), pp.627–668.

Deci, E.L. & Ryan, R.M., 1985a. *Intrinsic Motivation and Self-Determination in Human Behavior*, New York, NY: Plenum Press. Available at: https://books.google.co.uk/books?id=p96Wmn-ER4QC&printsec=frontcover&dq=deci+ryan+intrinsic+motivation&hl=en&sa=X&ei=cHrUVLf4LcfY7AaP54HYAg&ved=0CCIQ6AEwAA#v=onepage&q=deci ryan intrinsic motivation&f=false.

Deci, E.L. & Ryan, R.M., 1985b. The General Causality Orientations Scale: Self-Determination in Personality. *Journal of Research in Personality*, 19, pp.109–134.

Deng, X., Joshi, K.D. & Galliers, R.D., 2016. The Duality of Empowerment and Marginalization in Microtask Crowdsourcing: Giving Voice To the Less Powerful Through Value Sensitive Design. *MIS Quarterly*, 40(No. 2 Special Issue: ICT and Societal Challenges), pp.279–302.

Denscombe, M., 2004. *The Good Research Guide* 2nd ed., Maidenhead, Berks: McGraw-Hill Education.

Denzin, N.K., 2002. The Cinematic Society and The Reflexive Interview. In F. Holstein & J. A. Gubrium, eds. *Handbook of Interview Research*. Thousand Oaks, CA: Sage Publications, Inc., pp. 833–847.

Denzin, N.K. & Lincoln, Y.S., 2003a. The Discipline and Practice of Qualitative Research. In N. K. Denzin & Y. S. Lincoln, eds. *The Landscape of Qualitative Research. Theories and Issues*. Thousand Oaks, CA: Sage Publications, Inc., pp. 1–45.

Denzin, N.K. & Lincoln, Y.S. eds., 2003b. *The Landscape of Qualitative Research: Theories and Issues*, Thousand Oaks, CA: Sage Publications, Inc.

Denzin, N.K. & Lincoln, Y.S., 2005. *The Sage Handbook of Qualitative Research* 3rd ed., Thousand Oaks, CA: Sage Publications.

Dey, I., 1993. *Qualitative Data Analysis: A User-Friendly Guide for Social Scientists*, London: Routledge. Available at: http://www.classmatandread.net/class/785wk3/Qualitative\_data\_analysis.pdf.

Dholakia, U.M., Bagozzi, R.P. & Pearo, L.K., 2004. A social influence model of consumer participation in network- and small-group-based virtual communities. *International Journal of Research in Marketing*, 21(3), pp.241–263.

Diaz Andrade, A., 2007. *Interaction between Existing Social Networks and Information and Communication Technology (ICT) Tools: Evidence from Rural Andes*.

van Dijck, J., 2010. Flickr and the culture of connectivity: Sharing views, experiences, memories. *Memory Studies*, 4(4), pp.401–415. Available at: http://mss.sagepub.com/cgi/doi/10.1177/1750698010385215 [Accessed October 21, 2013].

Din, H. & Hecht, P., 2007. Preparing the Next Generation of Museum Professionals. In H. Din & P. Hecht, eds. *The Digital Museum: A Think Guide*. Washington, DC: American Association of Museums, pp. 9–17.

DiPalantino, D. & Vojnovic, M., 2009. Crowdsourcing and All-Pay Auctions. In *Proceedings of the tenth ACM conference on Electronic commerce - EC ’09*. New York, New York, USA: ACM Press, pp. 1–16. Available at: http://portal.acm.org/citation.cfm?doid=1566374.1566392.

Dobreva, M., Jennings, E. & Devreni-Koutsouki, A., 2015. Citizen Science and Digital Cultural Heritage: Potential for Wider Engagement with the General Public. In *Proc. Cultural Heritage Communities: Technologies and Challenges -- Workshop at Communities and Technologies 2015*.

Doherty, G., Karamanis, N. & Luz, S., 2012. Collaboration in translation: The impact of increased reach on cross-organisational work. *Computer Supported Cooperative Work*, 21, pp.525–554.

Donovan, J. et al., 2002. Improving design and conduct of randomised trials by embedding them in qualitative research: ProtecT (prostate testing for cancer and treatment) study. *British Medical Journal*. Available at: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1124277/.

Dowden, R. & Sayre, S., 2007. The Whole World in Their Hands: The Promise and Peril of Visitor-Provided Mobile Devices. In H. Din & P. Hecht, eds. *The Digital Museum: A Think Guide*. Washington, DC: American Association of Museums, pp. 35–44.

Downes, S., 2005. E-learning 2.0. *eLearn Magazine*. Available at: http://elearnmag.acm.org/featured.cfm?aid=1104968.

Drotner, K. & Schroder, K.C., 2013. Introduction. In K. Drotner & K. C. Schroder, eds. *Museum Communication and Social Media*. New York, NY: Routledge, pp. 1–32.

Drucker, P.F., 1973. *Management: Tasks, Responsibilites, Practices*, New York, NY: Harper & Row, Publishers, Inc.

Dubini, P. & Aldrich, H., 1991. Personal and extended networks are central to the entrepreneurial process. *Journal of Business Venturing*, 6(5), pp.305–313.

Dunn, S. & Hedges, M., 2014. How the Crowd Can Suprise Us: Humanities Crowdsourcing and the Curation of Knowledge. In M. Ridge, ed. *Crowdsourcing our Cultural Heritage*. Farnham, Hants: Ashgate Publishing Ltd, pp. 231–246.

Dyer, J.H. & Nobeoka, K., 2000. Creating and Managing a High-Performance Knowledge-Sharing Network: The Toyota Case. *Strategic Management Journal*, 21(3), pp.345–367.

Earle, F., 2014. *Crowdsourcing Metadata for Library and Museum Collections using a Taxonomy of Flickr User Behavior*.

Egghe, L., 1991. Theory of Collaboration and Collaborative Measures. *Information Processing & Management*, 27, pp.177–202.

Eisenhardt, K.M., 1989. Building Theories from Case Study Reseach. *Academy of Management Review*, 14(4), pp.532–550.

Eisner, E.W., 1991. *The Enlightened Eye: Qualitative Inquiry and the Enhancement of Educational Practice*, New York, NY: Macmillan.

Ellis, S., 2014. A History of Collaboration, a Future in Crowdsourcing: Positive Impacts of Cooperation on British Librarianship. *Libri*, 64(June 2012), pp.1–10. Available at: http://www.degruyter.com/view/j/libr.2014.64.issue-1/libri-2014-0001/libri-2014-0001.xml.

Ellonen, H.-K., Kosonen, M. & Henttonen, K., 2011. Sense of Virtual Community. In *Virtual Communities: Concepts, Methodologies, Tools and Applications (4 Volumes)*. Information Resources Management Association, pp. 1821–1822.

Emerson, R.M., Fretz, R.I. & Shaw, L.L., 2011. *Writing Ethnographic Fieldnotes* 2nd ed., Chicago, Illinois: The University of Chicago Press. Available at: https://books.google.co.uk/books?hl=en&lr=&id=k83BlbBHubAC&oi=fnd&pg=PT3&dq=accuracy+of+field+notes&ots=eMXujmlDRi&sig=yxIvoNb34qwfc-x7lfT0a6krhVQ#v=onepage&q=accuracy of field notes&f=false.

Engström, T.E.J., 2003. Sharing knowledge through mentoring. *Performance Improvement*, 42(8), pp.36–42.

Eschenfelder, K.R. & Caswell, M., 2010. Digital Cultural Collections in an Age of Reuse and Remixes. *First Monday: Peer-Reviewed Journal on the Internet*, 15(11). Available at: http://pear.accc.uic.edu/ojs/index.php/fm/article/view/3060/2640.

Estelles-Arolas, E. & Gonzalez-Ladron-de-Guevara, F., 2012. Towards an integrated crowdsourcing definition. *Journal of Information Science*, 38(2), pp.189–200. Available at: http://jis.sagepub.com/cgi/doi/10.1177/0165551512437638 [Accessed March 21, 2014].

Eveleigh, A., 2014. Crowding Out the Archivist? Locating Crowdsourcing within the Broader Landscape of Participatory Archives. In M. Ridge, ed. *Crowdsourcing our Cultural Heritage*. Farnham, Surrey: Ashgate Publishing Ltd, pp. 211–229.

Falk, J.H. & Sheppard, B.K., 2006. *Thriving in the Knowledge Age: New Business Models for Museums and Other Cultural Institutions*, Oxford, Oxon: Altamira Press.

Faraj, S. & Azad, B., 2012. The Materiality of Technology: An Affordance Perspective. In P. M. Leonardi, B. A. Nardi, & J. Kallinikos, eds. *Materiality and Organizing: Social Interaction in a Technological World*. Oxford, Oxon: Oxford University Press, pp. 237–258.

Faraj, S., Kudaravalli, S. & Wasko, M.M., 2015. Leading Collaboration in Online Communities. *MIS Quarterly*, 39(2), pp.393–412.

Farzan, R. et al., 2012. Socializing Volunteers in an Online Community: A Field Experiment. In *Computer Supported Cooperative Work (CSCW)*. pp. 325–334.

Feldman, M.S., Bell, J. & Berger, M.T., 2003. *Gaining Access: A Practical and Theoretical Guide for Qualitative Researchers*, Walnut Creek, CA.: AldineTransaction.

Fernandez, W.D., 2004. Using the Glaserian Approach in Grounded Studies of Emerging Business Practices. *Electronic Journal of Business Research Methods*, 2(2), pp.83–94.

Firestone, W.A., 1987. Meaning in the Method: The Rhetoric of Quantitative and Qualitative Research. *Educational Researcher*, 16(7), pp.16–21.

Fischer, E. & Reuber, A.R., 2011. Social interaction via new social media: (How) can interactions on Twitter affect effectual thinking and behavior? *Journal of Business Venturing*, 26(1), pp.1–18. Available at: http://dx.doi.org/10.1016/j.jbusvent.2010.09.002.

Fisher, C.D., 1978. The Effects of Personal Control, Competence, and Extrinsic Reward Systems on Intrinsic Motivation. *Organizational Behavior and Human Performance*, 21, pp.273–288.

Fletcher, A. & Lee, M.J., 2012. Current social media uses and evaluations in American museums. *Museum Management and Curatorship*, 27(5), pp.505–521. Available at: http://www.tandfonline.com/doi/abs/10.1080/09647775.2012.738136 [Accessed January 21, 2014].

Flick, U., 2014. *An Introduction to Qualitative Research* 5th ed., London: Sage Publications Ltd.

Foster, L.W. & Hamner, W.C., 1974. Are Intrinsic and Extrinsic Rewards Additive: A Test of Deci’s Cognitive Theory of Task Motivation. *Academy of Management Proceedings*, 8, pp.46–46.

Foucault, M. & Deleuze, G., 1977. Intellectuals and Power. In D. F. Bouchard, ed. *Language, Counter-Memory, Practice: Selected Essays and Interviews*. Ithasca: Cornell University Press, pp. 205–217.

Freeman, A. ed., 2013. *Horizon Report > 2013 Museum Edition*, Austin, Texas: New Media Consortium.

Frisch, M., 2011. From A Shared Authority to the Digital Kitchen, and Back. In B. Adair, B. Filene, & Kolosk, eds. *Letting Go? Sharing Historical Authority in a User-Generated World*. Philadelphia, PA: The Pew Center for Arts & Heritage.

Furlong, M.S., 1989. An Electronic Community for Older Adults: The SeniorNet Network. *Journal of Communication*, 39(3), pp.145–153.

Gagné, M., 2009. A Model of Knowledge-Sharing Motivation. *Human Resource Management*, 48(4), pp.571–589.

Gagné, M. & Deci, E.L., 2005. Self-determination theory and work motivation. *Journal of Organization Behavior*, 26, pp.331–362.

Gagné, M., Koestner, R. & Zuckerman, M., 2000. Facilitating acceptance of organizational change: The importance of self-determination. *Journal of Applied Social Psychology*, 30, pp.1843–1852.

Gallaugher, J. & Ransbotham, S., 2010. Getting Customers’ Ideas to Work for You: Learning from Dell how to Succeed with Online User Innovation Communities. *MIS Quarterly*, 9(4), pp.197–212.

Gallivan, M.J., 1997. Value in Triangulation: A Comparison of Two Approaches for Combining Qualitative and Quantitative Methods. In A. S. Lee & J. Liebenau, eds. *Information Systems and Qualitative Research*. Springer US.

Gamboni, D., 2011. World Heritage: Shield or Target? *The Getty Conservation Institute Newsletter*. Available at: http://www.getty.edu/conservation/publications\_resources/newsletters/16\_2/feature.html.

Ganley, D. & Lampe, C., 2009. The ties that bind: Social network principles in online communities. *Decision Support Systems*, 47(3), pp.266–274. Available at: http://linkinghub.elsevier.com/retrieve/pii/S0167923609000591 [Accessed January 12, 2015].

Gao, J. et al., 2016. Mining Reliable Information from Passively and Actively Crowdsourced Data. In *KDD ’16*. pp. 1–2.

Gates, J., 2010. Clearing the Path for Sisyphus: How Social Media is Changing Our Jobs and Our Working Relationships. In *Museums and the Web*. Toronto. Available at: http://www.museumsandtheweb.com/mw2010/papers/gates/gates.html.

Geiger, D., Rosemann, M. & Fielt, E., 2011. Crowdsourcing Information Systems – A Systems Theory Perspective. In *22nd Australasian Conference on Information Systems*. Available at: http://link.springer.com/chapter/10.1007/978-3-642-31095-9\_30\nhttp://eprints.qut.edu.au/47466/.

Gerson, E.M., 2008. Reach, Bracket, and the Limits of Rationalized Coordination: Some Challenges for CSCW. In M. S. Ackerman et al., eds. *Resources, Co-Evolution and Artifacts*. London: Spring, pp. 193–220. Available at: http://link.springer.com/content/pdf/10.1007/978-1-84628-901-9\_8.pdf.

Gibson, J.J., 1954. The Visual Perception of Objective Motion and Subjective Movement. *Psychological review*, 61(5), pp.304–314.

Giddens, A., 1989. Hermeneutics and Social Theory. In G. Shapiro & A. Sica, eds. *Hermeneutics: Questions and Prospects*. Massachusetts: University of Massachusetts Press, pp. 215–230. Available at: http://books.google.co.uk/books?hl=en&lr=&id=Um8\_u0wY4rsC&oi=fnd&pg=PA215&dq=double+hermeneutic+giddens&ots=FAJfYIjpQd&sig=-GMzNihRfOUNFlreeomwtAkCHMA#v=onepage&q=double hermeneutic giddens&f=false.

Giddens, A., 1976. *New Rules of Sociological Method*, London: Hutchinson & Co (Pubishers) Ltd.

Giddens, A., 1984. *The Constitution of Society: Outline of the Theory of Structuration*, Malden, MA: Polity Press. Available at: http://www.amazon.co.uk/The-Constitution-Society-Outline-Structuration/dp/0745600077/ref=sr\_1\_1?ie=UTF8&qid=1410951528&sr=8-1&keywords=structuration+theory.

Giles, J., 2005. Special Report Internet encyclopaedias go head to head. *Nature*. Available at: http://www.nature.com/nature/journal/v438/n7070/full/438900a.html.

Gioia, D.A., Corley, K.G. & Hamilton, A.L., 2012. Seeking Qualitative Rigor in Inductive Research. *Organizational Research Methods*, 16(1), pp.15–31.

Glaser, B.G., 2002. Constructivist Grounded Theory? *Qualitative Social Research*, 3(3).

Glaser, B.G., 1992. *Emergence Vs. Forcing: Basics of Grounded Theory Analysis*, Sociology Press.

Glaser, B.G., 1978. *Theoretical Sensitivity: Advances in the methodology of grounded theory*, Mill Valley, CA: The Sociology Press.

Glaser, B.G. & Strauss, A.L., 1967. *The Discovery of Grounded Theory: Strategies for Qualitative Research* 3rd ed., New Jersey: AldineTransaction.

Goffman, E., 1974. *Frame Analysis*, Harmondsworth, Middlesex: Penguin Books Ltd.

Goulding, C., 2002. *Grounded Theory: A Practical Guide for Management, Business and Marketing Researchers*, London: Sage Publications Ltd.

Goulding, C., 2000. The museum environment and the visitor experience environment. *European Journal of Marketing*, 34(3), pp.261–278.

Grabill, J.T., Pigg, S. & Wittenauer, K., 2009. Take two: a study of the co-creation of knowledge on museum 2.0 sites. Available at: http://www.archimuse.com/mw2009/papers/grabill/grabill.html.

Graham, B., 2002. Heritage as Knowledge: Capital or Culture ? *Urban Studies*, 39(5-6), pp.1003–1017.

Grams, C., 2010. Why the open source way trumps the crowdsourcing way. *opensource.com*. Available at: http://opensource.com/business/10/4/why-open-source-way-trumps-crowdsourcing-way.

Grant, R.M., 1996. Toward a knoweldge-based theory of the firm. *Strategic Management Journal*, 17(Winter Special Issue), pp.109–122.

Gray, B., 1989. *Collaborating: Finding Common Ground for Multiparty Problems*, San Francisco, CA.: Jossey-Bass.

Greene, J.C., 2007. *Mixed Methods in Social Inquiry*, San Francisco, CA.: John Wiley & Sons, Inc.

Greene, J.C., Caracelli, V.J. & Graham, W.F., 1989. Toward a Conceptual Framework for Mixed-Method Evaluation Designs. *Eduactional Evaluation and Policy Analysis*, 11(3), pp.255–274.

Greenhill, A. et al., 2014. Playing With Science: Gamised Aspects of Gamification Found on the Online Citizen Science Project - Zooniverse. *Game-On*, pp.15–24. Available at: http://eprints.port.ac.uk/15648/1/COXj\_2014\_cright\_GO\_Playing\_with\_science.pdf\nhttp://www.eurosis.org/cms/?q=taxonomy/term/58#GAMEON.

Gregor, S., 2006. The Nature of Theory in Information Systems. *MIS Quarterly*, 30(3), pp.611–642.

Griffith, T.L., Sawyer, J.E. & Neale, M.A., 2003. Virtualness and Knowledge in Teams: Managing the Love Triangle of Organizations, Individuals, and Information Technology. *MIS Quarterly*, 27(2), pp.265–287.

Grinter, R.E. et al., 2002. Revisiting the Visit: Understanding How Technology Can Shape the Museum Visit. In *ACM conference on Computer supported cooperative work*. pp. 323–332.

Guba, E.G., 1990. *The paradigm dialog* E. G. Guba, ed., Newbury Park, CA: Sage Publications.

Guba, E.G. & Lincoln, Y.S., 1994. Competing Paradigms in Qualitative Research. In N. K. Denzin & Y. S. Lincoln, eds. *Handbook of Qualitative Research 2*. Sage Publications, pp. 105–117. Available at: http://elisa1.ugm.ac.id/files/PSantoso\_Isipol/FyBFBvRa/bab 6 denzin (ed.).pdf.

Gupta, D.K. & Sharma, V., 2013. Exploring crowdsourcing: a viable solution towards achieving rapid and qualitative tasks. *Library Hi Tech News*, 30(2), pp.14–20. Available at: http://www.emeraldinsight.com/10.1108/LHTN-01-2013-0002 [Accessed February 2, 2014].

Gupta, S. & Hee-Woong, K., 2004. Virtual community: Concepts, implications, and future research directions. *Proceedings of the tenth Americas conference on Information Systems*, (August), pp.2679–2687. Available at: http://www.hsw-basel.ch/iwi/publications.nsf/8cb05fe34834b7d4c12572180031b48b/77ff047d5dbfae6cc125722e002923bf/$FILE/SIGEBZ05-1115.pdf\nhttp://www.researchgate.net/publication/228819308\_Virtual\_community\_Concepts\_implications\_and\_future\_research\_direction.

Gurian, E.H., 1999. What is the Object of this Exercise? A Meandering Exploration of the Many Meanings of Objects in Museums. *America’s Museums*, 128(3), pp.163–183. Available at: http://www.jstor.org/stable/20027571?seq=1#page\_scan\_tab\_contents.

Hagedorn-Saupe, M., Kampschulte, L. & Noschka-Roos, A., 2013. Informal, Participatory Learning with Interactive Exhibit Settings and Online Services. In K. Drotner & K. C. Schroder, eds. *Museum Communication and Social Media*. New York, NY: Routledge, pp. 111–129.

Haig, B.D., 1995. Grounded Theory as Scientific Method. *Philosophy of Education*, 28(1), pp.1–11.

Haldin-Herrgard, T., 2000. Difficulties in diffusion of tacit knowledge in organizations. *Intellectual Capital*, 1(4), pp.357–365.

Hamma, K., 2004. Becoming Digital. *Bulletin of the American Society for Information Science and Technology*, 30(5), pp.11–13. Available at: http://www.asis.org/Bulletin/Jun-04/hamma.html.

Hammon, L. & Hippner, H., 2012. Crowdsourcing. *Business & Information Systems Engineering*, 4(3), pp.163–166. Available at: http://link.springer.com/10.1007/s12599-012-0215-7 [Accessed February 3, 2014].

Han, K. et al., 2014. Enhancing community awareness of and participation in local heritage with a mobile application. In *CSCW ’14*. Baltimore, Maryland: ACM Press, pp. 1144–1155. Available at: http://dl.acm.org/citation.cfm?doid=2531602.2531640.

Hanneman, R.A. & Riddle, M., 2005. *Introduction to Social Network Methods*, Available at: http://www.faculty.ucr.edu/~hanneman/.

Hansen, K.V., 2014. *Crowdsourcing Platform for Museums*.

Hansen, M.T., Nohria, N. & Tierney, T., 1999. What’s Your Strategy for Managing Knowledge? *Harvard Business Review*, (March-April).

Haralambos, M. & Holborn, M., 2008. *Sociology Themes and Perspectives* 7th ed., London: HarperCollins Publishers Ltd.

Hardaker, G. & Singh, G., 2011. The adoption and diffusion of eLearning in UK universities: A comparative case study using Giddens’s Theory of Structuration. *Campus-Wide Information Systems*, 28(4), pp.221–233. Available at: http://www.emeraldinsight.com/10.1108/10650741111162707 [Accessed April 28, 2014].

Hardt, M. & Negri, A., 2000. *Empire*, Cambridge, Mass: Harvard University Press. Available at: http://www.tek.uni-corvinus.hu/files/szovegek/hardt\_negri\_birodalom\_eloszo.pdf.

Hargrave, J. & Mistry, R., 2013. *Museums in the Digital Age*, London. Available at: http://www.arup.com/Publications/Museums\_in\_the\_Digital\_Age.aspx.

Harindranath, G., Bernroider, E.W.N. & Kamel, S.H., 2015. Social Media and Social Transformation Movements: the Role of Affordances and Platforms. *Proceedings of the European Conference on Information Systems*, Paper 73, pp.1–13.

Hars, A. & Ou, S., 2002. Working for Free? Motivations for Participating in Open-Source Projects. *International Journal of Electronic Commerce*, 6(3), pp.25–39.

Hartley, J., 2012. Case Study Research. In G. Symon & C. Cassell, eds. *Qualitative Organizational Research: Core Methods and Current Challenges*. London: Sage Publications Ltd.

Hedesstrom, T. & Whitley, E.A., 2000. What is meant by tacit knowledge? Towards a better understanding of the shape of actions. In *ECIS*. pp. 1–6.

Hedlund, G., 1994. A Model of Knowledge Management and the N-Form Corporation. *Strategic Management Journal*, 15(Special Issue: Strategy: Search for New Paradigms), pp.73–90.

Hein, G.E., 1998. *Learning in the Museum (Museum Meanings)*, London: Routledge.

Hendriks, P., 1999. Why share knowledge? The influence of ICT on the motivation for knowledge sharing. *Knowledge and Process Management*, 6(2), pp.91–100.

Hickman, L.A., 1999. Dewey: Pragmatic technology and community life. In S. B. Rosenthal, C. R. Hausman, & D. R. Anderson, eds. *Classical American Pragmatism: Its Contemporary Vitality*. Illinois: University of Chicago Press, pp. 99–119.

Hildreth, P., Wright, P. & Kimble, C., 1999. Knowledge Management: Are We Missing Something? In *4th UKAIS Conference*. York, pp. 347–356.

von Hippel, E., 1994. “Sticky Information” and the Locus of Problem Solving: Implications for Innovation. *Management Science*, 40(4), pp.429–439.

Hirschheim, R.A., 1985. Information Systems Epistemology: An Historical Perspective. In *Research methods in information systems*. pp. 13–35.

Hirschheim, R.A. & Klein, H.K., 2012. A Glorious and Not-So-Short History of the Information Systems Field. *Journal of the Association for Information Systems*, 13(4), pp.188–235.

Hirschheim, R.A. & Klein, H.K., 1989. Four Paradigms of Information Systems Development. *Communications of the ACM*, 32(10), pp.1199–1216.

Hislop, D., 2003. Linking human resource management and knowledge management via commitment: A review and research agenda. *Employee Relations*, 25(2), pp.182–202. Available at: http://www.emeraldinsight.com/doi/abs/10.1108/01425450310456479 [Accessed January 7, 2015].

Hjørland, B., 1998. Theory and Metatheory of Information Science: A New Interpretation. *Journal of Documentation*, 54(5), pp.606–621. Available at: http://www.emeraldinsight.com/10.1108/EUM0000000007183.

Hoadley, C. & Pea, R.D., 2002. Finding the Ties That Bind: Tools in Support of a Knowledge-Building Community. In K. A. Renninger & W. Shumar, eds. *Building Virtual Communities: Learning and Change in Cyberspace*. Cambridge, UK: Cambridge University Press, pp. 321–354.

Holley, R., 2010. Crowdsourcing: How and Why Should Libraries Do It? *D-lib Magazine*, 16(3/4). Available at: http://www.dlib.org/dlib/march10/holley/03holley.html.

Holstein, J.A. & Gubrium, J.F., 1997. Active interviewing. In *Qualitative research: theory, method and practice*. Sage Publications, pp. 113–129.

Honeysett, N., 2007. Reach More and Earn More: Connecting with Audiences Online. In H. Din & P. Hecht, eds. *The Digital Museum: A Think Guide*. Washington, DC: American Association of Museums, pp. 147–155.

Hooper-Greenhill, E., 2000. Changing Values in the Art Museum: rethinking communication and learning. *International Journal of Heritage Studies*, 6(1), pp.9–31. Available at: http://www.tandfonline.com/doi/abs/10.1080/135272500363715 [Accessed May 7, 2014].

Hooper-Greenhill, E., 1999. *The Educational Role of the Museum* 2nd ed., London: Routledge. Available at: https://books.google.co.uk/books?hl=en&lr=&id=-3\_9K-TcPiwC&oi=fnd&pg=PR10&dq=hooper+greenhill+educational&ots=oRBAe3QAEk&sig=6dXFdR4nqrlc\_IIr7\_Z9-6E1fkw#v=onepage&q=hooper greenhill educational&f=false.

Horton, J.J. & Chilton, L.B., 2010. The Labor Economics of Paid Crowdsourcing. In *Proceedings of the 11th ACM conference on Electronic commerce*. pp. 1–10.

Howard, P., 2003. *Heritage: Management, Interpretation, Identity*, London: Continuum.

Howe, J., 2006a. Crowdsourcing: A Definition. *Crowdsourcing.com*. Available at: http://www.crowdsourcing.com/cs/2006/06/crowdsourcing\_a.html.

Howe, J., 2008. *Crowdsourcing: How the Power of the Crowd is Driving the Future of Business*, London: Random House Business Books.

Howe, J., 2006b. The Rise of Crowdsourcing. *Wired Magazine*, (14), pp.1–5. Available at: http://www.clickadvisor.com/downloads/Howe\_The\_Rise\_of\_Crowdsourcing.pdf.

Howe, K.R., 1988. Against the Quantitative-Qualitatvie Incompatibility Thesis or Dogmas Die Hard. *Educational Researcher*, 17(8), pp.10–16.

Howes, D.S., 2007. Why the Internet Matters: A Museum Educator’s Perspective. In H. Din & P. Hecht, eds. *The Digital Museum: A Think Guide*. Washington, DC: American Association of Museums, pp. 67–78.

Howison, J. & Crowston, K., 2014. Collaboration Through Open Superposition: A Theory of the Open Source Way. *MIS Quarterly*, 38(1), pp.29–50.

Hsu, M.-H. et al., 2007. Knowledge sharing behavior in virtual communities: The relationship between trust, self-efficacy, and outcome expectations. *International Journal of Human-Computer Studies*, 65(2), pp.153–169. Available at: http://linkinghub.elsevier.com/retrieve/pii/S1071581906001431 [Accessed July 11, 2014].

Huang, P., Tafti, A. & Mithas, S., 2012. Knowledge contribution in online network of practice: The role of IT infrastructure, foreign direct investment and immigration. In *33rd International Conference on Information Systems*. pp. 1–18.

Huang, P. & Zhang, Z., 2016. Participation in Open Knowledge Communities and Job-Hopping: Evidence from Enterprise Software. *MIS Quarterly*, 40(3), pp.785–806.

Huberman, B.A., Romero, D.M. & Wu, F., 2009. Crowdsourcing , Attention and Productivity. *Journal of Information Science*, pp.1–10.

Hutchinson, S., 1988. Education and Grounded Theory. In R. R. Sherman & R. B. Webb, eds. *Qualitative Research in Education: Focus and Methods (Explorations in ethnography)*. Oxford, Oxon: Routledge.

Ilardi, B.C. et al., 1993. Employee and Supervisor Ratings of Motivation: Main Effects and Discrepancies Associated with Job Satisfaction and Adjustment in a Factory Setting. *Journal of Applied Social Psychology*, 23(21), pp.1789–1805.

Jackson, C.B. & Østerlund, C., 2015. Motivations for Sustained Participation in Crowdsourcing: Case Studies of Citizen science on the Role of Talk. In *Proceedings of the Annual Hawaii International Conference on System Sciences*. pp. 1624–1634.

Jain, R., 2010. Investigation of Governance Mechanisms for Crowdsourcing Initiatives. In *Americas Conference on Information Systems*.

Jarvenpaa, S.L. & Tuunainen, V.K., 2013. How Finnair Socialized Customers for Service Co-Creation with Social Media. *MIS Quarterly Executive*, 12(3), pp.125–136. Available at: http://search.ebscohost.com/login.aspx?direct=true&db=bth&AN=90083194&site=ehost-live.

Jick, T.D., 1979. Mixing Qualitative and Quantitative Methods: Triangulation in Action. *Administrative Science Quarterly*, 24(4), pp.602–611.

Johnson, J.M., 2002. In-Depth Interviewing. In J. F. Gubrium & J. A. Holstein, eds. *Handbook of Interview Research: Context & Method*. Thousand Oaks, CA: Sage Publications, Inc., pp. 103–119.

Johnson, R.B. & Onwuegbuzie, A.J., 2004. Mixed Methods Research: A Research Paradigm Whose Time Has Come. *Educational Researcher*, 33(7), pp.14–26. Available at: http://edr.sagepub.com/cgi/doi/10.3102/0013189X033007014 [Accessed May 23, 2014].

Jones, M.R. & Karsten, H., 2008. Gidden’s Structuration Theory and Information Systems Research. *MIS Quarterly*, 32(1), pp.127–157.

Jung, C., Tsou, M. & Issa, E., 2015. Developing a Real-time Situation Awareness Viewer for Monitoring Disaster Impacts Using Location-Based Social Media Messages in Twitter. In *International Conference on Location-Based Social Media Data*. pp. 1–5.

Kane, G.C., Labianca, G.J. & Borgatti, S.P., 2014. What’s Different about Social Media Networks? A Framework and Research Agenda. *MIS Quarterly*, 38(1), pp.275–304.

Kankanhalli, A., Tan, B.C.Y. & Wei, K.-K., 2005. Contributing Knowledge to Electronic Knowledge Repositories: An Emprical Investigation. *MIS Quarterly*, 29(1), pp.113–143.

Kaplan, A.M. & Haenlein, M., 2010. Users of the world, unite! The challenges and opportunities of Social Media. *Business Horizons*, 53(1), pp.59–68. Available at: http://linkinghub.elsevier.com/retrieve/pii/S0007681309001232 [Accessed October 17, 2013].

Kaplan, B. & Maxwell, J.A., 2005. Qualitative Research Methods for Evaluating Computer Information Systems. In *Evaluating the Organizational Impact of Healthcare Information Systems*. New York, NY: Springer New York, pp. 30–55.

Kaplan, B. & Maxwell, J.A., 1994. Qualitative Research Methods for Evaluating Computer Information Systems. In J. G. Anderson, C. E. Aydin, & S. J. Jay, eds. *Evaluating Health Care Information Systems: Methods and Applications*. Thousand Oaks, CA: Sage Publications, pp. 45–68.

Kasser, T., Davey, J. & Ryan, R.M., 1992. Motivation and employee-supervisor discrepancies in a psychiatric vocational rehabilitation setting. *Rehabilitation Psychology*, 37(3), pp.175–188.

Kaufmann, N., Schulze, T. & Veit, D., 2011. More than fun and money. Worker Motivation in Crowdsourcing - A Study on Mechanical Turk. *AMCIS*, 11, pp.1–11. Available at: http://www.researchgate.net/publication/220894276\_More\_than\_fun\_and\_money.\_Worker\_Motivation\_in\_Crowdsourcing\_-\_A\_Study\_on\_Mechanical\_Turk/file/9fcfd50e5afe007d78.pdf.

Ke, W. & Zhang, P., 2009. Motivations in Open Source Software Communities: The Mediating Role of Effort Intensity and Goal Commitment. *International Journal of Electronic Commerce*, 13(4), pp.39–66.

Keen, A., 2007a. *The Cult of the Amateur: How today’s internet is killing our culture*, New York, NY: Doubleday.

Keen, A., 2007b. The Cult of the Amateur: How Today’s Internet is Killing our Culture and Assaulting our Economy. *BBC Newsnight Online*. Available at: http://www.bbc.co.uk/blogs/newsnight/2007/06/the\_cult\_of\_the\_amateur\_by\_andrew\_keen.html.

Kelle, U., 2007. “Emergence” vs. “Forcing” of Empirical Data? A Crucial Problem of “Grounded Theory” Reconsidered. *Historical Social Research*, Supplement(19), pp.133–156.

Kelly, L., 2013. The Connected Museum in the World of Social Media. In K. Drotner & K. C. Schroder, eds. *Museum Communication and Social Media*. New York, NY: Routledge, pp. 54–71.

Khatib, R. et al., 2014. Patient and Healthcare Provider Barriers to Hypertension Awareness, Treatment and Follow Up: A Systematic Review and Meta-Analysis of Qualitative and Quantitative Studies. *PloS One 9.1*. Available at: http://dx.plos.org/10.1371/journal.pone.0084238.

Khedhaouria, A., 2013. The influence of team knowledge sourcing on team creativity: Evidences from information system development. *The Learning Organization*, 20(4/5), pp.308–321. Available at: http://www.emeraldinsight.com/10.1108/TLO-10-2012-0063 [Accessed November 25, 2013].

Khuong, L.N., Harindranath, G. & Dyerson, R., 2014. Understanding knowledge management software-organisation misalignments from an institutional perspective: A case study of a global IT-management consultancy. *International Journal of Information Management*, 34(2), pp.226–247. Available at: http://www.sciencedirect.com/science/article/pii/S0268401213001485.

Kidd, A., 1994. The marks are on the knowledge worker. In *Proceedings of the SIGCHI conference on Human Factors in Computing Systems*. pp. 186–199. Available at: http://portal.acm.org/citation.cfm?doid=259963.260346.

Kidd, J., 2011. Enacting engagement online: framing social media use for the museum. *Information Technology & People*, 24(1), pp.64–77. Available at: http://www.emeraldinsight.com/10.1108/09593841111109422 [Accessed October 15, 2013].

Kierkegaard, S., 2010. Twitter thou doeth? *Computer Law & Security Review*, 26(6), pp.577–594. Available at: http://linkinghub.elsevier.com/retrieve/pii/S026736491000141X [Accessed December 4, 2013].

Kincheloe, J.L. & McLaren, P., 2002. Rethinking Critical Theory and Qualitative Research. In Y. Zou & E. T. Trueba, eds. *Ethnography and Schools: Qualitative Approaches to the Study of Education*. Lanham, Maryland: Rowman & Littlefield Publishers, Inc, pp. 87–138.

Kireyev, K., Palen, L. & Anderson, K., 2009. Applications of Topics Models to Analysis of Disaster-Related Twitter Data. *NIPS Workshop on Applications for Topic Models: Text and Beyond*, pp.1–4. Available at: http://www.umiacs.umd.edu/~jbg/nips\_tm\_workshop/15.pdf.

Kitchens, J.D. et al., 2002. Defining History for Library Statistics, or Everything Has a History. *The Journal of Academic Librarianship*, 28(4), pp.211–223.

Klein, D.A., 1998. *The Strategic Management of Intellectual Capital*, Woburn, MA: Butterworth-Heinemann.

Kluge, J., Stein, W. & Licht, T., 2001. *Knowledge Unplugged: The McKinsey Global Survey of Knowledge Management*, Palgrave Macmillan. Available at: http://books.google.co.uk/books?hl=en&lr=&id=YQkHR8UxLjYC&oi=fnd&pg=PA1&dq=Kluge+2001+knowledge+unplugged&ots=ldllf7TbH-&sig=ivVIqhX9i6WMiL3bswwRFaZrXhc#v=onepage&q=Kluge 2001 knowledge unplugged&f=false.

Kollock, P., 1999. *The Economies of Online Cooperation: Gift Exchange and Public Goods in Cyberspace*,

Kristiansen, E. ed., 2012. The Transformative Museum. In *The Transformative Museum*. Odense, Denmark: DREAM - Danish Research Centre on Eduaction and Advanced Media Materials.

von Krogh, G., Ichijo, K. & Nonaka, I., 2000. *Enabling Knowledge Creation: How to Unlock the Mystery of Tacit Knowledge and Release the Power of Innovation*, Oxford, Oxon: Oxford University Press.

Kumar, R., 2012. *Research Methodology: a step-by-step guide for beginners* 3rd ed., London: Sage Publications.

Kunda, S. & Anderson-Wilk, M., 2011. Community Stories and Institutional Stewardship: Digital Curation’s Dual Roles of Story Creation and Resource Preservation. *portal: Libraries and the Academy*, 11(4), pp.895–914. Available at: http://muse.jhu.edu/content/crossref/journals/portal\_libraries\_and\_the\_academy/v011/11.4.kunda.html [Accessed December 23, 2013].

Kvale, S. & Brinkmann, S., 2009. *InterViews: Learning the Craft of Qualitative Research Interviewing* 2nd ed., Thousand Oaks, CA: Sage Publications.

de Laine, M., 2000. *Fieldwork, Participation and Practice: Ethics and Dilemmas in Qualitative Research*, London: Sage Publications.

Lakhani, K. & Wolf, R.G., 2003. Why Hackers Do What They Do: Understanding Motivation and Effort in Free/Open Source Software Projects. *Social Science Research Network*, 49, pp.1–27. Available at: http://www.ssrn.com/abstract=443040.

Lakhani, K.R. & von Hippel, E., 2003. How open source software works: “free” user-to-user assistance. *Research Policy*, 32(July 2002), pp.923–943.

Lampel, J. & Bhalla, A., 2007. The role of status seeking in online communities: Giving the gift of experience. *Journal of Computer-Mediated Communication*, 12, pp.434–455.

Laudon, K.C. & Laudon, J.P., 2006. The Digital Firm: Electronic Business & Electronic Commerce. In *Management Information Systems*. New York, NY: Prentice Hall.

Lave, J. & Wenger, E., 1991. *Situated Learning: Legitimate Peripheral Participation (Learning in Doing: Social, Cognitive and Computational Perspectives)*, New York, NY: Cambridge University Press.

Law, E. & von Ahn, L., 2011. Human Computation. *Synthesis Lectures on Artificial Intelligence and Machine Learning*, 5(3), pp.1–121.

Law, M. et al., 1998. Guidelines for Critical Review of Qualitative Studies. , pp.357–362.

Lebraty, J.-F., 2009. Externalisation ouverte et perennite: une nouvelle etape de la vie des organisations. *Revue Francaise de Gestion*, 35(192), pp.151–166.

Lebraty, J.-F. & Lobre-Lebraty, K., 2013. *Crowdsourcing: One Step Beyond*, London: ISTE Ltd/John Wiley & Sons, Inc.

Leedy, P.D. & Ormrod, J.E., 2001. *Practical Research: Planning and Design* 7th ed., New Jersey, NY: Merrill Prentice Hall.

Lee-kelley, L., Turner, N. & Ward, J., 2014. Intentionally Creating a Community of Practice to Connect Dispersed Technical Professionals. *Managers@Work*, (March-April).

Lehmann, H., 2001. *A Grounded Theory of International Information Systems*.

Leimeister, J.M., 2010. Collective Intelligence. *Business & Information Systems Engineering*, 2(4), pp.245–248. Available at: http://link.springer.com/10.1007/s12599-010-0114-8 [Accessed February 4, 2014].

Leimeister, J.M. et al., 2009. Leveraging Crowdsourcing: Activation-Supporting Components for IT-Based Ideas Competition. *Journal of Management Information Systems*, 26(1), pp.197–224. Available at: http://mesharpe.metapress.com/openurl.asp?genre=article&id=doi:10.2753/MIS0742-1222260108 [Accessed January 28, 2014].

Leonardi, P.M., 2015. Ambient Awareness and Knowledge Acquisition: Using Social Media to Learn “Who Knows What” and “Who Knows Whom.” *MIS Quarterly*, 39(4), pp.747–762.

Leonardi, P.M., 2013. When Does Technology Use Enable Network Change in Organizations? A Comparative Study of Feature Use and Shared Affordances. *MIS Quarterly*, 37(3), pp.749–775.

Lepper, M.R. & Greene, D., 1975. Turning play into work: Effects of adult surveillance and extrinsic rewards on children’s intrinsic motivation. *Journal of Personality and Social Psychology*, 31(3), pp.479–486.

Lerner, J. & Tirole, J., 2002. Some Simple Economics of Open Source. *The Journal of Industrial Economcis*, 50(2), pp.197–234.

Lesser, E. & Prusak, L., 1999. *Communities of Practice, Social Capital and Organizational Knowledge*, Available at: http://providersedge.com/docs/km\_articles/Cop\_-\_Social\_Capital\_-\_Org\_K.pdf.

Levina, N. & Vaast, E., 2008. Innovating or Doing as Told? Status Differences and Overlapping Boundaries in Offshore Collaboration. *MIS Quarterly*, 32(2), pp.307–332.

Lewis, A., 2014. What’s it like for Museum visitors to connect to Wi-Fi on a mobile phone? *Victoria and Albert Museum Website*. Available at: http://www.vam.ac.uk/b/blog/digital-media/mobile-wifi-screens.

Lewis, S., Pea, R. & Rosen, J., 2010. Beyond participation to co-creation of meaning: mobile social media in generative learning communities. *Social Science Information*, 49(3), pp.351–369.

Li, M. & Gao, F., 2003. Why Nonaka highlights tacit knowledge: a critical review. *Journal of Knowledge Management*, 7(4), pp.6–14. Available at: http://www.emeraldinsight.com/doi/abs/10.1108/13673270310492903 [Accessed November 16, 2014].

Li, Z. & Hongjuan, Z., 2011. Research of Crowdsourcing Model Based on Case Study. In *8th International Conference on Service Systems and Service Management (ICSSSM)*. Ieee, pp. 1–5. Available at: http://ieeexplore.ieee.org/lpdocs/epic03/wrapper.htm?arnumber=5959456.

Liebeskind, J.P. et al., 1996. Social networks, Learning, and Flexibility: Sourcing Scientific Knowledge in New Biotechnology Firms. *Organization Science*, 7(4), pp.428–443.

Lin, A.C.H., Fernandez, W.D. & Gregor, S., 2012. Understanding web enjoyment experiences and informal learning: A study in a museum context. *Decision Support Systems*, 53(4), pp.846–858. Available at: http://linkinghub.elsevier.com/retrieve/pii/S0167923612001315 [Accessed October 23, 2013].

Lin, M.-J.J., Hung, S.-W. & Chen, C.-J., 2009. Fostering the determinants of knowledge sharing in professional virtual communities. *Computers in Human Behavior*, 25(4), pp.929–939. Available at: http://dx.doi.org/10.1016/j.chb.2009.03.008.

Lindenberg, S., 2000. It Takes Both Trust and Lack of Mistrust: The Workings of Cooperation and Relational Signaling in Contractual Relationships. *Journal of Management and Governance*, 4(1-2), pp.11–33.

Littlejohn, S.W. & Foss, K.A., 2008. *Theories of Human Communication* 9th ed., Belmont, CA: Thomson Higher Education. Available at: http://www.cengagebrain.com/shop/content/littlejohn95877\_0495095877\_02.01\_chapter01.pdf.

Liu, A.H.Y. et al., 2010. Dulwich OnView: A Museum Blog Run by the Community for the Community. *Museums and the Web*. Available at: http://www.museumsandtheweb.com/mw2010/papers/liu/liu.html.

Livingstone, D.W., 2001. *Adults’ Informal Learning: Definitions, Findings, Gaps, and Future Research.*, Available at: https://tspace.library.utoronto.ca/retrieve/4484/21adultsinformallearni.

Livingstone, D.W., 1999. Exploring the Icebergs of Adult Learning: Findings of the First Canadian Survey of Informal Learning Practices. *Canadian Journal for the Study of Adult Education*, 13(2), p.49. Available at: http://journals.msvu.ca/index.php/cjsae/article/download/2000/1744.

Lukyanenko, R., Wiersma, Y. & Parsons, J., 2016. Is Crowdsourced Attribute Data Useful in Citizen Science? A Study of Experts and Machines. In *Collective Intelligence Conference NYU Stern School of Business from*. pp. 2–4.

Lynd, R.S., 1939. *Knowledge for what?*, Princeton University Press.

Ma, M. & Agarwal, R., 2007. Through a Glass Darkly: Information Technology Design, Identity Verification, and Knowledge Contribution in Online Communities. *Information Systems Research*, 18(1), pp.42–67.

MacArthur, M., 2007. Can Museums Allow Online Users to Become Participants? In H. Din & P. Hecht, eds. *The Digital Museum: A Think Guide*. Washington, DC: American Association of Museums.

MacDonald, G.F. & Alsford, S., 1991. The Museum as Information Utility. *Museum Management and Curatorship*, 10(3), pp.305–311.

Maioline, R. & Naggi, R., 2011. Crowdsourcing and SMEs. In *Information Technology and Innovation Trends in Organizations*. Springer-Verlag, pp. 399–406.

Maione, P. V. & Chenail, R.J., 1999. Qualitative inquiry in psychotherapy: Research on the common factors. In M. A. Hubble, B. L. Duncan, & S. D. Miller, eds. *The heart and soul of change: What works in therapy*. Washington, DC: American Psychological Association, pp. 57–88. Available at: http://psycnet.apa.org/index.cfm?fa=buy.optionToBuy&id=1999-02137-002.

Majchrzak, A., Faraj, S., et al., 2013. The Contradictory Influence of Social Media Affordances on Online Communal Knowledge Sharing. *Journal of Computer-Mediated Communication*, 19(1), pp.38–55. Available at: http://doi.wiley.com/10.1111/jcc4.12030.

Majchrzak, A., Wagner, C. & Yates, D., 2013. The Impact Of Shaping On Knowledge Reuse For Organizational Improvement With Wikis. *MIS Quarterly*, 37(2), pp.455–469.

Malizia, A. et al., 2010. Exploiting Collaborative Tagging Systems to Unveil the User-Experience of Web Contents: An Operative Proposal. In *Web Technologies: Concepts, Methodologies, Tools, and Applications*. London: IGI Global, pp. 1374–1387.

Malone, T.W., Laubacher, R. & Dellarocas, C., 2009. Harnessing Crowds: Mapping the Genome of Collective Intelligence.

Marchi, S., 2010. Hypertinence, Serendipity or Elicitation of Passion for Knowledge? Some Critical Elements of Online Learning by Using Web 2.0 Resources. In *Web Technologies: Concepts, Methodologies, Tools, and Applications*. London: IGI Global, pp. 1628–1641.

Markus, M.L. & Lee, A.S., 1999. Special Issue on Intensive Research in Information Systems: Using Qualitative, Interpretative, and Case Methods to Study Information Technology - Foreward. *MIS Quarterly*, 23(1), pp.35–38.

Markus, M.L. & Lee, A.S., 2000. Special Issue on Intensive Research in Information Systems: Using Qualitative, Interpretive, and Case Study Methods to Study Information Technology - Third Installment; Foreward. *MIS Quarterly*, 24(3), pp.473–474.

Martins, A., Ah Pak, D. & Martins, I., 2013. Communication and Leadership – Dialectical Tensions in Virtual Communities of Practice. *Management - Journal for Theory and Practice Management*, 18(68), pp.23–30. Available at: http://www.management.fon.rs/management/e\_management\_68\_english\_03.pdf [Accessed March 14, 2014].

Marty, P.F., 2007a. Museum Websites and Museum Visitors: Before and After the Museum Visit. *Museum Management and Curatorship*, 22(4), pp.337–360.

Marty, P.F., 2008. Museum Websites and Museum Visitors: Digital Museum Resources and their Use. *Museum Management and Curatorship*, 23(1), pp.81–99.

Marty, P.F., 2011. My lost museum: User expectations and motivations for creating personal digital collections on museum websites. *Library & Information Science Research*, 33(3), pp.211–219. Available at: http://linkinghub.elsevier.com/retrieve/pii/S0740818811000351 [Accessed October 23, 2013].

Marty, P.F., 2007b. The Changing Nature of Information Work in Museums. *Journal of the American Society for Information Technology and Science*, 58(1), pp.97–107.

Marty, P.F. & Kazmer, M.M., 2011. An Introduction to Involving Users. *Library Trends*, 59(4), pp.563–567. Available at: http://muse.jhu.edu/content/crossref/journals/library\_trends/v059/59.4.marty.html [Accessed October 23, 2013].

Marty, P.F., Sayre, S. & Filippini Fantoni, S., 2011. *Personal digital collections: Involving users in the co-creation of digital cultural heritage*, IGI Global.

Marty, P.F., Soren, B.J. & Armstrong, J., 2013. Building community among museum information professionals: a case study of the Museum Computer Network. *Museum Management and Curatorship*, 28(4), pp.394–412. Available at: http://www.tandfonline.com/doi/abs/10.1080/09647775.2013.831249 [Accessed February 17, 2014].

Martz Jr, B. & Shepherd, M.M., 2003. Testing for the Transfer of Tacit Knowledge: Making a Case for Implicit Learning. *Decision Sciences Journal of Innovative Education*, 1(1), pp.41–56.

Maruping, L.M. & Magni, M., 2015. Motivating Employees to Explore Collaboration Technology in Team Contexts. *MIS Quarterly*, 39(1), pp.1–16.

Mason, J., 2002. *Qualitative Researching* 2nd ed., London: Sage Publications.

Masters, K. et al., 2016. Science Learning via Participation in Online Citizen Science. *arXiv preprint arXiv:1601.05973*, p.32. Available at: http://arxiv.org/abs/1601.05973.

Matthews, T. et al., 2012. Productive interrelationships between collaborative groups ease the challenges of dynamic and multi-teaming. *Computer Supported Cooperative Work*, 21, pp.371–396.

Mazzola, D. & Distefano, A., 2010. Crowdsourcing and the participation process for problem solving: the case of BP. In *Proceedings of ItAIS 2010 VII Conference of the Italian Chapter of AIS*.

McDonald, D.W. & Ackerman, M.S., 2000. Expertise Recommender: A Flexible Recommendation System and Architecture. In *CSCW ’00 Proceedings of the 2000 ACM conference on Computer Supported Cooperative Work*. pp. 231–240. Available at: http://portal.acm.org/citation.cfm?id=358916.358994\nhttp://portal.acm.org/citation.cfm?doid=358916.358994.

Mclean, K., 2011. Whose Questions? Whose Conversations? In B. Adair, B. Filene, & L. Koloski, eds. *Letting Go? Sharing Historical Authority in a User-Generated World*. Philadelphia, PA: The Pew Center for Arts & Heritage, pp. 70–79.

Meecham, P., 2013. Social Work: Museums, Technology, and Material Culture. In K. Drotner & K. C. Schroder, eds. *Museum Communication and Social Media*. New York, NY: Routledge, pp. 33–53.

Mendenhall, T. et al., 2014. Advancing Medical Family Therapy Through Qualitative, Quantitative, and Mixed-Methods Research. In J. Hodgson et al., eds. *Medical Family Therapy*. Springer International Publishing, pp. 241–258.

Merriam, S.B., 2002. *Qualitative Research in Practice: Examples for Discussion and Analysis*, San Francisco, CA.: Jossey-Bass.

Merriam, S.B., 1995. What Can You Tell From An N of 1?: Issues of Validity and Reliability in Qualitative Research. *PAACE Journal of Lifelong Learning*, 4, pp.51–60.

Mertins, K., Heisig, P. & Vorbeck, J., 2003. *Knowledge Management: Concepts and Best Practices* 2nd ed., Berlin, Germany: Springer-Verlag. Available at: http://books.google.co.uk/books?hl=en&lr=&id=iqWyQkJjxpkC&oi=fnd&pg=PA1&dq=Mertins+Heisig+Knowledge+management&ots=nuN\_BEAo\_E&sig=iWwqPC6gRmGxmJsStRmTbtAMeYM#v=onepage&q=Mertins Heisig Knowledge management&f=false.

Meskell, L., 2002. Negative Heritage and Past Mastering in Archaeology. *Anthropological Quarterly*, 75(3), pp.557–574. Available at: http://muse.jhu.edu/content/crossref/journals/anthropological\_quarterly/v075/75.3meskell.html [Accessed January 7, 2014].

Miles, M.B. & Huberman, A.M., 1994. *Qualitative Data Analysis* 2nd ed., Thousand Oaks, CA: Sage Publications.

Mills, J., Bonner, A. & Francis, K., 2006. The Development of Constructivist Grounded Theory. *International Journal of Qualitative Methods*, 5(1), pp.25–35. Available at: http://www.ncbi.nlm.nih.gov/pubmed/24877905.

Mills, S.C., 2010. Implementing Collaborative Problem-Based Learning with Web 2.0. In *Web Technologies: Concepts, Methodologies, Tools, and Applications*. London: IGI Global, pp. 1479–1494.

Mitchell, S. ed., 1996. *Object Lessons: Role of Museums in Education*, Edinburgh: Stationery Office Books.

Moghaddam, A., 2006. Coding Issues in Grounded Theory. *Issues in Educational Research*, 16(1), pp.52–66. Available at: http://iier.org.au/iier16/moghaddam.html.

Morrison, K.R.B., 1995. *Habermas and the school curriculum: an evaluation and case study.* Durham University. Available at: http://etheses.dur.ac.uk/972/.

Morse, J.M., 2001. Situating Grounded Theory Within Qualitative Inquiry. In R. S. Schreiber & P. N. Stern, eds. *Using Grounded Theory in Nursing*. New York, NY: Springer.

Mosco, V. & McKercher, C., 2007. Theorizing Knowledge Labor and the Information Society. In *Knowledge Workers in the Information Society*. Plymouth, UK: Lexington Books, pp. vii–xxiv.

Moskaliuk, J. et al., 2011. Evaluation of Social Media Collaboration Using Task-Detection Methods. In *Lecture Notes in Computer Science*. Berlin, Germany: Springer-Verlag, pp. 248–259.

Moura, H. et al., 2012. Collaborative Museums: An Approach to Co-Design. In *CSCW ’12*. Seattle, Washington, pp. 681–684.

Moussouri, T., 2012. Knowledge management for collaborative exhibition development. *Museum Management and Curatorship*, 27(3), pp.253–272. Available at: http://www.tandfonline.com/doi/abs/10.1080/09647775.2012.701996 [Accessed February 17, 2014].

Moyle, M., 2011. Manuscript transcription by crowdsourcing: Transcribe Bentham. *LIBER Quarterly*, 20(3), pp.347–356.

Murphy, G., 2010. *Using Web 2 . 0 tools to facilitate knowledge transfer in complex organisational environments - a primer*,

Myers, M.D., 2013. *Qualitative Research in Business & Management* 2nd ed., Thousand Oaks, CA: Sage Publications.

Myers, M.D., 1997. Qualitative Research in Information Systems. *MIS Quarterly*, 21(June), pp.241–243. Available at: http://www.misq.org/skin/frontend/default/misq/MISQD\_isworld/index.html.

Nagel, J., 2014. *Knowledge: A Very Short Introduction*, Oxford, Oxon: Oxford University Press.

Nardi, B.A., Whittaker, S. & Schwarz, H., 2002. NetWORKers and their Activity in Intensional Networks. *Computer Supported Cooperative Work*, 11, pp.205–242.

Newell, S. et al., 2009. *Managing Knowledge Work and Innovation* 2nd ed., Basingstoke, Hants: Palgrave Macmillan. Available at: http://www.amazon.co.uk/Managing-Knowledge-Work-Innovation-Newell/dp/0230522017/ref=sr\_1\_1?s=books&ie=UTF8&qid=1421067640&sr=1-1&keywords=managing+knowledge+work.

Nonaka, I. & Takeuchi, H., 1995. *The Knowledge-Creating Compnay: How Japanese Companies Create the Dynamics of Innovation*, New York, NY: Oxford University Press. Available at: https://books.google.co.uk/books?hl=en&lr=&id=B-qxrPaU1-MC&oi=fnd&pg=PA3&dq=The+Knowledge-Creating+Compnay:+How+Japanese+Companies+Create+the+Dynamics+of+Innovation&ots=XhTJtvshcY&sig=P44-YR06l20ZzdS2igLKziGvm6Y#v=onepage&q=The Knowledge-Creating Compnay%.

Nonnecke, B., Andrews, D. & Preece, J., 2006. Non-public and public online community participation: Needs, attitudes and behavior. *Electronic Commerce Research*, 6(1), pp.7–20.

Noor, N.L.M., Razali, S. & Adnan, W.A.W., 2010. Digital cultural heritage: Community empowerment via community-based e-museum. *2010 International Conference on Information Society*, pp.542–547. Available at: http://ieeexplore.ieee.org/xpls/abs\_all.jsp?arnumber=6018773.

Noordegraaf, J., Bartholomew, A. & Eveleigh, A., 2014. Modeling Crowdsourcing for Cultural Heritage. *Museums and the Web*, pp.25–37. Available at: http://mw2014.museumsandtheweb.com/papers.

Nooteboom, B. & Bogenrieder, I., 2003. *Change Of Routines: A Multi-Level Analysis*,

Norris, D.M., Mason, J. & Lefrere, P., 2003. *Transforming E-Knowledge: a Revolution in the Sharing of Knowledge*, Society for College and University Planning.

Nuryanti, W., 1996. Heritage and Postmodern Tourism. *Annals of Tourism Research*, 23(2), pp.249–260.

O’Reilly, T., 2005. What is Web 2.0: Design Patterns and Business Models for the Next Generation of Software. *O’Reilly*. Available at: http://oreilly.com/web2/archive/what-is-web-20.html.

O’Riordan, S., Feller, J. & Nagle, T., 2012. Exploring The Affordances Of Social Network Sites: An Analysis Of Three Networks. *European Conference on Information Systems (ECIS)*, pp.1–12.

Oestreicher-singer, G. & Zalmanson, L., 2013. Content or Community? A Digital Business Strategy for Content Providers in the Social Age. *MIS Quarterly*, 37(2), pp.591–616.

Oliver, P., 2004. *Writing Your Thesis*, London: Sage Publications.

Olson, D.L. & Rosacker, K., 2012. Crowdsourcing and open source software participation. *Service Business*, 7(4), pp.499–511. Available at: http://link.springer.com/10.1007/s11628-012-0176-4 [Accessed February 5, 2014].

Onions, P.E.W., 2006. Grounded Theory Applications in Reviewing Knowledge Management Literature. In *Methodological issues and ethical considerations*. pp. 1–20.

Onwuegbuzie, A.J. & Leech, N.L., 2005. Taking the “Q” Out of Research: Teaching Research Methodology Courses Without the Divide Between Quantitative and Qualitative Paradigms. *Quality & Quantity*, 39(3), pp.267–295. Available at: http://link.springer.com/10.1007/s11135-004-1670-0 [Accessed July 16, 2014].

Oomen, J. & Aroyo, L., 2011. Crowdsourcing in the Cultural Heritage Domain: Opportunities and Challenges. In *C&T ’11 Proceedings of the 5th International Conference on Communities and Technologies*. Brisbane, Australia, pp. 138–149.

Orlikowski, W.J. & Baroudi, J.J., 1991. Studying Information Technology in Organizations: Research Approaches and Assumptions. *Information Systems Research*, 2(1), pp.1–28.

Orlikowski, W.J. & Iacono, C.S., 2001. Desperately Seeking the “IT” in IT Research — A Call to Theorizing the IT Artifact. *Information Systems Research*, 12(2), pp.121–134.

Orr, J., 1996. *Talking about machines: An ethnography of a modern job*, New York, NY: Cornell University Press.

Ott, M. & Pozzi, F., 2011. Towards a new era for Cultural Heritage Education: Discussing the role of ICT. *Computers in Human Behavior*, 27(4), pp.1365–1371. Available at: http://linkinghub.elsevier.com/retrieve/pii/S074756321000227X [Accessed February 6, 2014].

Outhwaite, W., 1975. *Understanding social life: The method called Verstehen*, London: Allen & Unwin.

Owens, T., 2014. Making Crowdsourcing Compatible with the Missions and Values of Cultural Heritage Organisations. In M. Ridge, ed. *Crowdsourcing our Cultural Heritage*. Farnham, Surrey: Ashgate Publishing Ltd, pp. 269–280.

Padilla-Meléndez, A. & del Águila-Obra, A.R., 2013. Web and social media usage by museums: Online value creation. *International Journal of Information Management*, 33(5), pp.892–898. Available at: http://linkinghub.elsevier.com/retrieve/pii/S026840121300090X [Accessed October 23, 2013].

Page, R., 2014. Hoaxes, hacking and humour: analysing impersonated identity on social network sites. In P. Seargeant & C. Tagg, eds. *The Language of Social Media: Identity and Community on the Internet*. Basingstoke, Hants: Palgrave Macmillan, pp. 46–64.

Pandit, N.R., 1996. The Creation of Theory: A Recent Application of the Grounded Theory Method. *The Qualitative Report*, 2(4). Available at: http://www.nova.edu/ssss/QR/QR2-4/pandit.html.

Panteli, N. & Sockalingam, S., 2005. Trust and conflict within virtual inter-organizational alliances: a framework for facilitating knowledge sharing. *Decision Support Systems*, 39(4), pp.599–617. Available at: http://linkinghub.elsevier.com/retrieve/pii/S0167923604000557.

Parry, M., 2012. Historians Ask the Public to Help Organize the Past: But is the crowd up to it? *Chronicle of Higher Education*.

Partington, D., 1997. *Management Processes in Projects of Organizational Change: Case Studies From Four Industries*.

Patton, M.Q., 1990. *Qualitative Evaluation and Research Methods* 2nd ed., Thousand Oaks, CA: Sage Publications, Inc.

Patton, M.Q., 2002. *Qualitative Research and Evaluation Methods* 3rd ed., Thousand Oaks, CA: Sage Publications.

Paul, D.L. & McDaniel Jr., R.R., 2004. A Field Study of the Effect of Interpersonal Trust on Virtual Collaborative Relationship Performance. *MIS Quarterly*, 28(2), pp.183–227.

Pettigrew, K.E. & McKechnie, L. (E. F.., 2001. The Use of Theory in Information Science Research. *Journal of the American Society for Information Science and Technology*, 52(1), pp.62–73. Available at: http://doi.wiley.com/10.1002/1532-2890%282000%2952%3A1%3C62%3A%3AAID-ASI1061%3E3.0.CO%3B2-J.

Phillips, L.B., 2014. The Roleof Open Authority in a Collaborative Web. In M. Ridge, ed. *Crowdsourcing our Cultural Heritage*. Farnham, Hants: Ashgate Publishing Ltd, pp. 247–267.

Phillips, L.B., 2013. The temple and the bazaar: Wikipedia as a platform for open authority in museums. *Curator: The Museum Journal*, 56(2), pp.219–235.

Poellhuber, B., Roy, N. & Anderson, T., 2011. Distance Students’ Readiness for Social Media and Collaboration. *The International Review of Research in Open and Distance Learning*, 12(6), pp.102–125.

Polanyi, M., 1958. *Personal Knowledge: Towards a Post-Critical Philosophy*, London: Routledge and Kegan Paul Ltd. Available at: http://books.google.co.uk/books?hl=en&lr=&id=NdcnAgAAQBAJ&oi=fnd&pg=PR7&dq=polanyi+1958+personal+knowledge&ots=TjolwOONuG&sig=qAMPSTS6h107elY7MPLnbDV4v6c#v=onepage&q&f=false.

Polanyi, M., 1966. *The Tacit Dimension*, Chicago, Illinois: University of Chicago Press.

Polkinghorne, D., 1983. *Methodology for the Human Sciences Systems of Inquiry: Systems of Enquiry*, New York, NY: State University of New York Press.

Poole, N., 2013. What are Museums for? Available at: http://www.collectionslink.org.uk/discover/new-perspectives/1380-what-are-museums-for?goback=.gde\_3280471\_member\_127734931.

Porter, L.W., 1968. *Managerial Attitudes and Performance*, Richard D. Irwin, Inc.

Powdermaker, H., 1966. *Stranger and friend: The way of an anthropologist*, New York, NY: W.W. Norton & Company.

Powell, R. & Kokkranikal, J., 2014. From history to reality – engaging with visitors in the Imperial War Museum (North). *Museum Management and Curatorship*, 29(1), pp.36–49. Available at: http://www.tandfonline.com/doi/abs/10.1080/09647775.2013.869853 [Accessed February 17, 2014].

Preece, J., 2004. Etiquette, empathy and trust in communities of practice: Stepping-stones to social capital. *Journal Of Universal Computer Science*, 10, pp.294–302. Available at: http://www.jucs.org/jucs\_10\_3/etiquette\_empathy\_and\_trust/Preece\_J.html.

Procter, R. et al., 2013. Enabling Social Media Research Through Citizen Social Science. In *ECSCW 2013: Proceedings of the 13th European Conference on Computer Supported Cooperative Work*. pp. 51–56. Available at: http://link.springer.com/10.1007/978-1-4471-5346-7.

Proctor, N., 2010. Digital: Museum as Platform, Curator as Champion, in the Age of Social Media. *Curator: The Museum Journal*, 53(1), pp.35–44.

Punch, K.F., 2014. *Introduction to Social Research: Quantitative and Qualitative Approaches* 3rd ed., London: Sage Publications Ltd.

Qaurooni, D. et al., 2016. Citizens for Science and Science for Citizens: The View from Participatory Design. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*. pp. 1822–1826. Available at: http://doi.acm.org/10.1145/2858036.2858575.

Quintane, E. et al., 2013. Short- and long-term stability in organizational networks: Temporal structures of project teams. *Social Networks*, 35(4), pp.528–540. Available at: http://linkinghub.elsevier.com/retrieve/pii/S0378873313000658 [Accessed September 28, 2013].

Ragin, C.C., 1992. *The Comparative Method: Moving Beyond Qualitative and Quantitative Strategies*, Los Angeles, CA: University of California Press.

Reis, H.T. et al., 2000. Daily Well-Being: The Role of Autonomy, Competence, and Relatedness. *Personality & Social Psychology Bulletin*, 26(4), pp.419–435.

Remenyi, D. et al., 1998. *Doing Research in Business and Management*, London: Sage Publications Ltd.

Rheingold, H., 2000. The Virtual Community. Available at: http://www.rheingold.com/vc/book/.

Richmond, R., 2010. The Tech Savvy Lend a Hand in Haiti. *The New York Times*. Available at: http://www.nytimes.com/2010/02/04/technology/personaltech/04volunteer.html?\_r=0 [Accessed February 11, 2015].

Rico, T., 2008. Negative Heritage: The Place of Conflict in World Heritage. *Conservation and Management of Archaeological Sites*, 10(4), pp.344–352. Available at: http://www.maneyonline.com/doi/abs/10.1179/135050308X12513845914507.

Ridge, M., 2014a. Crowdsourcing our Cultural Heritage. In M. Ridge, ed. *Crowdsourcing our Cultural Heritage*. Farnham, Surrey: Ashgate Publishing Ltd, pp. 1–13. Available at: https://books.google.co.uk/books?hl=en&lr=&id=E7FIBQAAQBAJ&oi=fnd&pg=PR9&dq=crowdcuration&ots=Moq-\_TAH6X&sig=fIKcMETPtNu1\_ESBBa37lfxBGCI#v=onepage&q=crowdcuration&f=false.

Ridge, M., 2014b. Enriching cultural heritage collections through a Participatory Commons platform: a provocation about collaborating with users. *Open Objects*. Available at: http://openobjects.blogspot.co.uk/2014/03/sharing-is-caring-keynote-enriching.html.

Ridge, M., 2013. From tagging to theorizing: deepening engagement with cultural heritage through crowdsourcing. *Curator: The Museum Journal*, 56(4), pp.1–16.

Ridings, C.M. & Gefen, D., 2004. Virtual Community Attraction: Why People Hang Out Online. *Journal of Computer-Mediated Communication*, 10(1). Available at: http://onlinelibrary.wiley.com/doi/10.1111/j.1083-6101.2004.tb00229.x/full.

Riege, A., 2005. *Three-dozen knowledge-sharing barriers managers must consider*, Available at: http://0-dx.doi.org.library.vu.edu.au/10.1108/13673270510602746\nhttp://www.emeraldinsight.com/doi/abs/10.1108/13673270510602746.

Rifkin, J., 2000. *The Age of Access: The New Culture of Hypercapitalism where all of Life is a Paid-For Experience*, New York, NY: Penguin Putnam Inc.

de Rijcke, S. & Beaulieu, A., 2011. Image as Interface: Consequences for Users of Museum Knowledge. *Library Trends*, 59(4), pp.663–685. Available at: http://muse.jhu.edu/content/crossref/journals/library\_trends/v059/59.4.de-rijcke.html [Accessed May 5, 2014].

Ritchie, S.M. & Rigano, D.L., 2001. Researcher#participant positioning in classroom research. *International Journal of Qualitative Studies in Education*, 14(6), pp.741–756. Available at: http://www.tandfonline.com/doi/abs/10.1080/09518390110078413 [Accessed October 6, 2014].

Robertson, C. et al., 2014. Systematic reviews of and integrated report on the quantitative, qualitative and economic evidence base for the management of obesity in men. *Health Technology Assessment*, 18(35), pp.v–vi, xxiii–xxix, 1–424. Available at: http://www.ncbi.nlm.nih.gov/pubmed/24857516 [Accessed July 16, 2014].

Rode, H., 2016. To share or not to share: the effects of extrinsic and intrinsic motivations on knowledge-sharing in enterprise social media platforms. *Journal of Information Technology*, 31, pp.152–165. Available at: http://dx.doi.org/10.1057/jit.2016.8.

Rogstadius, J. et al., 2013. CrisisTracker: Crowdsourced Social Media Curation for Disaster Awareness. *IBM Journal of Research and Development*, pp.1–22.

Rosen, M., 1991. Coming to Terms with the Field: Understanding and Doing Organizational Ethnography. *Journal of Management Studies*, 28(1), pp.1–24.

Roth, A.E., 2016. *Knowledge Sharing Intentions in Wholesale Distribution Organizations*.

Roulston, K., 2010. Considering quality in qualitative interviewing. *Qualitative Research*, 10(2), pp.199–228. Available at: http://qrj.sagepub.com/cgi/doi/10.1177/1468794109356739 [Accessed June 2, 2014].

Rouse, A.C., 2010. A Preliminary Taxonomy of Crowdsourcing. *Australasian Conference on Information Systems*, pp.1–10. Available at: http://aisel.aisnet.org/acis2010/76/.

Russo, A. et al., 2008. Participatory Communication with Social Media. *Curator: The Museum Journal*, 51(1), pp.21–31. Available at: http://doi.wiley.com/10.1111/j.2151-6952.2008.tb00292.x.

Russo, A., 2011. Transformations in Cultural Communication: Social Media, Cultural Exchange, and Creative Connections. *Curator: The Museum Journal*, 54(3), pp.327–346. Available at: http://doi.wiley.com/10.1111/j.2151-6952.2011.00095.x.

Russo, A., Watkins, J. & Groundwater-Smith, S., 2009. The impact of social media on informal learning in museums. *Educational Media International*, 46(2), pp.153–166. Available at: http://www.tandfonline.com/doi/abs/10.1080/09523980902933532 [Accessed January 24, 2014].

Ryall, A., 2014. Challenging Collaborations. In J. Kidd et al., eds. *Challenging History in the Museum: International Perspectives*. Farnham, Hants: Ashgate Publishing Ltd, pp. 81–85.

Ryan, A.B., 2006. POST-POSITIVIST APPROACHES TO RESEARCH. In *Researching and Writing your Thesis: a guide for postgraduate students*. pp. 12–26.

Sale, J.E.M., Lohfeld, L.H. & Brazil, K., 2002. Revisiting the Quantitative-Qualitative Debate: Implications for Mixed-Methods Research. *Quality and quantity*, 36(1), pp.43–53.

Sallis, E. & Jones, G., 2012. *Knowledge Management in Education: Enhancing Learning & Education*, Routledge. Available at: http://books.google.co.uk/books?hl=en&lr=&id=YjZhDR-0o7EC&oi=fnd&pg=PT1&dq=sallis+and+jones+2002&ots=lbzjJ5gMqq&sig=xnAW5BABQrw27e14ulnw7PdohsM#v=onepage&q=sallis and jones 2002&f=false.

Sanchez, R. & Heene, A., 1997. *Strategic Learning and Knowledge Management*, New York, NY: John Wiley & Sons, Inc.

Sandell, R. ed., 2002. *Museum, Society, Inequality*, London: Routledge.

Sandelowski, M., 1995. Focus on Qualitative Methods Sample Size in Qualitative. *Research in Nursing & Health*, 18, pp.179–183.

Sarker, S., Lau, F. & Sahay, S., 2000. Building an Inductive Theory of Collaboration in Virtual Teams: An Adapted Grounded Theory Approach. In *Proceedings of the 33rd Annual Hawaii International Conference on System Sciences*. pp. 1–10.

Sarker, S., Xiao, X. & Beaulieu, T., 2013. Qualitative Studies in Information Systems: A Critical Review and Some Guiding Principles. *MIS Quarterly*, 37(4), pp.iii–xviii.

Sarraf, S., 1999. A Survey of Museums on the Web: Who Uses Museum Websites? *Curator: The Museum Journal*, 42(3), pp.231–244.

Scarbrough, H. & Swan, J.A., 1999. *Case Studies in Knowledge Mangement*, London: Institute of Personnel and Development.

Scarbrough, H., Swan, J.A. & Preston, J., 1999. *Knowledge Management: A literature Review*, London: Institute of Personnel and Development.

Schauer, A., Vasconcelos, A.C. & Sen, B., 2015. The ShaRInK framework: a holistic perspective on key categories of influences shaping individual perceptions of knowledge sharing. *Journal of Knowledge Management*, 19(4), pp.770–790. Available at: http://www.emeraldinsight.com/doi/10.1108/JKM-12-2014-0519.

Schenk, E. & Guittard, C., 2009. Crowdsourcing: What can be Outsourced to the Crowd, and Why? In *Workshop on Open Source Innovation*. Strasbourg, pp. 1–29.

Schmidt, K. & Bannon, L., 1992. Taking CSCW Seriously: Supporting Articulation Work. *Computer Supported Cooperative Work*, 1(1), pp.7–40.

Schreiber, R.S. & Stern, P.N., 2001. *Using Grounded Theory in Nursing* R. S. Schreiber, ed., New York, NY: Springer.

Schwandt, T.A., 1997. *Qualitative inquiry: A dictionary of terms*, Thousand Oaks, CA: Sage Publications, Inc.

Schweitzer, F.M. et al., 2012. Crowdsourcing: Leveraging Innovation through Online Idea Competitions. *Research-Technology Management*, 55(3), pp.32–38. Available at: http://openurl.ingenta.com/content/xref?genre=article&issn=0895-6308&volume=55&issue=3&spage=32 [Accessed February 3, 2014].

Scott, C. “Kit” & Sarker, S., 2010. Examining the Role of the Communication Channel Interface and Recipient Characteristics on Knowledge Internalization: A Pragmatist View. *IEEE Transactions on Professional Communication*, 53(2), pp.116–131. Available at: http://ieeexplore.ieee.org/lpdocs/epic03/wrapper.htm?arnumber=5467307.

See, L. et al., 2016. Crowdsourcing, Citizen Science or Volunteered Geographic Information? The Current State of Crowdsourced Geographic Information. *ISPRS International Journal of Geo-Information*, 5(55), pp.1–23. Available at: http://www.mdpi.com/2220-9964/5/5/55/htm.

Seidel, J. & Kelle, U., 1998. Different Functions of Coding in the Analysis of Textual Data. In U. Kelle, ed. *Computer-Aided Qualitative Analysis: Theory, Methods and Practice*. London: Sage Publications Ltd, pp. 52–61. Available at: http://books.google.co.uk/books?hl=en&lr=&id=JMt8K1sg2ykC&oi=fnd&pg=PR9&dq=computer-aided+qualitative+seidel&ots=jb0vdlRLA6&sig=LcLr8o7ldMxWvBXLxPOmQjyz7vw#v=onepage&q=computer-aided qualitative seidel&f=false.

Seidel, S. & Urquhart, C., 2013. On emergence and forcing in information systems grounded theory studies: The case of Strauss and Corbin. *Journal of Information Technology*, 28, pp.237–260. Available at: http://dx.doi.org/10.1057/jit.2013.17.

Sharma, D., 2013. Knowledge Management & Organizational Structure: A Study of Indian Companies. *International Journal of Organizational Behaviour & Management Perspectives*, 2(4), pp.585–593.

Sheng, C.-W. & Chen, M.-C., 2012. A study of experience expectations of museum visitors. *Tourism Management*, 33(1), pp.53–60. Available at: http://linkinghub.elsevier.com/retrieve/pii/S0261517711000392 [Accessed October 23, 2013].

Shepherd, H., 2012. Crowdsourcing. *Contexts*, 11(2), pp.10–11. Available at: http://ctx.sagepub.com/lookup/doi/10.1177/1536504212446453 [Accessed November 4, 2013].

Sherrard, C., 1997. Qualitative research. *Psychologist*, 10(4), pp.161–162.

Siggelkow, N., 2007. Persuasion with Case Studies. *The Academy of Management Review*, 50(1), pp.20–24.

Silverman, D., 1999. *Doing Qualitative Research: A Practical Handbook*, London: Sage Publications Ltd.

Simon, N., 2010. *The Participatory Museum*, Santa Cruz, CA: Museum 20. Available at: http://www.participatorymuseum.org/read/.

Smith, B., 1996. Addressing the Delusion of Relevance: struggles in connecting educational research and social justice. *Educational Action Research*, 4(1), pp.73–91. Available at: http://www.tandfonline.com/doi/abs/10.1080/0965079960040107 [Accessed October 6, 2014].

Smith, J.K., 1986. Closing down the Conversation: The End of the Quantitative-Qualitative Debate among Educational Inquirers. *Educational Researcher*, 15(1), pp.4–12.

Smith, W.E., 1975. *The Effect of Anticipated vs. Unanticipated Social Reward on Subsequent Intrinsic Motivation*,

Soliman, F. & Spooner, K., 2000. Strategies for implementing knowledge management: role of human resources management. *Journal of Information Management*, 4(4), pp.337–345.

Spence, P.R. et al., 2015. Variability in Twitter Content Across the Stages of a Natural Disaster: Implications for Crisis Communication. *Communication Quarterly*, 63(2), pp.171–186. Available at: http://www.tandfonline.com/doi/full/10.1080/01463373.2015.1012219.

Srinivasan, R., Boast, R., Becvar, K.M., et al., 2009. Blobgects: Digital museum catalogs and diverse user communities. *Journal of the American Society for Information Science and Technology*, 60(4), pp.666–678.

Srinivasan, R., Boast, R., Furner, J., et al., 2009. Digital Museums and Diverse Cultural Knowledges: Moving Past the Traditional Catalog. *The Information Society*, 25(4), pp.265–278. Available at: http://www.tandfonline.com/doi/abs/10.1080/01972240903028714 [Accessed October 23, 2013].

Stake, R.E., 1995. *The Art of Case Study Research*, Thousand Oaks, CA: Sage Publications, Inc.

Stam, D.C., 1993. The informed muse: The Implications of “The New Museology” for Museum Practice. *Museum Management and Curatorship*, 12(3), pp.267–283. Available at: http://linkinghub.elsevier.com/retrieve/pii/096477759390071P.

Steelman, Z.R., Hammer, B.I. & Limayem, M., 2014. Data collection in the digital age: Innovation alternatives to student samples. *MIS Quarterly*, 38(2), pp.355–A20.

Stein, R., 2011. Please chime in: The challenges and opportunities of participatory culture. Available at: http://www.imamuseum.org/blog/2011/10/11/please-chime-in-the-challenges-and-opportunities-of-participatory-culture/.

Stenmark, D., 2000. Turning Tacit Knowledge Tangible. In *Proceedings of the 33rd Annual Hawaii International Conference on System Sciences*. IEEE Comput. Soc, pp. 1–9. Available at: http://ieeexplore.ieee.org/lpdocs/epic03/wrapper.htm?arnumber=926703.

Straub, D.W., 2012. Does MIS Have Native Theories? *MIS Quarterly*, 36(2), pp.iii–xii.

Strauss, A.L., 1987. *Qualitative Analysis for Social Scientists*, Cambridge, UK: Cambridge University Press.

Strauss, A.L. & Corbin, J., 1990. *Basics of Qualitative Research: Grounded theory procedures and techniques*, Newbury Park, CA: Sage Publications.

Strauss, A.L. & Corbin, J., 1998. *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory* 2nd ed., Thousand Oaks, CA: Sage Publications.

Suddaby, R., 2006. From The Editors: What Grounded Theory Is Not. *Aca*, 49(4), pp.633–642.

Surowiecki, J., 2005. *The Wisdom of Crowds*, New York, NY: Anchor Books.

Swain, J.W., 1923. What is History?--I. *The Journal of Philosophy*, 20(11), pp.281–289.

Swart, J. & Kinnie, N., 2003. Sharing knowledge in knowledge-intensive firms. *Human Resource Management Journal*, 13(2), pp.60–75. Available at: http://doi.wiley.com/10.1111/j.1748-8583.2003.tb00091.x.

Szulanski, G., 2003. *Sticky Knowledge: Barriers to Knowing in the Firm*, Lon: Sage Publications Ltd. Available at: http://books.google.co.uk/books?hl=en&lr=&id=dAiOieL-uZEC&oi=fnd&pg=PP2&dq=szulanski+sticky+knowledge&ots=nKfwMTrajS&sig=Ffbz1M8T8j9iyWPv5\_ujhpj\_RGY#v=onepage&q=szulanski sticky knowledge&f=false.

Tam, K.Y. & Ho, S.Y., 2005. Web personalization as a persuasion strategy: An elaboration likelihood model perspective. *Information Systems Research*, 16(3), pp.271–291.

Tan, C.T. et al., 2014. Initial Perceptions of a Casual Game to Crowdsource Facial Expressions in the Wild. In *Proceedings of Foundations of Digital Games: 11*.

Tang, M.-C., 2005. Representational practices in digital museums: A case study of the National Digital Museum Project of Taiwan. *The International Information & Library Review*, 37(1), pp.51–60. Available at: http://linkinghub.elsevier.com/retrieve/pii/S1057231705000068 [Accessed November 2, 2013].

Tapscott, D. & Williams, A.D., 2008. *Wikinomics: How mass collaboration changes everything*, London: Atlantic Books.

Taylor, E.Z. & Murthy, U.S., 2009. Knowledge sharing among accounting academics in an electronic network of practice. *Accounting Horizons*, 23(2), pp.151–179.

Teddlie, C. & Tashakkori, A., 2011. Contemporary Issues in an Emerging Field. In N. K. Denzin & Y. S. Lincoln, eds. *The Sage Handbook of Qualitative Research*. pp. 285–299.

Teigland, R., 2003. *Knowledge Networking: Structure and Performance in Networks of Practice*. Stockholm School of Economics. Available at: http://www.sciencedirect.com/science/article/pii/B9780750639767500049.

Tellis, W.M., 1997. Application of a Case Study Methodology. *The Qualitative Report*, 3(3), pp.1–17.

Terras, M., 2010. Digital curiosities: Resource creation via amateur digitization. *Literary and Linguistic Computing*, 25(4), pp.425–438.

Tess, P.A., 2013. The role of social media in higher education classes (real and virtual) – A literature review. *Computers in Human Behavior*, 29(5), pp.A60–A68. Available at: http://linkinghub.elsevier.com/retrieve/pii/S0747563212003743 [Accessed January 20, 2014].

Thomas, D. & Seeley Brown, J., 2014. A New Culture of Learning. *Lifewide Magazine*, pp.10–12. Available at: http://www.lifewidemagazine.co.uk/uploads/1/0/8/4/10842717/lifewide\_magazine\_11.pdf#page=10 [Accessed June 29, 2015].

Thomas, D.R., 2006. A General Inductive Approach for Analyzing Qualitative Evaluation Data. *American Journal of Evaluation*, 27(2), pp.237–246. Available at: http://aje.sagepub.com/cgi/doi/10.1177/1098214005283748 [Accessed May 24, 2014].

Thomas, J., 1993. *Doing Critical Ethnography*, Newbury Park, CA: Sage Publications, Inc.

Thomas, S., 2007. Introduction. In *The Digital Museum: A Think Guide*. Washington, DC: American Association of Museums, pp. 1–7.

Thorne, K., 2008. Cyberpunk-Web 1.0 “Egoism” Greets Group-Web 2.0 “Narcissim”: Convergence, Consumption, and Surveillance in the Digital Divide. *Administrative Theory & Praxis*, 30(3), pp.299–323.

Thuan, N.H., Antunes, P. & Johnstone, D., 2013. *Factors influencing the decision to crowdsource*, Berlin, Germany: Springer Berlin Heidelberg.

Treem, J.W. & Leonardi, P.M., 2012. Social Media Use in Organizations: Exploring the Affordances of Visibility, Editablity, Persistence, and Association. *Communication Yearbook*, 36, pp.143–189.

Trochim, W.M.K., 2006. Qualitative Approaches. *Research Methods Knowledge Base*. Available at: http://www.socialresearchmethods.net/kb/qualapp.htm.

Tsoukas, H., 2002. Do we really understand tacit knowledge ? In *Knowledge Economy and Society Seminar, LSE Department of Information Systems*. pp. 1–18.

Tunbridge, J.E. & Ashworth, G.J., 1996. *Dissonant Heritage: The Management of the Past as a Resource in Conflict*, John Wiley & Sons, Inc.

Tuomi, I., 2002. *Networks of Innovation: Change and Meaning in the Age of the Internet*, Oxford, Oxon: Oxford University Press.

Tushman, M.L. & Scanlan, T.J., 1981. Characteristics and External Orientations of Boundary Spanning Individuals. *Academy of Management Journal*, 24(1), pp.83–98.

UNESCO, 2003. What is intangible cultural heritage? Available at: http://www.unesco.org/culture/ich/index.php?lg=en&pg=00002.

Urquhart, C., 2013. *Grounded Theory for Qualitative Research*, London: Sage Publications.

Urquhart, C. & Fernandez, W.D., 2006. Grounded Theory Method: The Researcher as Blank Slate and Other Myths. In *International Conference on Information Systems*. pp. 456–464.

Vaast, E. & Walsham, G., 2009. Trans-Situated Learning: Supporting a Network of Practice with an Information Infrastructure. *Information Systems Research*, 20(4), pp.547–564. Available at: http://pubsonline.informs.org/doi/abs/10.1287/isre.1080.0228 [Accessed December 30, 2014].

Vaidya, A.V., 2010. *The implications of organizational context for Information Systems and Technology strategy formulation: A study of socio-political factors in global c*.

Vakharia, D. & Lease, M., 2013. Beyond AMT: An Analysis of Crowd Work Platforms. *MIS Quarterly*, 40(2), pp.A1–A19. Available at: http://arxiv.org/abs/1310.1672.

de Vaus, D., 2006. *Research Design in Social Research*, London: Sage Publications Ltd.

Vender Wal, T., 2007. Folksonomy Coinage and Definition. *Folksonomy Coinage and Definition*. Available at: http://vanderwal.net/folksonomy.html.

Vermeeren, A. et al., 2016. Involving the Crowd in Future Museum Experience Design. In *CHI Extended Abstracts on Human Factors in Computing Systems*. pp. 3347–3354.

Violi, P., 2012. Trauma Site Museums and Politics of Memory: Tuol Sleng, Villa Grimaldi and the Bologna Ustica Museum. *Theory, Culture & Society*, 29(1), pp.36–75. Available at: http://tcs.sagepub.com/cgi/doi/10.1177/0263276411423035 [Accessed January 22, 2014].

Vlarr, P.W.L., van Fenema, P.C. & Tiwari, V., 2008. Cocreating Understaning and Value in Distributed Work: How Members of Onsite and Offshore Vendor Teams Give, Make, Demand, and Break Sense. *MIS Quarterly*, 32(2), pp.227–255.

Vroom, V.H., 1994. *Work and Motivation*, New York, NY: John Wiley & Sons, Inc.

Vukovic, M., 2009. Crowdsourcing for Enterprises. *Congress on Services - I*, pp.686–692. Available at: http://ieeexplore.ieee.org/lpdocs/epic03/wrapper.htm?arnumber=5190710 [Accessed March 31, 2014].

Wallace, A., 2001. Collections Management and Inclusion. In J. Dodd & R. Sandell, eds. *Including Museums: perspectives on museums, galleries and social inclusion*. Leicester, UK: Research Centre for Museums and Galleries, pp. 80–83.

Wallis, J. & Dollery, B., 2005. Leadership and Economic Theories of Nonprofit Organizations. *Review of Policy Research*, 22(4), pp.483–499. Available at: http://doi.wiley.com/10.1111/j.1541-1338.2005.00151.x.

Wang, S. & Noe, R.A., 2010. Knowledge sharing: A review and directions for future research. *Human Resource Management Review*, 20(2), pp.115–131. Available at: http://linkinghub.elsevier.com/retrieve/pii/S1053482209000904 [Accessed July 10, 2014].

Warren, C.A.B., 2002. Qualitative Interviewing. In J. F. Gubrium & J. A. Holstein, eds. *Handbook of Interview Research: Context & Method*. Thousand Oaks, CA: Sage Publications, Inc., pp. 83–101.

Wasko, M.M. & Faraj, S., 2005. Why Should I Share? Examining Social Capital and Knowledge Contribution in Electronic Networks of Practice. *MIS Quarterly*, 29(1), pp.35–57.

Wasko, M.M., Teigland, R. & Faraj, S., 2009. The provision of online public goods: Examining social structure in an electronic network of practice. *Decision Support Systems*, 47(3), pp.254–265. Available at: http://linkinghub.elsevier.com/retrieve/pii/S0167923609000621 [Accessed January 12, 2015].

Watson, G. & Johnson, D.W., 1972. *Social Psychology: Issues and Insights*, Philadelphia, PA: Lippincott.

Weil, S.E., 2002. *Making Museums Matter*, Washington, DC: Smithsonian Institution Press. Available at: https://books.google.co.uk/books?hl=en&lr=&id=AZ1fBgAAQBAJ&oi=fnd&pg=PT5&dq=weil+making+museums+matter&ots=XH90mO-LeQ&sig=RF7R3fGHFJrFl1asdY8Ul5sLl6k.

Weilenmann, A., Hillman, T. & Jungselius, B., 2013. Instagram at the Museum: Communicating the Museum Experience through Social Photo Sharing. In *CHI 2013*. Paris, France, pp. 1843–1852.

Wellbourne, M., 2001. *Knowledge*, London: Routledge.

Wellington, J., 2000. *Educational Research: Contemporary Issues and Practical Approaches*, London: Contin.

Wellman, B. et al., 1996. Computer Networks as Social Networks: Collaborative Work, Telework, and Virtual Community. *Annual Review of Sociology*, 22, pp.213–238.

Wellman, B. & Gulia, M., 2001. Virtual communities as communities: Net surfers don’t ride alone. In M. A. Smith & P. Kollock, eds. *Communities in Cyberspace*. Cambridge, UK: Routledge, pp. 167–194.

Wenger, E., 2006. Communities of practice: a brief introduction. , pp.3–13. Available at: http://www.noetikos.org/sitebuildercontent/sitebuilderfiles/copandsituatedlearning.pdf.

Wenger, E., 1998. *Communities of Practice: Learning, Meaning, and Identity*, New York, NY: Cambridge University Press.

Wenger, E., McDermott, R. & Snyder, W.M., 2002. *Cultivating Communities of Prctice*, Massachusetts: Harvard Business School Publishing.

Wexler, M.N., 2011. Reconfiguring the sociology of the crowd: exploring crowdsourcing. *International Journal of Sociology and Social Policy*, 31(1/2), pp.6–20. Available at: http://www.emeraldinsight.com/10.1108/01443331111104779 [Accessed November 4, 2013].

Whetten, D.A., 1989. What Constitutes a Theoretical Contribution? *The Academy of Management Review*, 14(4), pp.490–495.

Whitworth, A. & Garnett, F., 2011. MOSI-ALONG: Social media, the museum and the community. In *MindTrek ’11*. Tampere, Finland, pp. 161–164.

Whitworth, B. & de Moor, A., 2002. Legitimate by design: towards trusted virtual community environments. *Proceedings of the 35th Annual Hawaii International Conference on System Sciences*, pp.1–12.

Wiggins, A. & Crowston, K., 2011. From conservation to crowdsourcing: A typology of citizen science. In *Proceedings of the Annual Hawaii International Conference on System Sciences*. pp. 1–10.

Wildemuth, B.M., 1993. Post-Positivist Research: Two Examples of Methodological Pluralism. *The Library Quarterly*, 63(4), pp.450–468.

Williams, M., 2001. *Problems of Knowledge: a critical introduction to epistemology*, Oxford, Oxon: Oxford University Press.

Williams, P., 2007. *Memorial Museums: The Global Rush to Commemorate Atrocities*, Oxford, Oxon: Berg.

Wilson, H.S. & Hutchinson, S., 1996. Methodologic Mistakes in Grounded Theory. *Nursing Research*, 45(2), pp.122–124.

Wilson, T.D., 2002. The nonsense of “knowledge management.” *Information Research*, 8(1). Available at: http://www.iwp.jku.at/born/mpwfst/06/nonsenseofwm/p144.html.

Winter, G., 2000. A Comparative Discussion of the Notion of “Validity” in Qualitative and Quantitative Research. *The Qualitative Report*, 4(3 & 4). Available at: http://www.nova.edu/ssss/QR/QR4-3/winter.html [Accessed May 11, 2015].

Wolcott, H.F., 1994. *Transforming Qualitative Data: Description, Analysis, and Interpretation*, Thousand Oaks, CA: Sage Publications, Inc.

Woozley, A.D., 1949. *Theory of Knowledge* H. J. Paton, ed., London: Hutchinson & Co (Pubishers) Ltd.

Wunsch-Vincent, S. & Vickery, G., 2007. *Participative Web and User-Created Content: Web 2.0, Wikis and Social Networking*,

Yamamoto, K., 2015. Development of Social Media GIS to Support Information Utilization from Normal Times to Disaster Outbreak Times. *International Journal of Advanced Computer Science and Applications*, 6(9), pp.1–14.

Yang, J., Adamic, L.A. & Ackerman, M.S., 2008. Crowdsourcing and Knowledge Sharing: Strategic User Behavior on Taskcn. In *Proceedings of the 9th ACM conference on Electronic commerce*. pp. 246–255.

Yang, S.-C. & Farn, C.-K., 2009. Social capital, behavioural control, and tacit knowledge sharing-A multi-informant design. *International Journal of Information Management*, 29, pp.210–218.

Yin, R.K., 1994. *Case Study Research: Design and Methods* 2nd ed., Thousand Oaks, CA: Sage Publications.

Yoon, C. & Rolland, E., 2012. Knowledge-sharing in virtual communities: familiarity, anonymity and self-determination theory. *Behaviour & Information Technology*, 31(11), pp.1133–1143.

Zhang, J., Ackerman, M.S. & Adamic, L.A., 2007. Expertise Networks in Online Communities: Structure and Algorithms. In *Proceedings of the 16th international conference on World Wide Web*. pp. 221–230. Available at: http://portal.acm.org/citation.cfm?doid=1242572.1242603.

Zhang, P., 2008. Motivational Affordances: Reasons for ICT Design and Use. *Communications of the ACM*, 61(11), pp.145–147.

Zhang, P., Scialdone, M.J. & Min-Chun, K., 2011. IT Artifacts and The State of IS Research. In *International Conference on Information Systems*. Shanghai, China. Available at: http://melody.syr.edu/pzhang/publications/ICIS\_11\_Zhang\_etal\_IT\_Artifacts.pdf.

Zhao, C. et al., 2014. Qualitative and Quantitative Analysis for Facial Complexion in Traditional Chinese Medicine. *BioMed research international*, 2014, pp.1–17. Available at: http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=4054802&tool=pmcentrez&rendertype=abstract.

Zhao, Q. et al., 2016. Precision CrowdSourcing: Closing the Loop to Turn Information Consumers into Information Contributors. In *Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work & Social Computing - CSCW ’16*. pp. 1613–1623. Available at: http://dl.acm.org/citation.cfm?doid=2818048.2819957.

Zhao, Y. & Han, Q., 2016. Spatial Crowdsourcing: Current State and Future Directions. *IEEE Communications Magazine*, (July), pp.102–107.

Zhao, Y. & Zhu, Q., 2012. Evaluation on crowdsourcing research: Current status and future direction. *Information Systems Frontiers*. Available at: http://link.springer.com/10.1007/s10796-012-9350-4 [Accessed March 27, 2014].

Zhao, Y. & Zhu, Q., 2014. Evaluation on crowdsourcing research: Current status and future direction. *Information Systems Frontiers*, 16(3), pp.417–434.

Zheng, H., Li, D. & Hou, W., 2011. Task Design, Motivation, and Participation in Crowdsourcing Contests. *International Journal of Electronic Commerce*, 15(4), pp.57–88. Available at: 10.2753/JEC1086-4415150402\nhttp://search.ebscohost.com/login.aspx?direct=true&db=buh&AN=61988867&site=ehost-live.

Zheng, Y. & Yu, A., 2016. Affordances of social media in collective action: the case of Free Lunch for Children in China. *Information Systems Journal*. Available at: http://doi.wiley.com/10.1111/isj.12096.

# Appendix A - Letter of introduction



# Appendix B - Consent form

**SEMI-STRUCTURED INTERVIEW CONSENT FORM**

**Introduction**

Krista Godfrey is a Postgraduate Research Student (PhD) investigating the impact of crowdsourcing on internal heritage stakeholders such as curators, archivists and digital media personnel.

**Participation**

As part of this research study, Krista would like to collect data on you and your experiences of using social media and your participation in any crowdsourcing activities that have taken place at your workplace. The data may take the form of recorded interviews (voice and/or video), photographs, and notes. All data will be anonymised and held securely on the servers at Royal Holloway, University of London in Egham, Surrey. No direct feedback will be given to your employers but should they wish to receive a copy of the completed thesis, this will be provided to them.

**Confidentiality**

The data gathered through this research will be kept confidential. Data is stored securely and is only made available to the researcher (Krista) and her supervisor, Dr Simon Foley, Senior Lecturer in Business Information Systems, School of Management. Specific written authorisation would be asked of you for any other persons to be given access to the data. The data provided will be written up, coded and published in accordance with the theoretical framework that the researcher is using. No reference will be made which could link you to the study. Your participation in this research is voluntary and you may withdraw at any time.

**Contact Information**

If you have questions at any time about the study, you may contact the researcher, Krista Godfrey at [krista.godfrey.2013@live.rhul.ac.uk](mailto:krista.godfrey.2013@live.rhul.ac.uk). You may also telephone the researcher directly on 07766 255560.

**Consent**

I have read the above information. I have received a copy of this form. I agree to participate in the research and data collection.

Participant’s signature ­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date ­­­­­­­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Organisation \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Please complete the following demographic data (**circle** appropriate answer) for research sampling:

Sex: Male / Female

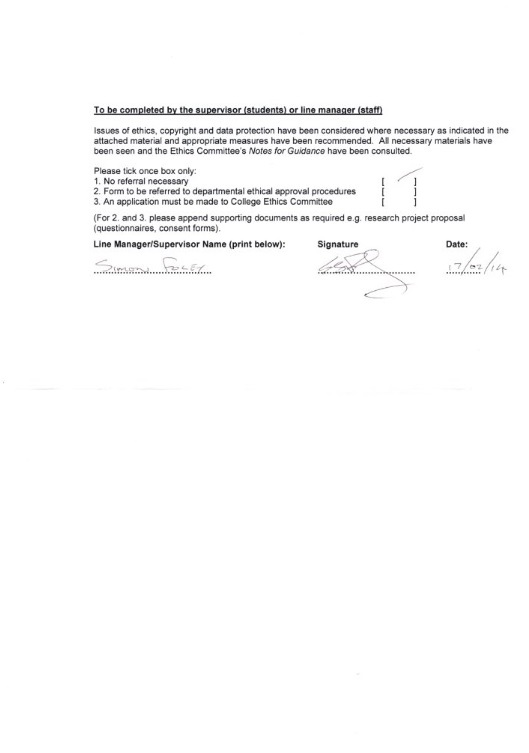
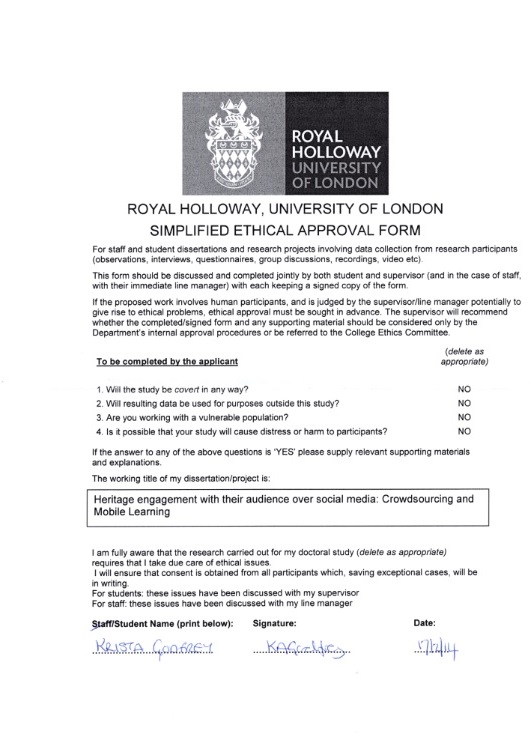
Age: <18 / 19-29 / 30-39 / 40-49 / 50-59 / >60

No. Years with current employer: <1 / 1-3 / 4-6 / 7-9 / 10+

No. Years in heritage industry: <1 / 1-3 / 4-6 / 7-9 / 10+

Highest Level of Qualification: GCSE / A-AS / BSc or equiv / MSc or equiv / MPhil / PhD

# Appendix C - Royal Holloway Simplified Ethical Approval Form



# Appendix D - Interview question prompts

1. What is your background in the heritage industry?
2. What types of social media have you been involved in either personally or through your professional role in this organisation?
3. Has there been any requirement for you to learn new technologies or systems in order to use social media within your role? If so, which ones? What kind of training did you have, if any?
4. What kind of social media engagement do you have with the public?
5. What kind of requests/criticisms do you receive as an organisation over social media and how do you deal with those?
6. What social media initiatives have you been involved in (e.g. #AskACurator) and were there any challenges associated with it? Did other departments have to be involved and to what capacity?
7. Could you tell me how you feel about your involvement with social media and the public at work? Do you have any good or bad experiences of it that you could share? What challenges have you encountered with the increased use of social media in the organisation?
8. What types of community building have you been involved with, if any?

Crowdsourcing

1. What kind of crowdsourcing/co-curation initiatives have you taken part in? How long have they lasted? (consider that they may not think of these initiatives as ‘crowdsourcing’ per se)
2. Has your organisation engaged with a third party crowdsourcing supplier (e.g. Zooniverse) or are you running things in-house and what challenges has the decision presented?
3. What technologies/personnel did you use to validate and disseminate the information that was sourced from the crowd?
4. Could you tell me how you feel about your involvement with crowdsourcing (or appropriate terminology) as part of your role? Do you have any good or bad experiences of it that you could share? Have you encountered any challenges in dealing with the public (crowd)?

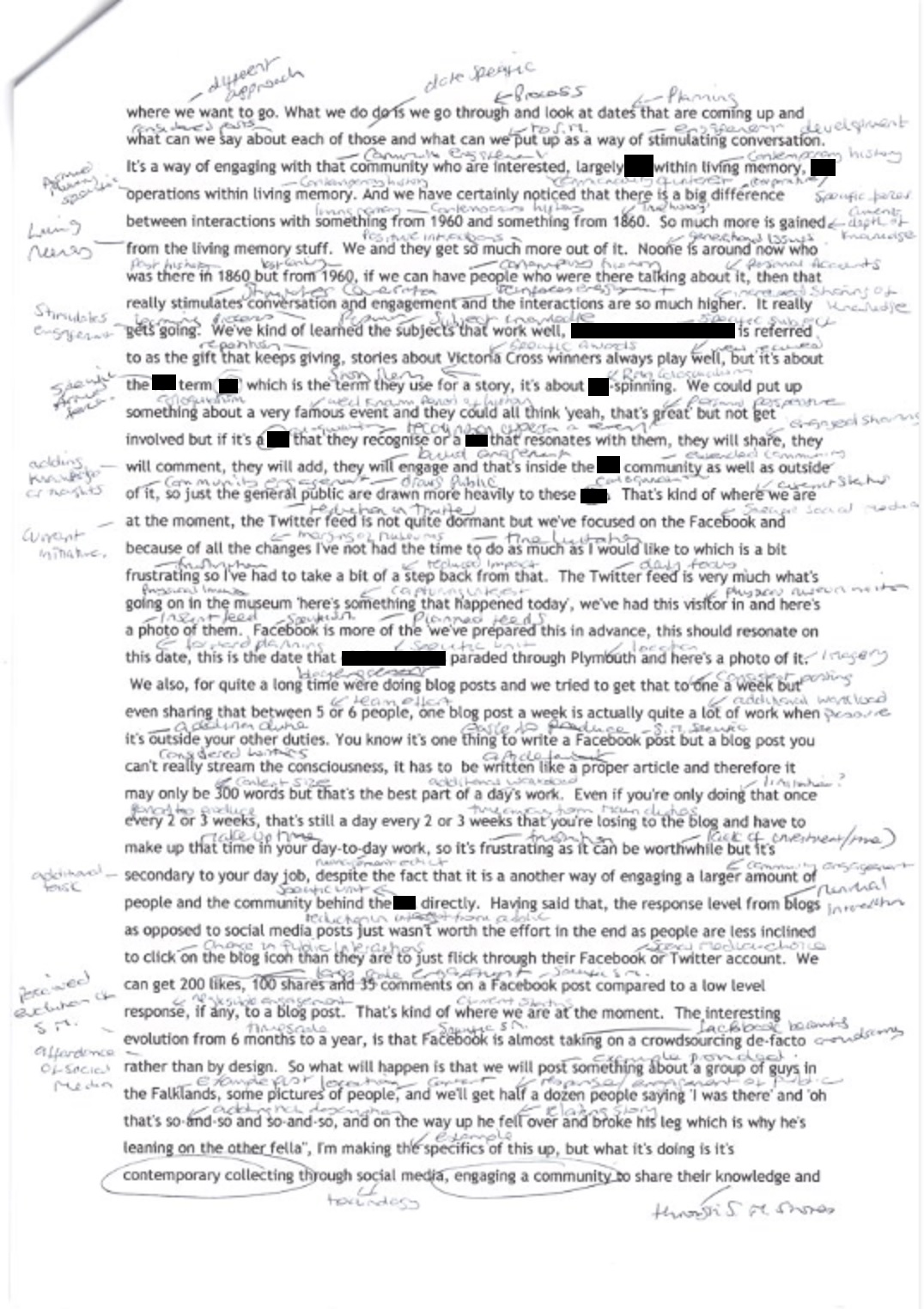
IS

1. Has there been a need to learn or upgrade the IS within the organisation to meet the needs and challenges of crowdsourcing/social media engagement and if so, what sort of changes have been required?

# Appendix E - Transcript example (anonymous)

where we want to go. What we do do is we go through and look at dates that are coming up and what can we say about each of those and what can we put up as a way of stimulating conversation. It's a way of engaging with that community who are interested, largely RM within living memory, RM operations within living memory. And we have certainly noticed that there is a big difference between interactions with something from 1960 and something from 1860.  So much more is gained from the living memory stuff.  We and they get so much more out of it.  No-one is around now who was there in 1860 but from 1960, if we can have people who were there talking about it, then that really stimulates conversation and engagement and the interactions are so much higher.  It really gets going.  We've kind of learned the subjects that work well, The Cockleshell Heroes is referred to as the gift that keeps giving, stories about Victoria Cross winners always play well, but it's about the RM term 'dit' which is the term they use for a story, it's about dit-spinning.  We could put up something about a very famous event and they could all think 'yeah, that's great' but not get involved but if it's a dit that they recognise or a dit that resonates with them, they will share, they will comment, they will add, they will engage and that's inside the RM community as well as outside of it, so just the general public are drawn more heavily to these dits.  That's kind of where we are at the moment, the Twitter feed is not quite dormant but we've focused on the Facebook and because of all the changes I've not had the time to do as much as I would like to which is a bit frustrating so I've had to take a bit of a step back from that.  The Twitter feed is very much what's going on in the museum 'here's something that happened today', we've had this visitor in and here's a photo of them.  Facebook is more of the 'we've prepared this in advance, this should resonate on this date, this is the date that 42 Commandos paraded through Plymouth and here's a photo of it.  We also, for quite a long time were doing blog posts and we tried to get that to one a week but even sharing that between 5 or 6 people, one blog post a week is actually quite a lot of work when it's outside your other duties. You know it’s one thing to write a Facebook post but a blog post you can't really stream the consciousness, it has to be written like a proper article and therefore it may only be 300 words but that's the best part of a day's work.  Even if you're only doing that once every 2 or 3 weeks, that's still a day every 2 or 3 weeks that you're losing to the blog and have to make up that time in your day-to-day work, so it's frustrating as it can be worthwhile but it's secondary to your day job, despite the fact that it is another way of engaging a larger amount of people and the community behind the RM directly.  Having said that, the response level from blogs as opposed to social media posts just wasn't worth the effort in the end as people are less inclined to click on the blog icon than they are to just flick through their Facebook or Twitter account.  We can get 200 likes, 100 shares and 35 comments on a Facebook post compared to a low level response, if any, to a blog post.  That's kind of where we are at the moment.  The interesting evolution from 6 months to a year, is that Facebook is almost taking on a crowdsourcing de-facto rather than by design.  So what will happen is that we will post something about a group of guys in the Falklands, some pictures of people, and we'll get half a dozen people saying 'I was there' and 'oh that's so-and-so and so-and-so, and on the way up he fell over and broke his leg which is why he's leaning on the other fella", I'm making the specifics of this up, but what it's doing is it's contemporary collecting through social media, engaging a community to share their knowledge and

# Appendix F - Open coding example



1. https://www.zooniverse.org/ [↑](#footnote-ref-1)
2. Described as “An archive of World War Two memories – written by the public, gathered by the BBC” and available at http://www.bbc.co.uk/history/ww2peopleswar/ [↑](#footnote-ref-2)
3. http://www.operationwardiary.org/ [↑](#footnote-ref-3)
4. https://livesofthefirstworldwar.org/ [↑](#footnote-ref-4)
5. http://waywithwords.net/ [↑](#footnote-ref-5)
6. https://www.royalholloway.ac.uk/iquad/collegepolicies/documents/pdf/research/researchethicsguidancenotes.pdf [↑](#footnote-ref-6)
7. https://livesofthefirstworldwar.org/ [↑](#footnote-ref-7)
8. https://www.volvoclub.org.uk/ [↑](#footnote-ref-8)
9. http://www.operationwardiary.org/ [↑](#footnote-ref-9)