INCREASING THE ACCESSIBILITY OF BATTLEFIELD HERITAGE

Considering whether battlefield interpretation would be improved through the use of

mobile applications

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Abstract

England's battlefields are sites of both local and national importance, serving as valuable sources for researchers and as places of tourism for communities. The influx in technological advancements in all walks of life provides the opportunity to enhance interpretation and provide a more accessible means of understanding the location's heritage.

Using the battle of Towton 1461 as a case study, this project investigates the present state of battlefield interpretation and considers how it can be developed. As generations expecting the frequent use of technology become potential visitors of sites, the need to encourage this new interest is vital in preserving battlefields and their history.

Several surveys and interviews were conducted to determine the opinions of professionals and potential visitors alike. Their responses showed that whilst those with close links to the site, such as the Towton Battlefield Society, felt the location was a well presented, well visited local attraction, a more general survey of opinions suggested technology could enhance a site and encourage more interest in the topic. Indeed, interviews with several industry professionals also showed the potential for the increasing use of technology. A review of current Towton battlefield interpretation and existing heritage applications contributed to the knowledge of technological interpretation and how it could successfully work alongside the more traditional forms.

In response to these findings, the final section of this study is the creation of a concept battlefield trail application, with suggestions for how it could encourage closer links between visitors, battlefield site contributors and the battlefield itself. Further research should be undertaken to create the application and determine how successful it could be. This project could eventually provide a framework for further battlefield applications and more advanced battlefield interpretation.

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Introduction

Interpretation is the foundation of public engagement with heritage sites, and with the ever-growing influence of technology within all aspects of life, it is understandable that over the past twenty years 'museums have heavily developed digital interpretation.'[1] However, onsite interpretation at heritage attractions such as battlefields have been slow off the mark to take advantage. Whilst more traditional, physical interpretation such as information boards and guided tours are familiar and trustworthy options, there are many benefits to applying technology into the management of sites where there is less physical evidence of history. Whilst not a substitute for existing interpretation, interpretive applications can enhance a traditional interpretative layout.[2] Adrian Murphy highlights the importance of considering visitor needs to see if technology can cater or apply to them. An emerging new generation of heritage attraction visitors may come to expect increasing use of technology, but it is important to find a balance and ensure it will genuinely enhance visitor engagement and learning.[3]

This study will consider such issues within the field of battlefield interpretation. It will evaluate the needs of battlefield visitors and whether mobile applications will benefit their experience. A good example of is shown with the Lost Palace Project in 2015. The project attempts to accurately tell the history of Whitehall Palace whilst attracting new and existing users by creating a unique visitor experience. The use of technology becomes appropriate due to the lack of physical evidence at the heritage site. As with a battlefield, imagination and knowledge is key to understanding such a site. With the Lost Palace Project, 'technology offers the opportunity to offer experiences of the history that happened,' within a building which has been lost to time.[4] Emphasis on technology enhancing a story rather than being the main focus is important, alongside increased links with, and involvement in the project from, the community and potential visitors. The need to ensure apps will be entertaining whilst also historically accurate is important to attract the widest range of visitors. Technology has the capability to do this in a way which offers different things to different audiences. Separate

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[1] Davies, Jamie (2014) *On-site digital heritage interpretation: Current uses and future possibilities at World Heritage Sites*, MA, Durham University, p.7.

[2] *Ibid* p.10 *AND* Reino, Sofia, Mitsche, Nicole and Frew, Andrew J. (2007) The contribution of technology-based heritage interpretation to the visitor satisfaction in museums, *Information and Communication Technologies in Tourism*, p.344.

[3] Murphy, Adrian (2015) *Technology in Museums: making the latest advances work for our cultural institutions,* Museums and Heritage. [http://advisor.museumsandheritage.com/features/technology-in-museums-making-the-latest-advances-work-for-our-cultural-institutions/]

[4] Murphy, Adrian (2015) *The Lost Palace: using technology to create a previously impossible visitor experience*, Museums and Heritage. [http://advisor.museumsandheritage.com/features/the-lost-palace-using-technology-to-create-a-previously-impossible-visitor-experience/]

sections of an application could cater to younger audiences, whilst another could be more appropriate for a visitor with existing knowledge of the site.

Factors such as practicality: whether an application can function without mobile signal, whether they can successfully present the most up to date version of information and whether it can encourage the movement of visitors away from areas of private land and those facing preservation risks will also be considered. My project will propose a walking tour application for the battlefield of Towton, using primary and secondary sources, pictures and video whilst pinpointing significant locations of interest for a visitor to learn about both the history of the battle and how factors such as terrain influenced tactical decisions. I will discuss existing heritage technology projects and communicate with application creators, heritage professionals and battlefield guides to determine whether this form of interpretation is a realistic option for English battlefields.

Aims and Methodology

Aims

I aim to consider present heritage applications and their benefits and pitfalls, coupled with my own research into visitor preferences, to produce a concept for a mobile application which will enhance the accessibility of England's historical battlefields. With focus on the Wars of the Roses, the Battle of Towton battlefield will be my case study. I suggest an interactive battlefield trail, pinpointing significant areas of the battle, will be the most effective means of doing so. From areas of strategic importance, to those relating to the preceding days and aftermath of the battle, I will produce a detailed account of the battle and any research surrounding it in an engaging format.

When considering the addition of a mobile application, it is important to discuss why digital interpretation can both enhance and interfere with present interpretation, whether a site is appropriate for such technology and what level or type of digital heritage is most effective. According to a survey in 2012 by the UK museums association, mobile interpretation was expected and 'essential' to visitor engagement for most participants.[5] Mobile applications and technology can provide heritage sites with the ability to customise their interpretive facilities by providing location specific information and suggestions for further research and sites of interest, as a result creating stronger links between visitor and place. However, this 'potential multiplication of contents and functions' also creates new issues.[6] Factors such as funding, technical issues and considering whether technology can be used to accurately present the information battlefield management want to portray, are potential challenges to the project. I will look at existing projects and consider whether they have been successful enough for their principles to be applied to my suggested sites within England.

Wicks in 2015 emphasises the benefits of mobile applications in increasing accessibility to a site: attracting non- traditional visitors, creating further interest in recurring visitors and bringing access to inaccessible areas.[7] Younger generations have come to expect technology and it could be the key to connecting them to more unfamiliar heritage sites. Whilst it could be argued that people visit heritage sites to reconnect

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[5] Davies, Jamie (2014) *On-site digital heritage interpretation: Current uses and future possibilities at World Heritage Sites*, MA, Durham University, p.13.

[6] Sartori, Andrea and Lazzeretti, Luciana (2014) *The role of digital technologies in heritage interpretation: a conceptual framework and some recommendations*, 10th ICOMOS General Assembly and Scientific Symposium, p.4.

[7] Wicks, Sanna (2015) *The Value of Mobile Phone Applications in Heritage Interpretation*, unpublished MA at the University of Birmingham. [http://etheses.bham.ac.uk/6048/1/Wicks15MAbyRes-Optimised.pdf] p.101.

with history and escape modern societies' technological developments, it could be that technology can provide visitors with several benefits. There can be links to material not typically accessed by the public and information on significant areas of a battlefield now inaccessible due to modern development or being on private land. An application can also provide instant access to more information about specific locations without increasing the amount of physical interpretation at the site. However, consideration also must be made for the benefits of existing physical interpretation. Those unaware of an application would be otherwise unaware of a battlefield without panels of information, some battlefields can have minimal mobile connection and visitors may simply not have the ability to download or use an application. Applications have their benefits but should work in partnership with existing, more traditional interpretation. This projects' aim is to consider these debates and use them to produce a concept which ultimately enhances battlefield interpretation.

Methodology

Several surveys and interviews have been performed to gauge opinion on the current state of interpretation and how it should be progressing. An article in 2016 emphasises the importance of assessing visitor preferences to provide policy makers with 'important insights to appropriately shape the supply side of the tourism market.'[8] In evaluating opinions of the current state of a battlefield's interpretation from a combination of the general visitor and industry experts alike, battlefield interpreters would be able to create more widely appreciated content.

To gather a range of responses, an online survey consisting of ten questions using multiple choice, ranking and open-ended answers surrounding Towton battlefield's interpretation and the potential use of technology was created. I advertised the survey firstly on social media, via. Twitter utilising 'tags' relevant to Towton and battlefield interpretation, and to my own Facebook page available to be shared. I have separately sent it to members of the Towton Battlefield Society, all who have an interest in or have visited the site. Understandably, such a group could suggest a bias in favour of Towton battlefield, or indeed more experience in the subjects than a more random survey. However, these may be the people most interested in visiting such sites or potentially testing such technology and the balance between these and my initial survey of people with no personal connections to the site, might provide an interesting contrast in opinions. Future research could expand these responses by using physical surveys at the site and more detailed interviews in order to access people who have an interest in the site but have not accessed the survey. Onsite data gathering could pose difficulties considering the vast nature of the land and the lack of a designated entrance or exit point, but could further enhance the study's scope of opinion.

The survey was created using the website *Survey Monkey*, in which the format of questions can be chosen, and answers can be analysed using their feedback software. It was felt that adding 'please explain why' boxes after the multiple choice questions could ensure responders would provide more detailed, useful answers.[9] The questions were divided into themes, the first four questions relating to existing Towton battlefield interpretation, questions 5-7 considering mobile applications within this context and the final three providing

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[8] Mitsche, Nicole and Strielkowski, Wadim (2016) Tourism e-services and Jewish heritage: a case study of Prague, *De Gruyter*, EJTHR, 7, 3, p.204.

[9] See Appendix 2 for survey questions.

some data about the participants.[10] The questions consider the fundamental principles of interpretation as outlined in 1957 by Freeman Tilden.[11] In questioning what aspect of Towton visitors found most interesting, and asking users to rank what they would prefer to see from a mobile application, the questionnaire has attempted to gain insight into the preferences of potential visitors in order to bridge greater links with the site. A case study of tourism e-services in Prague suggests mobile services are supplementing traditional information sources rather than replacing them, something the survey aims to address.[12] The final point of Tilden's, surrounding interpretation following different requirements for different groups of people, will hopefully be considered using the survey. Younger responders and people unfamiliar with the Towton battlefield site answering in favour of a mobile application could suggest this is a means of attracting a wider and more diverse audience.

Several qualitative interviews were had with heritage and battlefield professionals to supplement the literary historiography chapter. The professionals in question include: an informal discussion at the battlefield site with Chris Berendt, Chairman of the Towton Battlefield Society, email correspondence with Gary Adelman the Director of History and Education at the American Civil War Trust and Licenced Gettysburg Battlefield Guide, Nicholas Wiley the creator of the *inSite Gettysburg* application and finally an email correspondence and phone interview with Anthony Rich, an accredited Battlefield Guide within the Guild of Battlefield Guides.[13]. It is hoped they will provide extensive insight into a wider variety of issues surrounding the topics of interpretation and technology. These interviews will be referenced throughout this study. It is hoped that future research can develop the application and gather the appropriate feedback from these relevant parties to gauge its success, and as a result consider it as a framework for future developments in battlefield interpretation.

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[10] For a study of the results see p.46 onwards.

[11] Kuo, ien-Te, Chang, Kuo-Chien et al. (2016) Effects of Tour Guide Interpretation and Tourist Satisfaction on Destination Loyalty in Taiwan's Kinmen Battlefield Tourism: Perceived Playfulness and Perceived Flow as Moderators, *Journal of Travel and Tourism Marketing*, p.109.

[12] Mitsche, Nicole and Strielkowski, Wadim (2016) Tourism e-services and Jewish heritage: a case study of Prague, *De Gruyter*, EJTHR, 7, 3, p.204.

[13] See Appendix 1 for transcriptions of correspondences

Historical Research

Introduction

Heritage researchers may nowadays consider the conflicting nature of technological advances, weighing their benefits against their potential risks. Similar debates were found in the 1930s as America's National Park system was gradually embracing the act of interpreting historical locations as opposed to its initial aim of preserving.[14] B. Floyd Flickinger, hired in 1931 as one of the service's first park historians, expressed the importance of interpretation at historic sites, stating the first obligation as custodians of an historic site should be preservation, then restoration and reconstructions, with the third and 'most important phase' being interpretation.[15] Such aims are reflected in today's sites, who attempt a healthy balance between conservation and interpretation.

One issue during the early development of America's Civil War battlefields was difficulty appealing to a wide audience. Prior to the battlefields coming under National Park control the War Department controlled interpretation, and veterans interested in tactics and more detailed participant accounts were the main patrons. The National Park authorities were 'slow to recognise that contemporary visitors were more likely to appreciate the overall significance of the battles,' and accused of being too specialist.[17] It could be argued that similar issues are present in today's interpretation, in contrast Bannockburn's new technological installation depicting the war as a tactical game alienating more serious visitors to the site. The battle's 'immersive visitor experience' has won acclaim for its innovation in engaging the audience in a pivotal battle, using reality technologies to enable visitors to make crucial battle decisions.[18] With such little evidence left from the major battle, the Bannockburn website hails the technology as harnessing 3D technology to 'bring Scottish history to life.'[19] This example of technology shows the possibilities for battlefields with plenty of funding on this level. However, as some *TripAdvisor* reviews suggest, some visitors were not impressed by the display of technological advancement. One review complains it 'trivialised a bloody and brutal battle,' another described it as 'rather juvenile and frankly very difficult to

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[14] Mackintosh, Barry (1987) The National Park Service Moves Into Historical Interpretation, *The National Park Service and Historic Preservation*, Vol. 9, No. 2, p.51.

[15] *Ibid*, p.52.

[17] *Ibid*, p.56.

[18] Murphy, Adrian (2015) *Bright White: the Battle of Bannockburn and understanding the potential of virtual environments*, Museums and Heritage. [http://advisor.museumsandheritage.com/features/bright-white-the-battle-of-bannockburn-and-understanding-the-potential-of-virtual-environments/]

[19] http://battleofbannockburn.com/visit/

follow.'[20] The positive reviews notably mention how it would be 'excellent for school children' and that you must think of it as more of a 'computer game.'[21]

An impactful way of teaching history is to enable someone to gain an understanding and feeling of an event through the 'medium of contact with the site itself.' [22] The battlefield of Towton (1461) encourages this through research into the archaeology of the site and the incorporation of such into interpretation panels and guided tours. This effectively highlights to visitors the topography of the land and archaeological evidence, and how it shaped events. The addition of a compact visitor centre, the ability to purchase a battlefield trail map and multiple events held throughout the year by the Battlefield Society enables increased contact with the site and more personal links with the visitor. Whether simply stumbling across the site, or locating it online using their website, there is existing potential to see more of the battlefield than just an empty space. Technology could enhance this, providing multisensory experiences to make interpretation more immersive to new and existing visitors whilst accentuating the passionate efforts of the battlefield society in encouraging others to learn more about the context of the site.

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[20] James Clare (Sep 2017) Bill H (Aug 2017) The Bannockburn Experience, Tripadvisor.
[https://www.tripadvisor.co.uk/Attraction_Review-g191266-d216555-Reviews-The_Battle_of_Bannockburn_Experience-Stirling_Scotland.html]
[21] Midhill and Babhrab (Oct 2017) *Ibid*.
[22] *Ibid*, p.55.

Battlefield Interpretation: why?

Questioning both why battlefields should be interpreted and the motivations of people who visit such sites, can help determine how best to present them. Determining how sites have already been interpreted can help decide how best to interpret future sites by learning from any areas of mismanagement or room for improvement. Chris Ryan in his book on battlefield tourism finds interest in 'how places are presented and managed... how views are directed, and gazes structured.'[23] This highlights the purpose of interpretation; to present a place and encourage visitors to see the site as it was intended. From the site managers, to researchers of the interpretation and the visitors themselves, all those connected play a role in the interpreting of a site.[24]

Battlefields have great potential as recreational and educational resources. Mark Piekarz discusses the contradiction of sites being an empty, unimpressive field to some whilst others see it as a canvas for visualising and understanding an event in greater detail by fitting past events into the landscape. A battlefield site can serve multiple functions for different people, be it educational in context of the archaeological potential of the sites, recreational as a tourist spot for more casual visitors or 'history buffs,' and even a cultural benefit for a community and its identity.[25] This can be beneficial in that multiple functions and areas of interest can result in increased awareness of and visitation to the site itself.

It can also result in conflicting aims and impacts; interpretation and visitor centres could threaten the integrity of at-risk archaeological areas for example. During a study of battlefield sites in the Shenandoah Valley of Virginia in 1992 these conflicts are discussed. They were tasked with identifying Civil War sites within the region, determining their condition and relative importance, and considering how best they can be preserved and interpreted by those involved in the site.[26] The study states 'it is necessary to prevent the memory of an event and its participants from fading entirely' from the threat of development. Whilst considering the more emotive impact of the site and its' historical significance, it also acknowledges other purposes a site would hold, from being simply a recreational space to providing a historic attraction that is unique to the area. Indeed, in my own study, the battlefield of Towton can both maintain the history of the significant military event and present an interesting attraction to benefit the local community, as is evident through the Towton Society's events

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[23] Ryan, Chris (ed.) (2007) *Battlefield Tourism: History, Place and Interpretation*, Elsevier, p.1.
[24] *Ibid*, p.2.
[25] Ryan, Chris (ed.) (2007) *Battlefield Tourism: History, Place and Interpretation*, Elsevier, p.31.
[26] Lowe, David W. (1992) *Study of Civil War Sites in the Shenandoah Valley of Virginia*: Pursuant to Public Law 101-628, U.S. Department of the Interior, National Park Service. [https://www.nps.gov/abpp/shenandoah/svs0-1.html]

throughout the year.[27] A balance of all these factors and an acknowledgement of each individual sites' unique selling point is important for creating a lasting heritage site.

It is important to consider different sites around the world and their interpretational efforts as a means of determining the capabilities of our own battlefields. Whilst considerations must be made for the varying practical elements such as funding, management and land ownership, English battlefields and indeed, the case study of Towton, can learn a lot from American battlefield management and interpretation. A crucial part of American history, battlefields are protected and often visited, making them good examples of how to effectively advertise and present a site of such varied significance; to some they are sites of historical interest, to others they evoke feelings and emotions.

Whilst visitors to World War One sites focus on remembrance, validation and the wider reaching significance of an event it could be questioned whether visitors would find similar interest in Towton.[28] As with the Civil War sites in America, the First World War maintains connections to modern memory and has relative importance to modern society. Another example of this is the 'battlefield pilgrims,' who visit the Gettysburg National Military Park in America. The site is represented using emotive language such as 'hallowed ground,' portrayed as a national shrine commemorating the country's most difficult period of conflict.[29] Due to the more contemporary nature of this conflict within the context of American history, the ability to create such emotive links to English battlefield sites could prove more difficult. This can however still be achieved, be it through new research linking relevant topics to modern day interests, creating personal links through personal stories, or even connecting sites to other local areas. From the motives and experiences of soldiers who fought in a battle, to the wider political motives and impact of the event, all interests can be covered by battlefield interpretation.

Bruce Prideaux discusses the layered paradoxes of war. A battlefield in Scotland could present both a scene of national pride or national disgrace, a battle could have resulted in peace or further aggression, and the scale can span from national identity to the singular impact on participants.[30] Culloden in Scotland is an apt example of the use of a battlefield within a nation's history. It presents the site as a romantic portrayal of

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[27] https://www.towton.org.uk/battlefield-walks-2015/

[28] Dunkley, Ria, Morgan, Nigel and Westwood, Sheena (2010) Visiting the Trenches: Exploring meanings and motivations in battlefield tourism, *Tourism Management*, p.863.

[29] Gatewood, John B. and Cameron, Catherine M. (2004) Battlefield Pilgrims at Gettysburg National Military Park, *Ethnology*, Vol. 43, No. 3, p.194.

[30] Ryan, Chris (ed.) (2007) *Battlefield Tourism: History, Place and Interpretation*, Elsevier, p.20.

'Scottish tragedy,' creating a personal link with the people of Scotland, something a site like Towton might lack outside of its' local community.[31] Whilst the presentation of the battle as being a place where 'lives were lost in defence of national principles,' is quite romanticised and overly patriotic, it could be argued this narrative is still important as it shows the impact of the site on present day Scotland. It has cultural resonance, and if that is a way for the battlefield to ensure its' survival then it can work alongside other methods of interpretation and visitor experiences to cater to more audiences.

Heritage sites lacking this emotive, patriotic connection can still create contemporary links to the site. The city of Leicester used the discovery of King Richard III to revive the city's heritage and link the event to the Cathedral and neighbouring museums. It could be that sites such as Towton could enhance links with neighbouring heritage sites and other battlefields relating to their own. Efforts have already been made to do so on the Towton Battlefield Society's website; the 1461 Country project connects the site to other Yorkshire locations such as the Royal Armouries Museum in Leeds for more detail into the arms and armour of the time and the Sandal Castle at Wakefield to explore some of the events prior to Towton.[32]

A risk of conflict can arise from collaboration between relevant bodies involved in heritage sites when determining whether to prioritise preservation or create maximum commercial value; a risk more prominently felt by more popular battlefields. However, similar issues can be considered within the context of more modest sites - Towton battlefield for example could face threats from land owners prioritising their own land use, or threats from developments as the Bosworth battlefield is currently facing.[36] If such a notable, well-funded, researched and interpreted battlefield as Bosworth is at risk from development, it could set a precedent for other battlefield sites in England. The key is to use interpretation to make a site more relevant in a modern social context, not only for its historical significance but also for its wider reaching input within the local community, as a result making it easier to encourage the conservation of the site.

A further question is why more English battlefields are not used as visitor attractions.[37] The difficulty in attaching modern feelings to English historical battles, in contrast to that of Scotland, is one factor. They may not have the symbolic power or connection a site abroad in the World Wars might have; the lack of recognition

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[31] I*bid*, p.224.

[32] https://www.towton.org.uk/1461-country/

[36] https://www.history.org.uk/ha-news/categories/455/news/3655/bosworth-battlefield-under-threat

[37] Ryan, Chris (ed.) (2007) *Battlefield Tourism: History, Place and Interpretation*, Elsevier, p.36.

for the sites in contrast to those such as the Somme or Dunkirk, shows how important it is for battlefield to have some impact on society. If a link can be created with more than just the local community and those directly interested in the medieval wars, then more visitation may be accomplished. Again, new means of interpretation can aid with this, as more information can be provided and in a more accessible way. It could be that more audiences are attracted if more interesting research is presented in a more entertaining manner for younger generations. It is evident that a battlefield site requires interpretation, in whatever form is most relevant to the individual site, to create interest and encourage more personal connections. Increased visitation from this can create economic revenue for the site itself and the local community and ensure a site can survive the changing interests of modern-day society.

Battlefield interpretation: how?

From markers and monuments to audio trails and maps, orienteering devices transform 'otherwise undifferentiated terrain into an ideologically encoded landscape.'[38] Interpretation if done well can successfully mediate visitor movements and facilitate their ability to reflect and consider their experiences. Different sites require different methods of interpretation due to funding, accessibility issues and levels of research available. A site as significant and popular as Hastings could easily acquire the funding for an extensive interactive visitor centre. Battlefields which lack sources surrounding the specific locations and events may only have a commemorative plaque or interpretation panels, presenting limited knowledge but still acknowledging and commemorating the site.

A more interactive means of interpretation for such sites is the use of guided trails, society events and re-enactments. These create a more personal link with the site and aid in developing greater understanding and interaction with those who are passionate about the site. Towton has many guided tours and until recently held a widely popular event commemorating the battle on Palm Sunday. However, it was deemed to have become too large and unmanageable by the Society board and so was replaced with more localised events. Arguably, these events are invaluable in creating interest for the site and should be encouraged as much as possible in lieu of more permanent interpretation schemes. A re-enactment can have significant educational value for younger generations, in that events which can feel distant and foreign from todays' experiences can be presented visually and with enthusiasm.[39] It can be even more immersive if the reenactors also present an example of the wider community at the time, placing the battle in the context of broader contemporary society.

There are inevitable issues when considering how to present battlefield interpretation due to differing opinions and narratives. Re- enactors could risk trivialising the horrors of war and undermining the authenticity of a site, whilst others would argue re-enactors pride themselves on their accurate portrayals. Similarly, describing a battlefield site where people tragically died as a 'resource,' could undermine the emotive experience which is often memorialised. The need to balance these feelings with the more practical necessity of justifying the purpose of the land is ever present with the threat of development. One striking example of conflict is shown on the battlefield of Little Bighorn. A site, which in popular culture was portrayed as a heroic and tragic

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[38] Gatewood, John B. and Cameron, Catherine M. (2004) Battlefield Pilgrims at Gettysburg National Military Park, *Ethnology*, Vol. 43, No. 3, p.210.
[39] Ryan, Chris (ed.) (2007) *Battlefield Tourism: History, Place and Interpretation*, Elsevier, p.201.

last stand for Colonel Custer, has favoured a more mythical, dramatic portrayal over the presentation of the wide variety of experiences during the event. Native American peoples connected to the site argued their stories and sacrifices were ignored for the more patriotic and nationalistic portrayal. Interpretation should enable the telling of multiple stories and opinions of a battle, portraying the conflicting nature of both the participants and the sometimes uncomfortable hidden truths within history.[40] This is something to be considered in all battlefield interpretation, although some may not be as significant in their cultural divides. Highlighting the variety of stories is important and proven to create more interest in a site; rather than the stories of nobles, interest is growing in the more relatable layman and considering how they may have responded to such an event.

Interpretation can be useful in combatting risks to the landscape. It can be used to direct visitors away from areas in need of conservation and to raise awareness of threats facing the sites. It can also be utilised to distinguish a site which may be damaged or unrecognisable. A good example of this is in the study of the Civil War sites in Shenandoah.[41] The study creates a series of interpretation scenarios relevant to the battlefields and their preservation needs. It suggests their individual importance contributes to the wider history of the location alongside its' role in the Civil War and encourages sites to connect to each other through interpretation. The levels of risk vary dramatically amongst the sites; Front Royal is a site very heavily developed over. The study suggests a tour of the remaining surviving sources on an interpreted route following one of the armies involved in the battle. They intend for the tour to pass through town, tempting visitors to patronise business; effectively utilising the remaining sources from the battle whilst also creating links with the local community. A mid-level site is Tom's Brook, an area with the potential for a hiking trail and interpretive signs, but facing the risk of commercial development. The study concludes preservation is possible but could be difficult to obtain, suggesting the solution is to utilise the site as well as possible whilst determining how to best facilitate interpretation in the scenario of future development. The best-preserved site in the study is McDowell, described as holding great potential as many acres of the battlefield are owned by a non-profit battlefield protection association. There is currently no onsite interpretation which should be expanded, including an 'interpretive shelter in the town to encourage further visitors.'[42] This is a good example of a protected area with

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[40] Buchholtz, Debra (2011) TELLING STORIES: Making History, Place, and Identity on the Little Bighorn, *Journal of Anthropological Research*, Vol. 67, No. 3, p.432.
[41] Lowe, David W. (1992) *Study of Civil War Sites in the Shenandoah Valley of Virginia*: Pursuant to Public Law 101-628, U.S. Department of the Interior, National Park Service. [https://www.nps.gov/abpp/shenandoah/svs0-1.html]
[42] *Ibid*.

great potential as there is also a hiking trail, suggesting the site could appeal to both history fans and those eager to maintain the country's green spaces. These suggestions and recommendations could be used in the context of English sites; their threats and capabilities can be evaluated to ensure their interpretation potential is being adequately built upon. A site with few sources and lacking in protection can still be highlighted using a mobile application, with information about the site available where an interpretation panel may not be.

The Naseby Battlefield Project, aimed to 'make the history accessible to the modern, casual visitor as well as the scholar,' is another example of respectful and interactive interpretation improvements. [43] Through the use of new research creating new interpretation relating to tactics and terrain, the visitor is 'invited to appreciate what cannot be seen,' and consider how and why the battle came to pass.[44] A viewing platform provides information and flags to associate the history with the visual, and encourages visitors to consider sources and their viability in relation to the terrain using new archaeological findings. Interpretation creators aim to eventually include information about the Second World War, the locality and their own work, just as I aim to present Towton within the wider context of other battles and the local setting. The study also discusses the 'limited compass of an interpretation board,' and hopes to create more extensive interpretation within a museum setting. This again reflects the need to keep interpretation relevant and be aware of the constantly changing interests of the wider public. While the interpretation panels at Towton may be accurate and interesting, an application may create further intrigue and provide the platform to add new research to onsite interpretation.

The study of the Civil War battlefields of Shenandoah claims that to consider one battlefield separately from those of which it is a part, 'is to miss a critical meaning of this unique aspect of the Civil War.' This concept is appropriate for England's battlefields. Whilst a battlefield's individual importance can be interpreted, without considering the wider role within the wider war, any interpretation will be limited in scope. An application could succeed in acknowledging the individual site within the context of the wider geographical links and scope of research using the extra space available. Ultimately there is a need for diversity in interpretation, both in

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[43] Evans, M Marix (2014) Presenting Naseby, *Arms and Armour*, Vol 11 No 1, pp.17-32. [https://www-tandfonline-com.libaccess.hud.ac.uk/doi/pdf/10.1179/1741612414Z.00000000029?needAccess=true] p.17.
[44] *Ibid.*

presentation and also in representing the different meanings and significances of the place.[45] Battlefields as

heritage sites can differ vastly in scope and capabilities and should be treated as such.

[45] Lowe, David W. (1992) *Study of Civil War Sites in the Shenandoah Valley of Virginia*: Pursuant to Public Law 101-628, U.S. Department of the Interior, National Park Service, p.42.

Technology and heritage interpretation

The contribution of digital technologies in interpretation 'still remains to be assessed in more depth.'[46] The first historical phase was the digitization of museum collections to spread access to cultural contents; this also increased the ability to organise collections in a coherent manner.[47] More recently, new technological trajectories such as virtual reality models and mobile applications have created debates surrounding the impact of technology on interpretation. Its' role now encompasses 'enhancing the production of multiple interpretations,' encouraging visitors to actively construct a more personal meaning.[48] Mobile phone apps can enable visitors to create their own tour and as a result opinions about the site. Whether this is necessary, or appropriate for such heritage sites is a question to consider. Do visitors want to personalise their experience or want to be guided and taught, throughout which developing their own views on the information presented? Whilst visitors can determine their own personal links and opinions of the battle site, it might be best done so with information presented by professionals who have considered sources in the context of physical evidence and prior knowledge. My application will provide several academic suggestions to the source materials and encourage visitors to consider these arguments; they are not creating their own interpretation but considering the interpretation in the context of what they are learning.

As with traditional battlefield interpretation, American Civil War battlefields were at the forefront of making use of technological advancements and mobile applications. The Civil War Trust's websites claims that their mobile apps help visitors 'unlock American history' at the battlefield or at home, in doing so enhancing their efforts to save battlefield land from development.[49] This shows the potential of using mobile applications; if used right, it can increase both accessibility to the site and awareness of the risks to a site. Whilst the Civil War Trust's applications maintain a common theme and design, they all are unique to their battlefields. The Shiloh app covers not only the battle, but also the subsequent siege and other sites such as the Shiloh Church.[50] The 'seldom- visited' battlefield is just one part of an interesting location within America's Civil War history, and suggests potential sites people may not have noticed otherwise. In contrast, the Cedar Creek app emphasises

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[46] Sartori, Andrea and Lazzeretti, Luciana (2014) *The role of digital technologies in heritage interpretation: a conceptual framework and some recommendations*, 10th ICOMOS General Assembly and Scientific Symposium, p.2.

[47] Cushing, Amber L. and Cowan, Benjamin R. (2017) Walk1916: Exploring non- research user access to and use of digital surrogates via a mobile walking tour app, *Journal of Documentation*, Vol. 73, Iss. 5, pp.917-933. [https://doi.org/10.1108/JD-03-2017-0031]

[48] *Ibid*, p.3.

[49] https://www.battlefields.org/visit/mobile-apps

[50] https://www.civilwar.org/visit/mobile-apps/shiloh-battle-app-guide

the specific sites of tactical interest, from a surprise Confederate attack to the counter- attack that led to a crushing Union victory. [51] It includes historian videos, audio accounts of soldiers and orders of battle. This shows the detail an app can cover and in how many different formats. What features will be included in other battlefield applications will depend on factors such as practicality and available sources; there are lots of sources from the more recent American Civil War compared to the English Wars of the Roses.

A new initiative in 2015 at Gettysburg National Park shows the continuing development of interpretation and increase in the use of technology. Battlefield podcast tours were produced, taking a user on a 90-minute walking tour of the battlefield landmarks, hosted by a specialist Gettysburg Interpretive Ranger.[52] This indicates how technology and traditional interpretation can work successfully side by side; the podcast tour did not replace but worked alongside traditional guided tours, and proved applications do not have to 'dumb down' the thorough knowledge of battlefield specialists.

There is a wealth of research relating to mobile apps and significant heritage locations. An example of this is an analysis of existing World Heritage Site mobile applications, which discusses how such technology is used to encourage and improve sustainable tourism practices by presenting sites in a way which guides and sensitises visitors.[53] This could be employed within my own study of local heritage and how applications can be used to guide visitors and educate them of the sites' conservational needs. Sanna Wicks discusses the value of mobile phone applications and assesses the effectiveness of current heritage sector applications in her MA research. She suggests that different interpretation and technology is appropriate for different aims.[54] She also deduced that applications may offer more value to sites where there is less human interaction and interpretation. This could be applied to battlefields which are less funded and manned, providing guidance in an otherwise isolated site. Another recent study into the value of heritage sites collaborating with technology is a project at the museum of the Chesters roman fort at Hadrian's Wall. The process of creating a greater link between the heritage site and the visitor is encouraged through the 'internet of things,' in which technology is within a physical object of historic interest a visitor can interact with. In doing so the visitor will feel more

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[51] https://www.civilwar.org/visit/mobile-apps/cedar-creek-battle-app
[52] Anonymous (2015) *Battlefield 'Podcast' Tours*, Gettysburg, National Park Service.
[https://www.nps.gov/gett/learn/historyculture/gettysburg-podcast-tours.htm]
[53] Schieder, Theresa Karolina, Adukaite, Asta and Cantoni, Lorenzo (2013) Mobile Apps Devoted to UNESCO World Heritage Sites: A Map, *Information and Communication Technologies in Tourism*, p.18.
[54] Wicks, Sanna (2015) *The Value of Mobile Phone Applications in Heritage Interpretation*, unpublished MA at the University of Birmingham. [http://etheses.bham.ac.uk/6048/1/Wicks15MAbyRes-Optimised.pdf] p.145.

connected to the story and have a part to play in guiding their visit. This can in a fashion be implemented into onsite interpretation in that a battlefield application could help a visitor control their own visit; they can learn about events when they get to the point of interest and the personal link is created through experiencing the technology and learning whilst on the site of the event. If future funding and collaboration were possible, this experience could be further expanded with more immersive technology to enable visitors to have a more multisensory experience whilst on the site- through technologies such as Augmented Reality, for example.[55]

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[55] Petrelli, D, Dulake, N et al. (2018) *Exploring the potential of the internet of things at a heritage site through co-design practice*, Proceedings of the 2018 Digital Heritage International Congress.

Towton Battlefield

Introduction

My proposed location of Towton battlefield proves most popular when visited using a guided tour run by the Towton Battlefield Society. Negative reviews describe the battlefield as 'boring' with 'nothing to see,'[56] whilst positive reviews applaud the 'extremely knowledgeable' tour guide and 'interesting tour which added greater understanding of the battle.'[57] This shows the potential to be had from a tour application, in that with greater understanding and engagement a true appreciation can be had for what is often described as the largest and bloodiest battle ever fought on English soil. Information about the battles' political significance, deployments and strategy during the battle and the later discovered mass graves show there is much to learn about the site. More cultural references such as Shakespeare's reference to the battle and poems and verses to be seen on the battlefield's website, can all be engaging interpretation for an application.[58] The battlefield shows potential for an educational and interesting visit if one knows where to look or has the right facilities.

There are possible setbacks, such as the battlefield land belonging to private owners and there being surprisingly few contemporary accounts which provide similar timelines of events. It could be possible to use these as activities, enabling visitors to make research decisions based on the conflicting sources. In contrast, the Mortimer's Cross battle during the Wars of the Roses has very little information and lots of questions regarding the location and nature of the action. In an interview with battlefield guide and Mortimer's Cross project contributor Anthony Rich, he suggests that whilst the long-term aim of Mortimer's Cross may be to provide alternate interpretation- considering the use of technology- the site's primary aim is to discover whether there is in fact a story to tell.[59] A study into the sources and battlefield evidence to determine the historical and archaeological potential of the site is in progress. This highlights some of the issues surrounding many earlier battlefields and why they might not be the best initial case studies; not all have the archaeological potential of Towton, many have developments risking the integrity of the sites and others have a significant lack of documentary sources. Mortimer's Cross may in the future be an interesting alternative case study. With the

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[56] Paul S (2015) John C (2017) Towton Battlefield, Trip Advisor. [https://www.tripadvisor.co.uk/Attraction_Review-g7132690-d3640879-Reviews-Towton_Battlefield-Towton_Selby_District_North_Yorkshire_England.html]

[57] Richard G (2017) and John (2018) *Ibid*.

[58] https://www.towton.org.uk/verse/

[59] See Appendix 1c.

Heritage Lottery funded project currently in the works at the battlefield, the potential is there for new technology to be utilised in future interpretation. The collaborative nature of such projects with community, professional, conservational and archaeological involvement alike, provides the opportunity to produce an application which considers these questions and is updated with new findings and information.

Primary Sources

Contemporary Burgundian chronicler Jean de Waurin wrote of the battle of Towton, 'so followed a day of much slaying between the two sides, and for a long time no one knew to which side to give the victory so furious was the battle.'[60] The battle is perhaps most widely known for its reputation as the bloodiest and largest battle on British soil. It is arguably known best within the academic world for its' invaluable archaeological potential upon the discovery of a mass grave near the site in the 1990s. Shakespeare's play Henry VI likened the conflict to a 'contest between the wind and tide of a mighty sea,' so large were the armies and chroniclers often reference to the rivers running 'red with blood,' after the battle.[61] These emotive impressions were the culmination of a blood feud which preceded the encounter throughout the Wars of the Roses. Beginning in 1455 initially as a struggle to control the weak King Henry VI, a Civil War disputing the rightful succession to the throne was created between the competing Duke of York and Duke of Somerset. The Battle of Northampton, in which Henry VI was captured by Yorkist forces, resulted in the Duke of York claiming his own right to rule through his own royal lineage from Edward III. The resulting Act of Accord determined the Duke and his descendants would succeed Henry after his death, eradicating Henry's son Edward the Prince of Wales' right to the throne. His mother, the French queen Margaret of Anjou secretly amassed a Lancastrian army in the North of England to restore her son's rulership and rescue the current King. Thus, the Wars of the Roses became a series of battles between two kings, in which family fought family and those of noble lineage had everything to lose or gain.

Such a period of history would be written by the victors depicting their heroic deeds and impressive victories. The task of a historian is to determine the truth amongst the stories. Whilst documentary sources create a good baseline for the Battle of Towton- one of the better documented battles of the period- the battlefield itself provides the most impartial evidence within its archaeology. Whilst no single clean account of the action there are many brief contemporary references, the three most referenced being chronicler Jean de Waurin, the chronicle of Edward Hall written 70 years after the battle and Hearne's Fragment written in the 1520s.[62] All three present notable inconsistencies, with some avoiding Waurin's account of the battle despite its' contemporary nature due to his difficulties with English.[63] Edward Hall proves to be a popular source, but

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[60] Fiorate, Veronica, Boylston, Anthea, Knusel, Christopher (ed.) (2007) *Blood Red Roses: the archaeology of a mass grave from the Battle of Towton AD 1461*, Oxbow Books, p.1.
[61] *Ibid*, p.15.
[62] Battlefields Trust, *Battle of Towton*, UK Battlefields Resource Centre. [http://www.battlefieldstrust.com/resource-centre/warsoftheroses/battleview.asp?BattleFieldId=46]
[63] Anonymous (1995) English Heritage Battlefield Report: *Towton 1461*, p.3.

also provides a drawback as there is no evidence for where he got his information. Hearne's Fragment suggests the battle was fought overnight which is disputed by most historians. However, all three provide information which corroborates accepted interpretations of the battle.

The battle is well known for its' size, the average number of around 20-28000 men killed supported in several contemporary sources. The Earl of Warwick in a letter to his brother and Chancellor of England George Neville was supposedly the original source to suggest such figures. Contemporary Yorkist ballad The Rose of Rouen also suggests over 20000 were killed, and William Paston in 1461, a herald of King Edward also gives a number of 28000. Whilst these could be argued as 'propagandist tales of a great Yorkist victory against overwhelming odds,' the fact so many contemporary accounts state this battle was irregular in terms of size compared to most other Wars of the Roses battles suggest they could be believed.[64]

Another contemporary source is Lancastrian soldier Lord Dacre's tomb found in Saxton Church grounds. The now almost illegible inscription reads 'Here lies Rondolf, Lord Dacre… a true knight, valiant in battle in the service of King Henry VI, who died on Palm Sunday 29 March 1461, on whose soul may God have mercy, Amen.'[65][66] The church itself has also been dated as having 11th/12th century origins and could have provided refuge for the villages of Saxton on the Palm Sunday the battle ensued. Another physical source is Towton Cross, also referred to as Lord Dacre's cross, despite there being no evidence of any relation. Whilst these are few of the definite pieces of evidence relating to the battle, they also provide some points of contention- the cross, whilst contemporary from the battle, has been removed from its original context and reinstated as a memorial to the Battle. The inscription on the cross, as well as the monument which lies next to Lord Dacre's tomb, were both added more recently.

The topography of the battlefield landscape is an interesting research area and something which can be appreciated during a battlefield trail. The ability to see features which existed during the time of the battle can enable a visitor to experience closer links with the site. The tactical positioning of the two armies is evident when observing the Towton- Saxton plateau. The field between the two parishes experiences a sharp drop in the land on the west and east, providing a front for the battle lines and protection for the armies' flanks. The

[64] Fiorate, Veronica, Boylston, Anthea, Knusel, Christopher (ed.) (2007) *Blood Red Roses: the archaeology of a mass grave from the Battle of Towton AD 1461*, Oxbow Books, p.25.
[65] *Ibid*, p.3.
[66] See Appendix 4j.

River Beck provides a line along one flank and proved to be an area of death and despair in the latter stages of the battle.[67] Whilst the battlefield is officially defined as the area between the two villages, the final stages of conflict include land as far north as Tadcaster in the ensuing rout of the Lancastrians. The Old London Road still visible today was used by Lancastrians as they fled over the still existing River Cock. Both provide evidence of the landscape as it was and more recently the potential for archaeological research.[68] Near Towton Hall, visible in aerial shots, there is evidence of surviving ridge and furrow earthworks- a medieval farming technique.[70]

Towton was the culmination of a series of battles and skirmishes, beginning with a surprise attack on a garrison of Yorkists at Sandal Castle by the entire Lancastrian Army. The Battle of Wakefield in 1460 resulted in the death of the Duke of York and the passing of the title to his eldest son Edward, Earl of March, who after a definitive victory cementing his role against a Welsh and Lancastrian army at Mortimer's Cross in February 1461, marched onto London and was crowned King. King Edward's priority was to muster his allies and march north to deal with the Lancastrians. These prior battles provide good context and potential for further expansion of my application. What ensued during March was the initial fighting at Ferrybridge and Dintingdale which would eventually be encompassed within the wider title of the battle of Towton.

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[67] See Appendix 3a and 3b for images of the battle lines in relation to the terrain and surrounding locations, one modern one from the 1890s
[68] See p.33 onwards.
[70] See Appendix 3c. for an aerial shot of ridge and furrow evidence from 1940s, also look at Battlefield Trail panel 10 for further evidence

Events of the battle

Boardman in 1994 suggests the controversial nature of Towton's sources, referring particularly to the question of numbers of participants, is what makes the battle interesting.[71] The more interesting the subject the more likely it will pass the test of time, and Towton is still being discussed and still has potential for further research. Sources and evidence are open to interpretation from different backgrounds and fields of knowledge- from military historians, to archaeologists, to anthropologists. One such debate is evident in the Battle of Ferrybridge.

Boardman suggests the battle proved to be a dilemma for chroniclers, who failed to appreciate the sequence of events prior to Towton and put Ferrybridge in the shadow of the larger battle. He states he wants to show that 'this singular engagement across a natural defensible obstacle ranks among the more acclaimed and interesting battles of the Wars of the Roses.'[72] Tim Sutherland also suggests Towton's domination is a 'manufactured concept.'[73] Lord Clifford, a notable Lancastrian whose father was executed during the Duke of York's assault during the First Battle of St Albans in 1455 and subsequently impressed the Lancastrian hierarchy with his efforts during the Battle of Wakefield, was a key player. Alongside his personal retainers, his aim was to weaken the Yorkist forces by destroying their means of crossing the River Aire and dislodge them from their 'difficult and defensible position across the river.'[74] Whilst there is no archaeological evidence at Ferrybridge, evidence collected at the secondary clash at Dintingdale, one mile south of Towton, confirms prior activity.[75]

A surprise dawn raid shocked the Yorkists, and Clifford subsequently demolished the bridge and used it to form defences against the inevitable counterattack. Edward rallied his troops to meet them. Sources describe an impressive defence from Clifford and his men, some stating around 3,000 men killed with the Yorkists struggling to defeat the smaller but better positioned force. The tables turned as Clifford took the decision to retreat and was ambushed at Dintingdale only a mile away from his fellow Lancastrians at Towton. Many historians question how the events took such a turn; how Clifford and his men were left to be destroyed as the main body of Lancastrians prepared for the ensuing battle. Alan Stringer suggests the Duke of Somerset may have 'left Clifford out to dry' due to a clash of personalities or jealousy of the praise Queen Margaret offered

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[71] Boardman, A. W. (2000) *The Battle of Towton*, Sutton Publishing Ltd, p.xi.

[72] *Ibid*, p.58.

[73] Sutherland, Tim (2009) Killing Time: Challenging Common Perceptions Of Three Medieval Conflicts- Ferybridge, Dintingdale And Towton- 'The largest battle on British soil,' *Journal of Conflict Archaeology*, 5(1) p.1.

[74] Boardman, A. W. (2000) *The Battle of Towton*, Sutton Publishing Ltd, p.61.

[75] For a map of artefact distribution, see Appendix 3d.

Clifford after the battle of Wakefield. However, during such a significant point in the Wars of the Roses it is difficult believe a military leader would willingly lose one of his more significant Lords, for both morale and available manpower. He also highlights the topography of the landscape, as the Lancastrian line at Dacre's Cross faces a reverse slope from Dintingdale, possibly resulting in the ambush being out of sight of their allies.[76] The inevitable encounter with the Yorkists could have also resulted in the Lancastrians being occupied with planning and strategizing, trusting their further advanced troops to handle themselves. The actions at Ferrybridge delayed and unsettled the Yorkist advance and reduced their manpower. However, it also 'blooded Edward's troops' and arguably allowed time for the Duke of Norfolk, an ally of Edward who was late but en route to reinforce the Yorkists, to gain more ground.[77] It would be this arrival that turned the tide of the fighting.

Tim Sutherland, a significant contributor to the research into the battle of Towton, suggests a new hypotheses of the three battles being a more rapid dynamic series of conflicts, with the common total of 28,000 dead referring to all three parts.[78] This hypothesis considers whether the skirmish at Ferrybridge occurred on the morning of the 28th or the 29th March, suggesting if the latter was the case based on the differing concepts of time during the medieval age, then there would have to be a 'reconsideration of the number of combatants and the capabilities of Medieval forces to move around the landscape.'[79] He also suggests that the generally agreed upon number of deaths (around 20-28,000) could be grossly exaggerated and that within the most contemporary source by chronicler Waurin, the 3,000 dead at Ferrybridge could be the true total amount. This would be more similar to other Wars of the Roses battles and Sutherland suggests the large number of Noble deaths, alongside the contemporary notion that the conflict lasted a whole day, and that the victors would have elaborated their victory to establish their rule, implies the initial numbers may be incorrect.[80] This is a question which could be posed to the battlefield visitors, to consider the academic suggestions and use the evidence- both contemporary and archaeological, to develop their own opinions. Were the numbers of participants at Towton an anomaly or an exaggeration? The inclusion and emphasis on the Ferrybridge and Dintingdale events

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[76] Stringer, Alan (date unknown- post 2009) The battles of Ferrybridge and Dintingdale, 27-28 March 1461, p.8.
[77] *Ibid*, p.9.
[78] Sutherland, Tim (2009) Killing Time: Challenging Common Perceptions Of Three Medieval Conflicts- Ferybridge, Dintingdale And Towton- 'The largest battle on British soil,' *Journal of Conflict Archaeology*, 5(1) p.13.
[79] *Ibid*.
[80] *Ibid*, p.16.

also provide a more interesting background and more interesting characters to the Towton story, which could be highlighted further within my project.

Ellis wrote in 1809 'orders of no quarter were passed; snow fell and as the armies saw each other it is said that they made a great should of defiance.'[81] The scene was set. Nobles fought for titles, land and revenge and commoners fought for plunder and to fulfil feudal ties.[82] The Lancastrian army occupied a good position, with marshland on the left flank and the River Cock valley to the right. The Yorkist army appeared just out of bowshot range, the slight hill in front and snowstorm blowing into the Lancastrian lines giving them good cover and a slight advantage against the enemy's superior numbers.

The action began with a meeting of arrows, the Yorkist's carried by the wind whilst the Lancastrian's fell 'forty tailor's yards short.'[83] It was crucial the Lancastrians advanced first to avoid being shot down. Yorkist archers were described as gathering 'the arrows of their enemies and let[ting] a great part of them fly against their own masters... another part they let stand on the ground which sure annoyed the legs of their owners when battle was joined.'[84] The Lancastrians attacked across Towton Dale and up Bloody Meadow. Sheer numbers pushed the Yorkist archers back. Some contemporary writers and historians suggest the Lancastrians were assisted by a number of cavalry men laid ready to ambush in Castle Hill wood on the Yorkist's left flank, but there is not much evidence to support such claims.[85] Despite the Lancastrian push, at the most opportune moment 'fate favoured the white rose of York,' and the Duke of Norfolk's troops arrived via. the Ferrybridge road and entered the battle on the Yorkist right flank.[86] This resulted in the eventual breaking of Lancastrian lines and routing of their men.

Writings suggest the Lancastrians fled as far as the town of Tadcaster, creating a bridge of bodies across the flooded river as men struggled to escape their fate. The War of the Roses was not over, but the Lancastrian nobility was significantly deceased, and never again could they field such an army without the support of Scottish

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[81] Ellis 1809 *in* Fiorate, Veronica, Boylston, Anthea, Knusel, Christopher (ed.) (2007) *Blood Red Roses: the archaeology of a mass grave from the Battle of Towton AD 1461*, Oxbow Books.
[82] Fiorate, Veronica, Boylston, Anthea, Knusel, Christopher (ed.) (2007) *Blood Red Roses: the archaeology of a mass grave from the Battle of Towton AD 1461*, Oxbow Books, p.19.
[83] *Ibid*, p.20.
[84] *Ibid*, p.21.
[85] See Appendix 3e for a diagram of the initial battle lines, showing the possible location of the Lancastrians in Castle Hill Wood to the left of the picture
[86] Fiorate, Veronica, Boylston, Anthea, Knusel, Christopher (ed.) (2007) *Blood Red Roses: the archaeology of a mass grave from the Battle of Towton AD 1461*, Oxbow Books, p.22.

troops or continental mercenaries. The Towton dead 'littered the fields six miles long by three miles four furlongs wide,' George Neville, the Bishop of Exeter and the Earl of Warwick's brother wrote.[87] The eventual discovery of these dead provided the invaluable opportunity to gain physical information about the soldiers, arms and fighting methods and living conditions of the time.

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[87] *Ibid*, p.23.

The Archaeology of Towton

In July 1996 builders excavating the foundations of Towton Hall discovered part of a mass grave. This was the catalyst for a multidisciplinary research project, spanning from the first archaeological excavation of a mass grave from an English battlefield, to the study of the skeletal remains and battlefield landscape.[88] The Royal Armouries museum in Leeds enabled wounds found on the remains to be compared to weapons of the era, to determine how they were used in actual combat.[89] This project, like the combined efforts at Towton, could encourage links with surrounding enterprises to create a united project, suggesting visitors of Towton visit the Royal Armouries to fully appreciate the links made between each field of evidence.

Following the initial discovery of around 23 human skulls, all with various levels and types of damage, the skeletons were given a Christian burial in Saxton churchyard beside the tomb of the Lancastrian Lord Dacre. In September of the same year the North Yorkshire County Council, West Yorkshire Archaeology Service and staff and postgrad students of the Department of Archaeological Sciences at the University of Bradford subsequently undertook further scientific excavation and research.[90] Interestingly, two previous excavations are recorded, one an antiquarian excavation of a grave-pit in 1816 at the Chapel Hill area of Towton Hall which recovered arrow piles, a sword, coins and human remains. Another trial excavation in 1993 by the Towton Battlefield Society to the South East of Castle Hill Wood- the location of the supposed Lancastrian ambush-resulted in no finds and waterlogged trenches.[91]

The more recent archaeology work sought to identify the nature and extent of the grave, which contained the remains of approximately 38 individuals alongside potsherds, iron, copper alloy objects and an armour attachment- which compared well with an attachment of 15th century armour from the Royal Armouries-amongst other things. The remains of animals such as sheep and cattle show how other items could become incorporated within the evidence during backfilling.[92] Understanding where finds originated from and attempting to reduce the risk of contaminating results are important factors in battlefield archaeology. The lack

[88] Fiorate, Veronica, Boylston, Anthea, Knusel, Christopher (ed.) (2007) *Blood Red Roses: the archaeology of a mass grave from the Battle of Towton AD 1461*, Oxbow Books, preface.

[89] https://royalarmouries.org/stories/our-collection/the-must-see-objects-from-late-medieval-europe-in-the-royal-armouries-collection/

[90] Fiorate, Veronica, Boylston, Anthea, Knusel, Christopher (ed.) (2007) *Blood Red Roses: the archaeology of a mass grave from the Battle of Towton AD 1461*, Oxbow Books, p.2.

[91] *Ibid*, p.33.

[92] Fiorate, Veronica, Boylston, Anthea, Knusel, Christopher (ed.) (2007) *Blood Red Roses: the archaeology of a mass grave from the Battle of Towton AD 1461*, Oxbow Books, p.30.

of significant artefacts recovered relating to the human remains poses a question to archaeologists; could it be that bodies were stripped prior to burial, small finds have been missed, or even objects have eroded with time?

The mass grave provides evidence of the human consequence of a medieval battle, the study of the physical anthropology of the bodies providing a personal link to the humans they used to be.[93] The wide range of age, stature and physique within the remains presents a diverse range of people who participated in the battle, more representative of the general population than a standardised army. The injuries evident from the remains imply the perceived chivalry of the medieval period was not a driving force. Many showed multiple wounds on the skull, implying the Yorkists were not forgiving with their blows. Through healing evidence, it was also made possible to determine some injuries were prior to Towton, suggesting a violent lifestyle or prior fighting. The body Towton 16 showed a prominent prior wound cut across the jaw through the teeth and bone and a fractured chin, both injuries which had healed.[94] This presents an example of the level of injury one could receive at the time and survive, and could provide interesting background for my project. Sharp force injuries from blades were the most common, with blunt force less so. Interestingly, frequent injuries occurred on the forearms, suggesting defence injuries in an attempt to parry blows. This evidence alongside the location of the grave being away from the main battlefield site, suggests the bodies could have been from the eventual rout of the Lancastrians.

The study considers reasons for the significant number of head injuries amongst the remains.[95] It could be that due to the location of the grave and resulting suggestion that they were the fleeing Lancastrians, they attempted to increase their speed by removing their armour, creating an easier target for their attackers. The suggestion that helmets could not be afforded is also considered, due to armour being common amongst the nobility but common soldiers possibly only wearing a material covering. Another possibility is that due to the large number of archers within the battle, the victims chose to fight without a helmet to be more accurate with their shooting. This is again an interesting question which could be posed to the visitors of the battle in order to involve them further with the processes of the academic thinking.

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[93] *Ibid*, p.35.
[94] Fiorate, Veronica, Boylston, Anthea, Knusel, Christopher (ed.) (2007) *Blood Red Roses: the archaeology of a mass grave from the Battle of Towton AD 1461*, Oxbow Books, p.95.
[95] *Ibid*, pp. 147-153.

Further research conducted by Tim Sutherland attempts to extensively survey the landscape using new technology such as geophysical surveys, field walking and metal detecting to enhance present research. He successfully analysed the locations of finds to create artefact density maps which validated the claims that the mass grave was from the final part of the battle and subsequent routing, and also discovered evidence of the small skirmish at Dintingdale.[96] Glenn Foard has questioned his discovery of arrowhead findings being used to confirm the location of the main fighting, suggesting that the commentaries depicting Yorkists re-using Lancastrian shots against their owners might imply that 'the pattern of artefact survival on a battlefield... may not fully reflect the true pattern of use.'[97] The study also revealed several sites within the official English Heritage Battlefield Register were not from the period; mounds suggested to be burial areas were identified by circular ring ditches as from prehistoric times.[98] This shows the benefit of various inputs from different historians from different fields and the benefit of reconsidering data using new methods. My project could mirror this, using technology to enable discoveries to be inputted and fed to visitors more frequently, keeping the interpretation up to date.

Foard also discusses the finding of two small calibre lead and lead composite round shots at Towton, leading to further questions regarding why there is such little evidence of these types of weapon.[99] The study suggests the shot came from the Lancastrian side of Towton Dale, with other potential evidence therefore overshooting the area of research towards the Yorkists. The material of the evidence could also play a part, in that rounds could have been produced by stone rather than lead. This material would not be recognised by a detector and possibly displaced, removed or buried through the destoning process of agricultural farming, showing another means by which potential evidence can be reduced throughout time.

Another discovery which could be highlighted to visitors is the mysterious Towton Chapel, supposedly built to commemorate the battle during the reign of Richard III. During the period of the Wars of the Roses, a Christian burial within sacred grounds was valued above all else. It could be that the chapel was built to legitimise the burial of the soldiers within the mass graves. Sources suggest the building was abandoned or unfinished,

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[96] Sutherland, Tim L, Schmidt, Armin R. (2003) Towton 1461: An integrated approach to battlefield archaeology, *Landscapes*, Vol. 4, No. 2, p.18.
[97] Foard, Glenn and Morris, Richard (2012) *The Archaeology of English Battlefields*, Council for British Archaeology, p.89.
[98] Sutherland, Tim L, Schmidt, Armin R. (2003) Towton 1461: An integrated approach to battlefield archaeology, *Landscapes*, Vol. 4, No. 2, p.15.
[99] Foard, Glenn and Morris, Richard (2012) *The Archaeology of English Battlefields*, Council for British Archaeology, p.91.

perhaps due to its reminder of the Lancastrians of their greatest defeat.[100] In 1483 Richard III provided a warrant of £40 for 'the building of the chapelle at Towtone.' Wheater in 1882 provides evidence of the construction not going to plan when in 1488 the Archbishop of York provides a further grant towards the cost, and in 1502 there is an allowance of 40 granted to complete the Chapel.[101] However, Leadman in 1889 writes that during the enlargement of the cellars of Towton Hall 100 years prior, cornered stones, tiles and human remains believed to be from the chapel were discovered.[102] Another challenge for the visitors of Towton is to consider whether the chapel was there, whether it was ever completed and what purpose it served.

Tim Sutherland in 2003 also endeavoured to locate evidence of the chapel.[103] He suggests that in 1996 and during other recent surveys around Towton Hall, fragments of carved medieval building material and two single grave skeletons were discovered partly under the walls of the Hall. Further excavations have the potential to uncover more. It could be suggested bodies were initially buried on the battlefield and eventually moved to consecrated ground. Sutherland whilst metal detecting and in subsequent test trenches discovered teeth, fragments of skull and some vertebra and fingers. He concluded that full bodies were initially buried there but were then disinterred and later moved, leaving behind little evidence of a burial ditch.[104] In 1484 Richard III stated whilst giving funds to the parish church of Saxton and another chapel that 'we… caused the bodies to be exhumed and left for an ecclesiastical burial… partly in the parish church of Saxton… and partly in the chapel of Towton…'[105] This could refer to the missing chapel potentially located under Towton Hall. These bodies could represent significant people worthy of moving to bury individually or show there was an attempt to bury all their dead in such a manner to consecrate their remains. This also leads to questions as to whether the dead of the victorious army were treated in the same way as the dead of the defeated.[106]

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[100] Fiorate, Veronica, Boylston, Anthea, Knusel, Christopher (ed.) (2007) *Blood Red Roses: the archaeology of a mass grave from the Battle of Towton AD 1461*, Oxbow Books, p.163.
[101] *Ibid*, p.12.
[102] *Ibid*, p.13.
[103] Sutherland, Tim L, Schmidt, Armin R. (2003) Towton 1461: An integrated approach to battlefield archaeology, *Landscapes*, Vol. 4, No. 2, p.20.
[104] Sutherland, T., and S. Richardson, Arrow Point to Mass Graves: Finding the Dead from the Battle of Towton. *IN* Curry, Anne & Foard, Glenn (2016) Where are the dead of medieval battles? A preliminary survey, *Journal of Conflict Archaeology*, 11:2-3, 61-77. [https://www.tandfonline.com/doi/full/10.1080/15740773.2017.1324675]
[105] Curry, Anne & Foard, Glenn (2016) Where are the dead of medieval battles? A preliminary survey, *Journal of Conflict Archaeology*, 11:2-3, p.67.
[106] Anne Curry & Glenn Foard (2016) Where are the dead of medieval battles? A preliminary survey, Journal of Conflict Archaeology, 11:2-3, 61-77 P.69

The most recent archaeological work in and around Towton battlefield is by Tim Sutherland in 2016, who excavates and performs a geophysical survey a section of Old London Road.[107] The aim was to investigate whether a formal road once ran along the same alignment. The road was significant as a route for the fleeing Lancastrians after the battle. His findings determined a substantial field boundary, or a road or track of some form existed where the bridal track now sits, suggesting during the period of the battle a definite path existed. The former presence of important stone quarries near the crossing point of the River Cock via. Old London Road could provide some purpose for the track.

The investigation also provided an interesting side-note when considering the needed to avoid contaminating research.[108] To help visitors understand the excavation in context of the battlefield reenactors frequented the site, and a member of the excavation team discovered a new copper alloy lace end. This shows the potential risks of external involvement, as the deposited materials could eventually be considered an original medieval artefact after a few years of corrosion. This study could again be added to my project as proof of continuing work on and potential future discoveries at the site. It could also increase awareness of the risks of presenting such a resource to the public. Tim Sutherland's 2015 article on a reinterpretation of the discovered 'Towton Battle Axe,' which doubts the use of the implement in the actual battle, again shows the continuing valuable nature of Towton as an academic resource.[109] Such alterations and expansions in research can be easily added to my project to reflect such changes in thinking, in a way physical interpretation might struggle to do so.

The Towton project's contribution to the knowledge of medieval warfare has multiple levels, from the multidisciplinary nature of the project, to the ability to examine victims using modern techniques and as a result gaining insight into the nature of warfare using evidence of injuries.[110] Trigger in 1990 suggests that 'historical interpretations are notoriously subjective, to the extent that many historians have viewed them as merely expressions of personal opinion.'[111] The value of the archaeological studies and the debatable nature of contemporary sources suggest that one cannot work without the other. My project can present both pieces of

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[107] Sutherland, T. L (2016) (draft) Geophysical Survey and Archaeological Evaluation of a Section of Old London Road, Towton, *Towton Battlefield Archaeology Project*, p.14.
[108] *Ibid*, p.11.
[109] Sutherland, Tim L (2015) Towton Battle - A Reinterpretation, *Arms and Armour*, 12, 2, pp.124-135. [https://www.researchgate.net/publication/304425811_The_Towton_Battle_-_A_Reinterpretation]
[110] Fiorate, Veronica, Boylston, Anthea, Knusel, Christopher (ed.) (2007) *Blood Red Roses: the archaeology of a mass grave from the Battle of Towton AD 1461*, Oxbow Books, p.167.
[111] *Ibid*, p.156.

evidence together to provide users with a well-rounded view of the battle. This information presented in an interactive manner through instant pictures, videos and extra detail, coupled with the visual evidence of the topography of the land and the physical interpretation panels, can create a fully immersive experience.

Towton Interpretation

To determine how best to enhance Towton's interpretation, it is necessary to review the current interpretation available to visitors. I have divided it into two sections, one being physical interpretation- that which is unchanging and has a physical presence. This interpretation is visitor led and can be understood as they see fit and therefore can be appreciated or utilised as much or as little as the visitor likes. This could be to the benefit of those who find the subject interesting but have time constraints, or to the disadvantage of those who may not understand what they are looking at. Interactive interpretation includes events and interactions with those who have an interest in the battle. These activities, usually run by the Towton Battlefield Society in a voluntary capacity, add a personal aspect to visiting the battlefield. These provide extra insights which might not be gained when independently observing the battlefield, but also incorporate someone's personal perceptions of the events surrounding the site.

<u>Physical interpretation:</u>

Panels and trail

The Towton Battlefield Trail, created in 2011, covers around 2 miles of the battlefield site and consists of 10 information panels. The trail is frequented by guided tours, passers-by, those interested in the battle and dog walkers alike, and many begin the trail by parking at Dacre's Cross. The panels provide a variety of information, some depicting what occurred at the point of interest, others providing background information to the Wars of the Roses politics, arms and armour and finds relating to the battle.

The first panel depicting the battle lines provides an aerial picture of the battlefield and the location of the lines, with some information on the set-up of both armies.

Image 1: Battlefield Trail Panel 1, The Battle Lines

The first panel does not depict the prior fighting at Ferrybridge or Dintingdale in the build up to the Towton battle. There is enough information to provide some detail, but not so much as to lose interest. An application could provide the opportunity for additional information for

those interested in learning more, without taking up any extra physical space. The first panel does not appear to count as part of the main trail, with the second panel being the map of the points of interest.

Image 2: Battlefield Trail Panel 2, Welcome map

The location of the first panel being behind where the Yorkist lines would have been makes this one of the most interesting places on the battlefield and allows the visitor to put themselves in the shoes of the participants. Whilst a bit out of the way, it is hoped visitors do not neglect this part of the trail- the application could increase interest in this section and make it worth the extra walk.

The third panel provides the required information about the prior skirmishes at Ferrybridge and Dintingdale, but arguably in not as much detail as they deserve. With more recent studies and interest into the primary battles, more information could be provided about the fighting which resulted in the death of the notable Lord Clifford and supposedly 3,000 other men. The panels do not allude to the presence of Lord Dacre's grave only a mile away, nor the advertised alternate Saxton trail within the battlefield map. It does however provide interesting information about the battlefield archaeology projects, such as panel 5 which depicts battlefield finds and panel 10 which highlights the mass grave excavations.

Images 3 and 4: Battlefield Trail Panels 5 and 10, Battlefield Archaeology and The Village

More information could be provided about the excavations and importance of the chapel built by Richard III which is briefly mentioned. An application could provide valuable space to go into further detail about the research, such as the skeletons' health and injuries. There are also several documentaries and pictures which

could be experienced at the site. A notable part of the trail is near the Bridge of Bodies and panel 9; the trail guide suggests taking an extra walk to a bridge which is reportedly the site of the bridge of bodies, but no mention is evident on a panel. Whilst quite a steep and slippery length of path, the route enables a visitor to appreciate the escape route of the Lancastrians - an application could encourage a visitor to consider the descent of the soldiers whilst imagining the snowy conditions alongside the steep slope and flooding river they faced.

The trail provides an interesting insight into the battlefield and ample background information to the battle, the preceding events and the experience of the soldiers. It could provide further information about the extra aspects of the battle and suggest visiting Sexton's church, Lord Dacre's grave and the Visitor Information Centre, but an application could enhance this by providing such details.

Information centre

The Visitor Information Centre situated within the grounds of the Crooked Billet pub is open to the public on request free of charge. It displays 'information about the battle and historic area, replica artefacts from the period and information about our Society.'[113] The Centre contains a series of boards providing further detail about the battle, the archaeological investigations and groups and events associated with the Society.
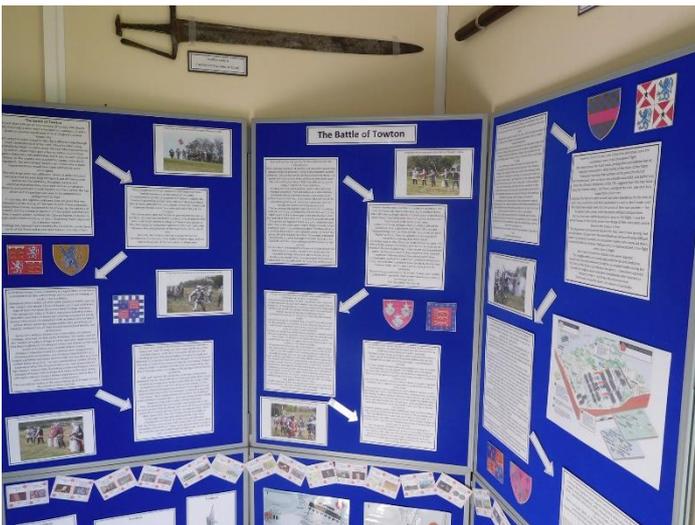

Image 5: Towton battlefield Visitor Information Centre information boards

This includes the Towton Tapestry group, the Palm Sunday Archers and the protective efforts of the Society itself. The model of the Yorkist and Lancastrian lines and replica armour provides useful additional visuals and enhances the information provided on the interpretation panels.

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[113] https://www.towton.org.uk/display-centre/ based at The Crooked Billet pub, photos taken from the Towton Battlefield Society Facebook page (April 2017) [https://www.facebook.com/Towton-Battlefield-Society-174158255993807/]

Image 6: Model of the battle lines

The information centre could easily be missed by potential visitors due to the lack of advertising since its renovation in 2017 and the method of accessing it. If a visitor had come across the battlefield site, there is no obvious or visible advertising for the location of the centre until one visits the Towton Battlefield Society website. It is also not mentioned on the battlefield map or interpretation panels, resulting in the centre being easily missed and the potential loss of valuable advertising for the Society's activities. An application could again advertise and pinpoint the location of the Centre to visitors as they walk around the trail, to enable them to finish or begin their visit with this well produced interpretation. It could provide further examples of pictures and videos at the Centre itself to enhance the experience; a video of one of the Palm Sunday Archer's events could encourage the visitor to look further into the group's available activities.

Battlefield map and trails

The battlefield map and trails, published by the Towton Battlefield Society in 2013, is available to purchase for £3 at a number of pubs near the battlefield. The guide includes a 'setting the scene' section, including a brief history of the War of the Roses and the events of the battle of Towton. The leaflet then opens into a map of the two advised trails; the Towton Battlefield Trail and accompanying Saxton Trail. The battlefield trail depicts the physical route and trail boards, describing what is on the board and providing directions to the next panel.

Whilst useful to see the route in the context of the surrounding area, the trail does not provide much more information than the panels. The guide could have used this opportunity to showcase what research has occurred at these points, providing extra pictures and source material to relate the research to the physical site. Within my application, I could add videos containing details about the excavations described at panel 10 when observing Towton Hall. I could also include pictures of Towton battlefield during winter seasons when covered

in snow, to help the visitor appreciate the conditions those partaking would have experienced; something this guide could have utilised.

Images 7 and 8: Towton Battlefield Map and Trails

The strongest aspect of the guide is the additional trail, another 3-mile route starting at the Crooked Billet including an additional view of the Yorkist's perspective of the battlefield and a visit to the Saxton Church which contains the grave of Lord Dacre. Due to the date of publication, the guide does not suggest the reader visits the Information Centre within the Crooked Billet. If the battlefield is to expand and make it more accessible for those who cannot physically attend the site, the guide is problematic in that it must be purchased within the area. If it would be viewed online and away from the site, it could provide a better understanding of the locations of events for those abroad or not able to visit.

Interactive interpretation:

Palm Sunday event

Palm Sunday 2018 saw several guided tours leave from Old London Road on 25th March. The nearby barn hosted several tables and stalls providing information of the Towton's Tapestry Group and brief introductions to life during the time of the Wars of the Roses, as people dressed in replica 15th century garb exhibited replica weaponry. One only has to search the event online to see the difference between this casual affair and the highly organised, highly popular event prior to 2016. The interesting artefacts, stalls and dedicated team of Society

members still presented an enlightening experience this year, a highlight being the guided tour which will be described in further detail later. It appears to pale in comparison however to the falconry displays, traders, living history, military displays and costumed re-enactors from Palm Sunday 2015, or the festival-esque events plan from 2012, which advertises a firepower show, sword training and finale of a re-enactment of the battles of Ferrybridge and Dintingdale. [115][116]

The Towton Society's website explains that 2016 marked the end of such festivities, with its' great success being its' eventual ruin. The announcement suggests the Society struggled to manage the location, resources and visitors who attended in 2015.[117] It could be argued that it was a shame to rid the society of one of its' main advertising and money creating events and hopefully the event could eventually be revised, perhaps in a different location and in partnership with a larger organisation, to again bring in the crowds of nearly 2,500. Whilst the 2018 Palm Sunday event was still well visited - the guided tours were all at full capacity - previous years shows the potential attraction the event provided.

Guided Tours

Arguably one of the most popular methods of battlefield interpretation, a guided tour presents the site in a more personal and knowledgeable way than a self-guided alternative. Extra information from someone personally interested in the topic could provide a greater connection to the site than a physical panel. The story can be catered to its' audience and be delivered with personality. The Palm Sunday guided tour I attended in 2018 was no exception. Alongside a small group of other visitors, I followed a member of the Towton Battlefield Society around the battlefield trail, gaining extra background information and having questions answered as they were thought up. We travelled the trail in reverse order according to the panels, which may have confused the story somewhat, and the tour did last longer than the advised time so as one point of interest was focussed on, another may have been skimmed over to catch up. With an application and physical panels, the amount of time spent at each location could be dictated by the visitor.

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[115] https://richardiiiexperience.com/event/battle-of-towton-palm-sunday-commemorative-event/
[116] https://www.towton.org.uk/wp-content/uploads/palm-sunday-visitor-info.pdf
[117] Anonymous (2015) *Palm Sunday Battlefield Event 2016*. [https://www.towton.org.uk/2015/12/30/palm-sunday-event-2016/]

The guide clearly knew and was interested in what he was describing, and the passion added to the experience. Whilst personal leanings and bias could be risked, it is trusted that a Society member could remain impartial enough to present both sides of the story, enabling the listener to develop their own opinions of the site. In lieu of a guided tour which may not always be available, an application could provide a similar effect. My surveys on battlefield interpretation highlight the popularity of guided tours when visiting a site, and whilst technology advances, it could be that visitors still value the personal touch.

Technological Research

Towton Survey

I created the aforementioned surveys to gauge opinion about the want for and practicalities of a battlefield mobile application at Towton.[118] I sent one to a more general audience, using social media such as Facebook and Twitter- word of mouth and hashtags relating to Towton, battlefields and applications. I sent another to the Towton Battlefield Society and requested they circulate it to their members. I received a total of 27 responses from the general survey and 41 from the Society. This could suggest there is more interest in the site and its development from associated groups but could also suggest I did not circulate widely enough or ask questions suitable for a more general audience. Other potential setbacks from my method could show potential biases within the results. With sharing on my personal accounts, responders would have wanted to help my research, and being of a younger age range may have favoured technology.

Future research could take the survey to the battlefield site and survey visitors; a wide range of people who have directly experienced the site and its current interpretation. The survey could also be presented to a younger audience of school or college age, to consider the impact it could have on the interest of future generations and discover what they would like from the interpretation. For maximum feedback, a further survey could be provided with an example of the application for potential users to see how it would function.

Some questions attempted to determine the demographic of my responses, whilst acknowledging my survey may not accurately represent the whole demographic of the Towton Society. Some may not have access to email, have chosen not to take the survey or may be a member less involved in the social aspects of the group. Keeping this in mind, the first question asks if the responder had ever visited the battlefield, providing the options to answer frequently, several times, once and never. 25 out of the 27 people in the general survey responded with once and never, as opposed to the 37 who answered frequently and several times from the society. As society members have more interest in the battlefield, they arguably would not need encouragement to attend the site. If the aim is to develop more interest in the battlefield, my project should be targeted at a more general demographic over those with prior knowledge of Towton. Similarly, my last question asked the responders' age. The Towton society questionnaire received responses from 18 60+s and 23 25-60s, whereas

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[118] See Appendix 2 for Survey questions and further responses

my general survey received 18 responses from 18-25s and only 1 from 60+. This again could highlight the need to attract a younger generation to the battlefield to ensure its' maintenance. It would also show those with more knowledge of the site have preserved their interest for several years. Questioning what interests them could be crucial to understanding the possible attraction for a wider audience and how to make it more accessible.

Having not interviewed or surveyed anyone under the age of 18, future research could consider the role of even younger people and how to effectively develop their interest in such sites. In a paper by Sanna Wicks, she surveyed a sample of young people aged 16 to 18 years to gain an indication on the popularity of phone applications compared to other forms of interpretation. The findings suggest that apps are potentially an effective form of interpretation for younger generations and should therefore be an interesting study group for any future battlefield application development.[119]

When asking about the battlefield's current interpretation, 39 out of 40 responders from the Towton society described it as 'excellent' or 'good', only one choosing 'could be better.' Comments stated it gave a good overview of the battle; some were from Towton's tour guides saying, 'see the feedback we get on trip advisor!' others provided small suggestions such as a longer path, further access and a proper visitor centre would be beneficial and publishing more research as 'members are very knowledgeable.' One comment states, 'the interpretation boards get a good range of information across with limited space and within the confines of the battlefield trail.'

Graph 1: Survey question 3: What do you think of the current Towton battlefield interpretation? Why? (Towton left, general right)
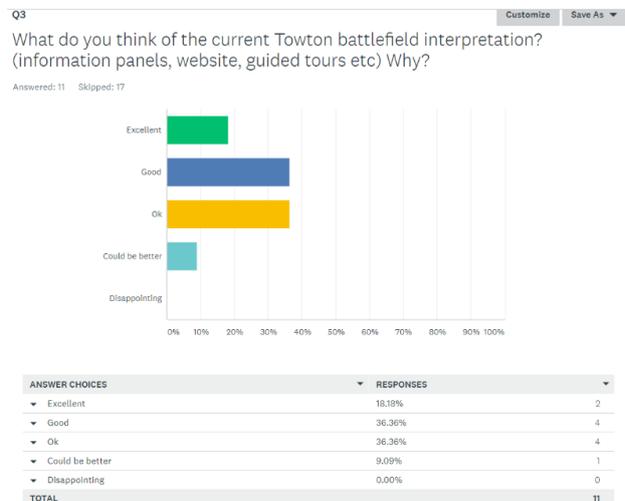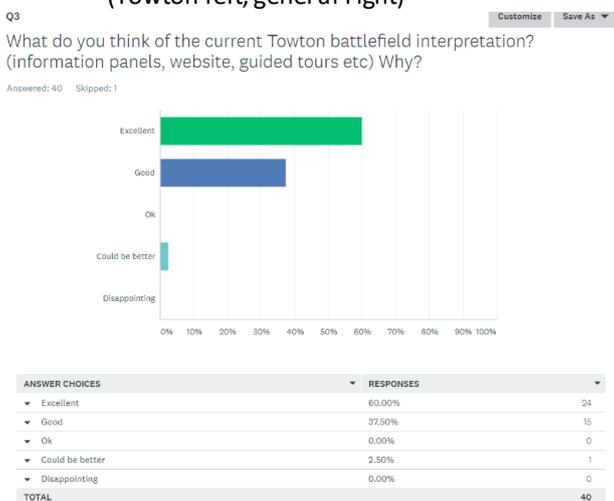
[119] Wicks, Sanna (2015) *The Value of Mobile Phone Applications in Heritage Interpretation*, unpublished MA at the University of Birmingham, p.19.

This could suggest a space for my project, as more information could be provided whilst maintaining the tone of present interpretation. Whilst the current interpretation is approved by the society members, they appear open to further improvement and expansion. Comments from the general survey ranged from the interpretation being 'clear, concise and very informative,' to 'more information and advertisement' being helpful. One comment said they 'happened upon it by chance,' and it being 'tricky to find some of them [the interpretation boards].' An app could help provide the locations of physical interpretation in the context of significant events of the battle.

I also asked whether the responder had previously been on a popular guided tour around the battlefield. My app would attempt to direct users around the route as if on a guided tour to make visual aspects easier to interpret. Most responses from the Towton society were positive, highlighting the guides' knowledge and enthusiasm.

Response list: Survey question 4: Have you been on a guided tour of the site? What did you think?

One says they help you 'feel you are walking in and amongst history' and two comments mention how there are 'individual personal impressions provided by the guides' and 'each guide brings a different perspective to their walks.' A constructive comment suggests 'tailoring different walks to different audiences would be beneficial.' I posed this question to battlefield guide Anthony Rich and received a similar response. He tailors his tours to his audience, from discussing tactics with military men to telling more personal stories to those less familiar with the battle, and discussing the topography in relation to the battle with locals to create a link with familiar locations.[120] It could be argued an application is this flexible as it can be catered to different audiences by changing information and formats - one application could have extra quizzes, pictures and videos for children.

The general survey agreed with the knowledge and expertise of the tours and also suggested doing different things during different tours 'to keep it interesting with different generations.' Another comment stated they did not know there were guided tours - an application could raise more interest in the events and tours provided by the society, helping promote more traditional interpretation.

My next few questions focussed on using mobile phone applications and the possible benefits within a battlefield context. My first question, 'Have you ever considered using a mobile phone app?' Was responded to more favourably by the general responses, 9 answered yes or maybe as opposed to the 3 who said no. Some said it would be useful on 'lesser known or less accessible sites,' others said they had never thought about it or used one but sounded like a good idea. Towton society responses were 32 to no and 9 to yes or maybe. Some comments ranged from suggesting they were appealing to the wrong age group, to highlighting signal issues, to saying they were not used to or fond of technology. Others suggest a physical tour guide would be more beneficial due to being able to instantly ask questions, or that a visitor should concentrate on making their own impressions. These answers highlight some of the potential downfalls of technology and help determine how to counter them. Applications I have tested below are downloadable and do not require mobile signal, just a GPS one for map tracking.[121] It could be argued more information within the app will enable the visitor to create more detailed impressions. Both surveys provided comments which suggested the application would be a good idea for sites which do not currently possess much interpretation. The concept of using the project as a

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[120] See in Appendix 1c.
[121] See p.58 onwards.

framework and Towton as a sample for a wider database of applications for different battles, is something I intend for this study.

Graph 2: Survey question 6: Have you ever used or considered using a mobile phone app for a battlefield or heritage site? Why?
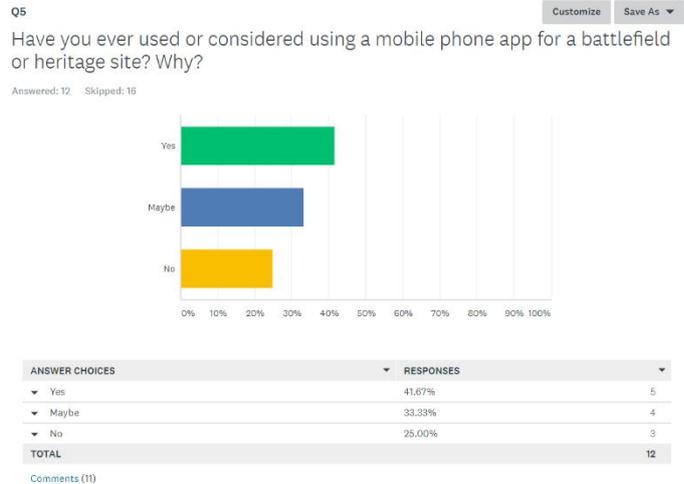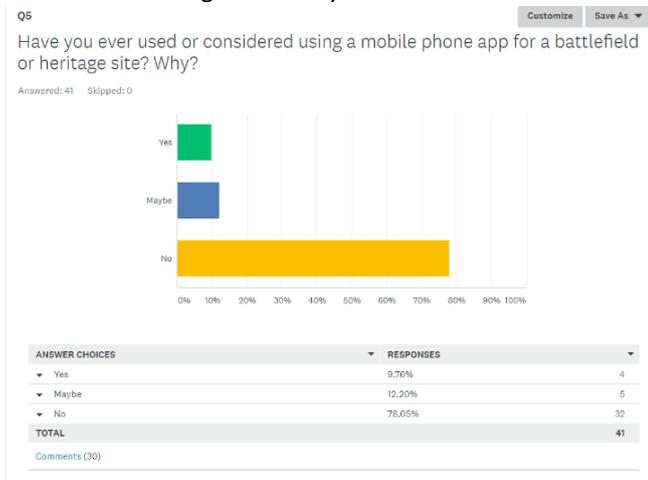
This could work for less physically manned sites, or sites where the battlefield may have changed or been developed over with time. It could also unify battlefields in that they could be linked by theme, period or location to enable users to locate different sites they otherwise might not have considered visiting. [122]

My next question used a ranking system to determine what a user would want most from the application. Both ranked extra information about the history and archaeology first, a GPS trail as second, and a social media aspect last. This suggests my demographic would agree that an application could effectively provide more detailed information about the site, with a GPS trail providing the locational awareness.

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[122] (see survey comments for more detailed responses:
[https://www.surveymonkey.com/analyze/12PFNUrvGK16N_2FJz8EXDRJC7MG3_2FwPJetSrTqw30xK4_3D])

Graph 3: Survey question 6: What would you want most from a battlefield mobile phone application? Rank from most interesting to least. (Towton left, general right)

Q6
What would you want most from a battlefield mobile phone application? Rank from most interesting to least
Answered: 27   Skipped: 1

	1	2	3	4	5	6	TOTAL	SCORE
Extra information about the history of the battle and the archaeology/landscape of the battlefield	48.15% 13	7.41% 2	14.81% 4	18.52% 5	11.11% 3	0.00% 0	27	4.63
Pictures and videos relating to the battlefield	3.70% 1	33.33% 9	40.74% 11	14.81% 4	7.41% 2	0.00% 0	27	4.11
A quiz/ some activities relating to the battle	7.41% 2	3.70% 1	0.00% 0	29.63% 8	48.15% 13	11.11% 3	27	2.59
A GPS trail showing key points of the battle	25.93% 7	37.04% 10	18.52% 5	11.11% 3	0.00% 0	7.41% 2	27	4.56
AR (augmented reality) see what you're looking at via. the screen to help better understand the events of the location you're in	14.81% 4	18.52% 5	25.93% 7	22.22% 6	14.81% 4	3.70% 1	27	3.85
Access to social media	0.00% 0	0.00% 0	0.00% 0	3.70% 1	18.52% 5	77.78% 21	27	1.26

Q6
What would you want most from a battlefield mobile phone application? Rank from most interesting to least
Answered: 32   Skipped: 9

	1	2	3	4	5	6	TOTAL	SCORE
Extra information about the history of the battle and the archaeology/landscape of the battlefield	46.67% 14	30.00% 9	6.67% 2	3.33% 1	0.00% 0	13.33% 4	30	4.80
Pictures and videos relating to the battlefield	14.29% 4	17.86% 5	17.86% 5	39.29% 11	7.14% 2	3.57% 1	28	3.82
A quiz/ some activities relating to the battle	7.14% 2	3.57% 1	28.57% 8	14.29% 4	39.29% 11	7.14% 2	28	3.04
A GPS trail showing key points of the battle	23.33% 7	30.00% 9	13.33% 4	20.00% 6	6.67% 2	6.67% 2	30	4.23
AR (augmented reality) see what you're looking at via. the screen to help better understand the events of the location you're in	7.41% 2	11.11% 3	29.63% 8	18.52% 5	22.22% 6	11.11% 3	27	3.30
Access to social media	10.34% 3	6.90% 2	0.00% 0	3.45% 1	20.69% 6	58.62% 17	29	2.07

As previously considered, future research could provide these surveys to previous responders with an example application; it could be difficult to appreciate without having a physical application to assess. Society members could have more positive responses if they tested and understood the application.

Arguably the most important question I asked was whether the site would benefit from a GPS map and why to gather more detailed responses. In my general survey, 26 said yes and 2 said maybe, whilst 0 responders said no. In my Towton survey, 12 answered yes, 21 answered maybe and 7 answered no. Positive comments suggest it would 'make the experience more personalised, make it more engaging and allows people to navigate more efficiently.' Another suggests it could make such sites more of an attraction to younger generations and would enable greater depth of study at the sites, especially if you cannot access a guided tour.

Graph 4: Question 7: Do you think the site would benefit from a mobile phone application, using a GPS enabled map to identify key points with extra information provided? (Towton left, general right)

The Towton responses provide much more constructive comments, questioning potential funding issues and whether you can get signal. Others state that if it 'encourages a more personal interaction with the society that protects the battlefield then it would have benefits for all concerned,' and that 'younger people would no doubt benefit.' Other comments highlight the private land and its restrictions of the GPS, but I could consider the GPS as a method of warning people away from such areas. The application could work alongside the designated route and existing interpretation rather than attempt to overrule it.

Overall, my surveys have provided some interesting results. Whilst not the opinions of everyone involved with the battlefield or all potential visitors, it suggests an application could benefit new visitors and those more technology savvy. Whilst at first it may appear not so beneficial to those already associated with the battle, it could always provide a means of accessing important information onsite and attracting new people to ensure the sites' survival as a heritage location.

Interviews with professionals

I also conducted several interviews with industry professionals to gain a more comprehensive opinion about the subject. In keeping with the comparison of general opinion versus one with personal links to the site in my surveys, I spoke to both Chris Berendt, Chairman of the Towton Battlefield Society, and email corresponded with Garry Adelman, Director of History and Education at the American Civil War Trust and Licenced Gettysburg Battlefield Guide. His opinion on the present state of American Civil War battlefield interpretation were that whilst there are obvious exceptions with the use of technology, which American battlefields lead the use of, there are few differences between the days of old and today. He states 'until site managers do more, we shall remain in the interpretive past. Also, many sites are scaling back their human interaction which is a mistake.'[123] Perhaps, in an effort to conserve battlefields, people are not being encouraged to visit them. The future of a battlefield could depend on its' ability to attract visitors and as a result, awareness of its' conservation requirements. He also provides a very apt way to consider the role of mobile phone applications, advising it should not replace other forms, but as with a museum where visitors have differing priorities and time scales, battlefields can cater to everyone's preferences; 'not everyone can get a human interpreter and not all have smartphones.'

I finished with asking Mr. Adelman where he sees the future of interpretation:

'In the end it's still about stories of people, places, events and objects. The delivery vehicles will continue to evolve… but the core stories that can touch a variety of people with varied interests should remain the responsibility of interpreters, site managers and content creators. I think technology does offer outstanding possibilities of showing people things they cannot or could not experience.'

This emphasis on the history of the site being priority and of interesting content being key is something not to be forgotten when attempting to make sites more accessible. In an interview with accredited Battlefield tour guide Anthony Rich, he states that the battlefield guide has two tasks; one to be a credible and acute historian, and the other to be a storyteller. Balance is the key to effective battlefield interpretation.[124]

To gain a more personal aspect, I also had a discussion with Chris Berendt, new chairman of the Towton Society, in a meeting at the battlefield itself. Whilst highlighting a few notable battle related locations and effective interpretation around the site, we discussed the impact a possible advancement in technological interpretation would have on the battlefield and those involved with it. Chris suggested points of interest, from

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[123] See Appendix 1b.
[124] See Appendix 1c.

areas current interpretation may not consider such as Ferrybridge to gain an insight into the prior events of the battle, to creating more personal links to soldiers of the battle using archives and archaeological records.[125]He questioned how the application would in turn benefit the battlefield and the society - his main emphasis being how the application would be funded and in turn, how it would make money. He suggested the application could not just be for academic purposes but must include more interesting aspects to attract more visitors. Societies and people involved would need to be convinced of the potential worth before they consider it a viable option and encourage its development. In keeping with Mr. Adelman's comments surrounding the need for visitors, Chris discussed the fact Towton's well known yearly Palm Sunday Event had to be stopped due to growing too popular. Whilst understandable considering the roles of volunteers in the running and organising of the event and the size of the location it would originally be based on, Chris suggested the event could have been further encouraged, even funded, and the growth in popularity welcomed to create more attention for the Societies' work.

In keeping with my own research, Chris suggested the society has investigated using technology and its potential uses for the site. They are considering the use of 3D mapping to create a virtual tour of the battlefield to attract more foreign interest and promote the battlefield on the global market. Applications which can be downloaded could also attract external interest for those unable to access the site. Anthony Rich also suggests technology is a technique 'that can be used to ignite the cordite.'[126] He stresses the need for technology to supplement interpretation over replacing it, but suggests the key to maintaining battlefield visitation is keeping people engaged, something applications can assist with.

These consultations have suggested that those involved in battlefield management and interpretation are considering the potentials of technology whilst stressing focus should remain in the quality of the interpretation itself. It is hoped my findings with regards to public and professional opinion and my concept for a basic battlefield application relevant to the site, could result in those responsible for battlefield interpretation considering more technological means to increase their accessibility.

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[125] No transcription of meeting, contact https://www.towton.org.uk/contact-us/ for further information.
[126] See Appendix 1c.

Types of Applications

After deciding a mobile application would be the most relevant technology for a battlefield, the types of applications available and what factors need to be considered before producing one should be discussed. Factors such as what platforms the app should be developed for, ensuring any content is suitable for mobile use, whether audio and video should be utilised and whether the application should be both online or downloadable offline, and free or at a cost to the user, are all things to consider.[127] Interactive maps are one of the most successful features of smartphones and it is evident how such a feature can be applied to battlefield interpretation.

Audio content may counter suggestions of an application distracting visitors from the visuals of the heritage site and could provide interesting sound clips of debates surrounding various battlefield strategies and locations.[128] However, whether it is easy enough to create and whether it will be easily accessible for people wanting to use the application will need to be determined. An application project which utilises this format is an audio trail of Don Valley Way.[129] The application gives directions of the heritage walk and provides historical information at designated points which is triggered by GPS location. Individuals and local history groups were recruited to devise the walks and research, showing the benefit of community involvement in such projects and the encouragement of the local community in welcoming new technologies.[130]

Whist World Heritage sites may be larger in popularity and management requirements than the battlefields I will consider, the methods and technology used could be useful examples for my own design. Whilst local heritage sites will provide different difficulties to World Heritage, largely funded, sites, these examples could provide warnings for potential setbacks and difficulties throughout the app building process. In Davies' review of WHS technological interpretation, QR codes are suggested as a cheap and simple digital interpretational trail in which a visitor can scan a code and learn more information about their desired location. Whilst free, easy to create and not visibly intrusive (they can be added to existing interpretation boards) resulting in a quick personal tour, in a world of newly emerging digital technologies, the QR Code is no longer an

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[127] Bolano, Stefania, Bowen, Jonathan and Gaia, Giuliano (2012) *Usability, Design and Content Issues of Mobile Apps for Cultural Heritage Promotion: The Malta Culture Guide Experience*, pp.1-4.
[128] *Ibid*, p.4.
[129] See application review on p.58
[130] Anonymous (2017) Listen- GPS Audio Tour Guide app, *Digital Interpretation*, Audiotrails. [http://audiotrails.co.uk/gps-audio-tour-guide/]

impressive, engaging form of interpretation.[131] Practical factors such as needing internet signal must also be considered when deciding upon the ideal app for a battlefield, which is not always in a well-built area.

Augmented reality is another option, which inputs virtual images onto reality.[132] This would be useful in that an empty battlefield could be enhanced with virtual images of strategic manoeuvres or images of how the site would have looked at the time of the battle. However, an example of a successful augmented reality project in Croatia was well funded and supported by bodies eager to create a popular project, which is the key to the success of the more impressive technologies available. It could also be that the true aim of a heritage site would be lost with some, who prioritise the virtual reality as opposed to the current state of the location. In correspondence with the creator of the battlefield of Gettysburg Augmented Reality application, he states responses have been mostly positive from users, with complaints being mainly focussed on technological and hardware issues. Rather than losing the aim of the heritage site, the application enabled visitors to create a more personal connection.[133]

A review of The HINT Project in 2013 provides the most practical and effective mobile application for battlefield sites. A funded partnership project at several locations, the project aimed to explore new technologies in heritage interpretation, one example site being a Geopark in Shetland.[134] An interesting point the review makes is stating that funding is usually dependent on a project being about more than just the product, requiring an element of education, community involvement and social or economic benefit.[135] This again links to claims that technology should not be just for the sake of technology; the wider reaching benefits of the application should be considered first. My aim is to use technology to create more inclusive interpretation for different audiences. It will also aim to consider the needs and interests of local community groups and societies and how the project can assist them. It also hopes to increase the education of battlefield visitors in providing more detailed information about the site. The aforementioned Geopark project format could help

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[131] Davies, Jamie (2014) *On-site digital heritage interpretation: Current uses and future possibilities at World Heritage Sites*, MA, Durham University, p.17.
[132] *Ibid*, p.49.
[133] See Appendix 1 for interview
[134] Anonymous (2013) *Exploring new technologies for heritage interpretation: A guide to developing digital projects*, The HINT Project, p.5.
[135] *Ibid*, p.12.

with this, as it uses a GPS map application to introduce visitors to the aims and heritage of the Geopark, highlighting several sites of significance on the map where they access text, visual and audio content.[136]

Throughout their content development stage, the project worked to ensure their app would run smoothly and be as interesting as possible. The app cross referenced sites, telling the bigger story and allowing people to make connections with the wider geological context.[137] This could be applied to my battlefield project, as whilst a single battlefield is of interest, its wider political influence and role within a larger war would interest visitors and direct them to other sites. For example, whilst my project will focus on the battlefield of Towton, its pinnacle role in the Wars of the Roses will be discussed and other battlefield sites such as Mortimer's Cross can be highlighted. The project also took a 'layered approach' to content, with easily understandable main content and further detail available to those who wanted to learn more. They tested content with potential users to gather opinions and preferences. As opposed to the previous examples of applications which advised the use of audio content, this application decided on text over audio, with users finding it easier to understand written context at their own speed. Finally, the app used a combination of written directions and photos to help people pinpoint desired sites, due to the quite isolated areas of the Geosite. I would consider the use of GPS to enable visitors to locate my ideal battlefield sites of interest to ensure it is as easy to find as possible. In areas which may provide difficult to locate via GPS for those who struggle to use such technology, pictures and directions are also necessary for maximum accessibility.

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[136] Anonymous (2013) *Exploring new technologies for heritage interpretation: A guide to developing digital projects*, The HINT Project, p.16.
[137] *Ibid*, p.22.

Existing Applications

During my research I tested several local applications to determine the best means of portraying the battlefield. From audio guides to GPS trails, I varied the applications tested to encompass as many of the ones discussed above as possible and considered the content, ease of use and suitability to my idea. My first test involved the Don Valley Way Audio Tour Guide, which presented detailed heritage walks along the Don Valley Way. The app is downloadable, which is then divided into different files for different sections of the walk.
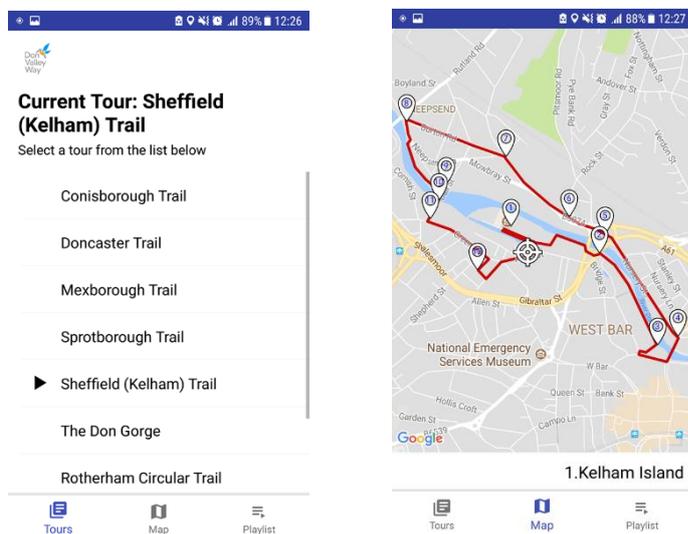
Images 9 and 10: Application screenshots (Don Valley Audio trail*)*

The application was very GPS heavy- content is triggered by arriving at a location and alerts are received even while the application is not open. The format is that of a playlist and the audio describes directions to each significant stop. There is also a map detailing the points of interest which is useful as the audio can at times be misleading. The audio can be paused when needed and provided the opportunity to gain extra information in an area that was not suited to a physically guided tour. Whilst not the most suited to my own aims, this application could suggest handheld audio guides at heritage sites should be replaced by downloadable apps to reduce costs and create a more personal link.

The second application tested was the Sheffield Lives walking trail produced by the University of Sheffield in partnership with Situate. The trail charts Sheffield's development during the 16th and 17th centuries, including a GPS map which triggers content when the user approaches a stop. The Situate application itself, when downloaded, contains numerous other applications which can be downloaded separately. The application format is one which could be beneficial if wanting to create multiple applications with a similar theme - for different battlefields, for example. The application can be used offline if downloaded beforehand. There is also an option for some audio, providing an extra story using a character relevant to the site. It adds a more personal

touch and helps relate to the history. The app was successful in its variety of content, ranging from historical accounts, to modern comparison pictures and older sources and maps from archives.
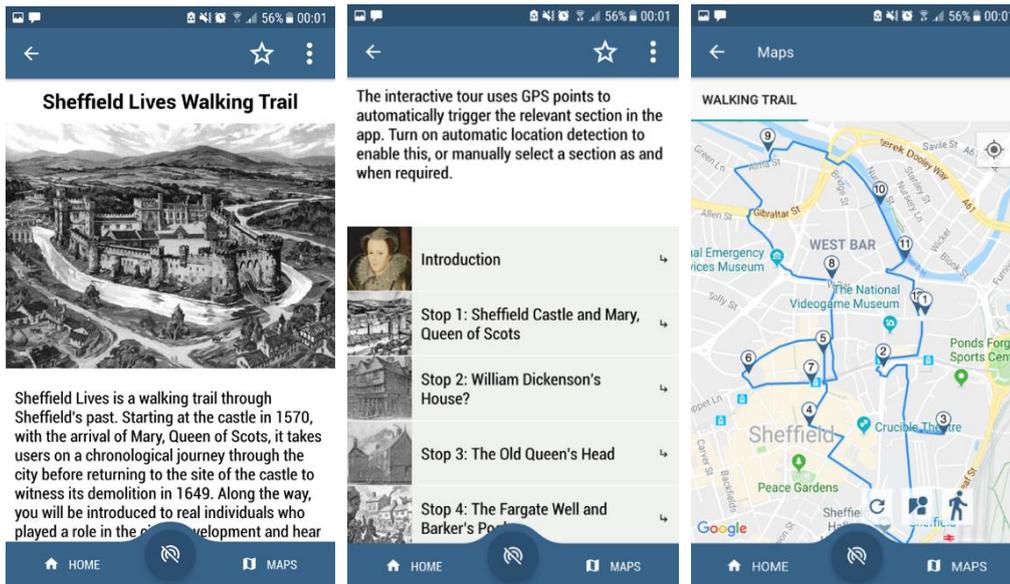
Images 11, 12 and 13: Screenshots of the Sheffield Lives Walking Trail created by Situate

The application also contains written instructions detailing how to locate the next stop, with a picture for reference in addition to the GPS map. All these factors are aspects most relevant for my own project.

Another application produced by Situate, partnered with a research project at Sheffield Hallam University is Where Bombs Fell. Similar to the above application, it details the various sites in Sheffield relevant to WW2 bombs. It uses a GPS walking trail to highlight key sites - the difference being the map is from the Second World War.
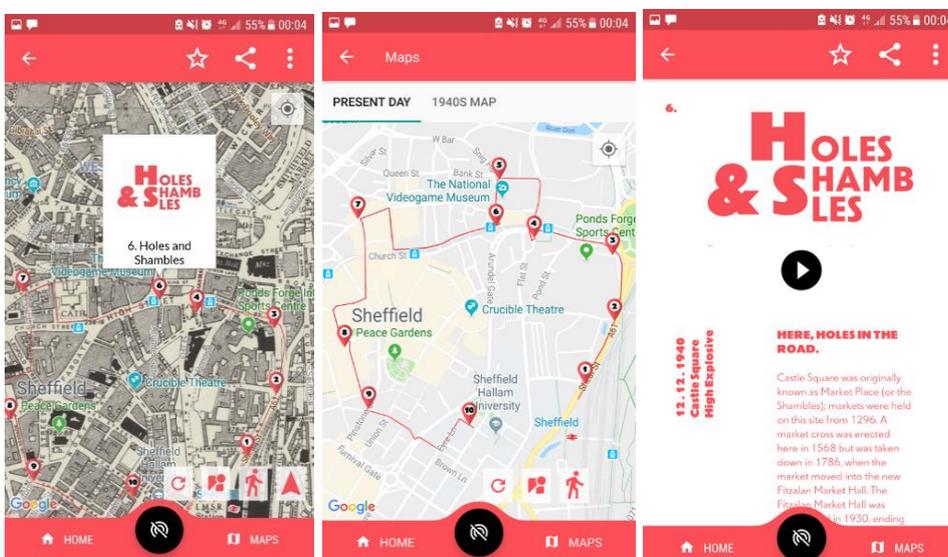
Images 14, 15 and 16: Screenshots of the Where Bombs Fell application created by Situate

The route can be followed both using the original map of the city and a more modern option. The application also involved some very innovative design - expected when produced by a graphic design student - and is very

visually appealing and easy to use. The concept of using an old map is one with potential for my own project, as old maps of the topography when battles occurred can be compared to aerial views of the current landscape. An old road could have been used for tactical purposes which no longer exists, for example.

Arguably the most relevant application tested during my research was the Prestonpans 1745 Application, involving an interactive walking tour for visitors of the Prestonpans Battlefield. Information again becomes available when reaching a point of interest, whilst also being available offline and off-site. There is a vast amount of information for each point of interest, using pictures, videos and links to other sites. The pictures from both modern times and the time of the battle make for a good comparison.
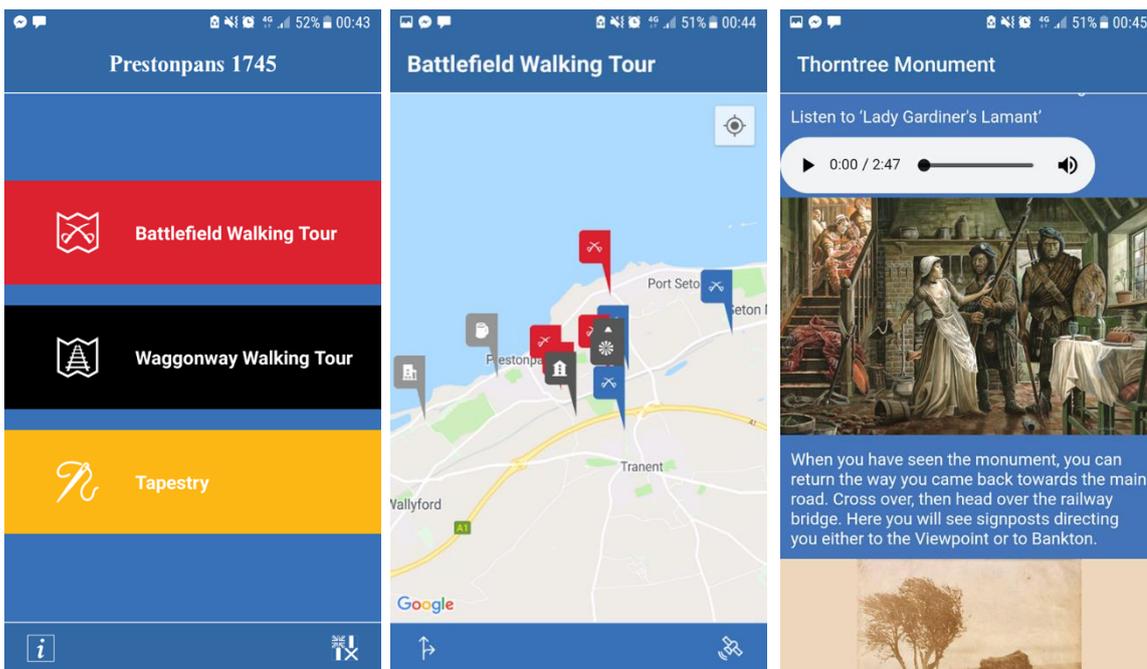
Images 17, 18 and 19: Screenshots of the Prestonpans 1745 application

The application's description claims it to be a substitute for existing interpretation, but my research suggests an application should work best in conjunction with traditional interpretation. An example of a successful application working on a battlefield site is good evidence for my own project. When considering the Prestonpans application within the context of Towton battlefield's own capabilities, Prestonpans due to its' later age has an advantage with regards to sources and evidence. There is a definite timeline of events, partnerships with other Scottish battlefields due to a connecting aspect of shared national history and a comprehensive survey of the archaeology of the site commissioned in 2008, which discovered lots of findings such as musket balls. There could be such links with the Towton battlefield and other Wars of the Roses battles, sharing the connection of being an early influencer of England's history. The Wars of the Roses, while possibly lacking the range of sources

and evidence other battles may, is an important part of the country's history which is worth studying and remembering; Towton provides examples of the transition between arrows and guns through archaeological finds. The value of learning about a period much different from our own provides interesting comparisons to later battles and societies. It is important, despite the length of time which has since passed, that history of such national and local importance should still be remembered, debated and interpreted.

The final application I considered was more international. Whilst researching American battlefield interpretation, I discovered a wealth of applications relevant to the American Civil War battlefields. One such application was *InSite Gettysburg*, an Augmented Reality tour which uses videos, pictures and interactive features to add life to historic stories. The tour is booked and an iPad is rented, or application downloaded, to take on the tour, which pinpoints significant sites and provides archival photos and evidence alongside '3-D virtual artefacts to collect.'[142] The mix of AR technology and history could be the ultimate means of creating an immersive experience for battlefield visitors when proper funding and a wealth of information about the site is available. Numerous reviews on the InSite Gettysburg Facebook page hail it a 'great idea,' as very interactive and an immersive way to tour Gettysburg 'at your own pace.'[143] The application also created interest on news sites, the *Celebrate Gettysburg* blog hailing the technology as 'making history cool.'[144] The article celebrates the personal nature of the application, an interview with Wiley stating that 'it was very important to write the app's narration in the present tense, putting visitors directly into the battle scenes before them.'[145] He states they used historical information from licensed battlefield guides, 'but wrote it from an emotional standpoint' to describe events. This mix of academic research and a more immersive way of portraying such information is something which appeals to the more general visitor. Wiley utilised the concept of children 'bridging the gap' between families and technology, in that the younger generations can use the interactive features and in doing so encourage older generations to participate. The application provides all the concepts an app for English battlefields could thrive from.

The one question regarding the application is that of funding. A significant battlefield to its country's history and with such a significant sponsorship towards the American Civil War battlefields, this application

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[142] http://www.insitegettysburg.com/
[143] https://www.facebook.com/insitegettysburg/
[144] Hendricks, Karen (2017) *Before Snapchat, Before 'Pokemon Go,' Gettysburg's Nick Wiley Utilized Similar Technology to Make History 'Cool'*, Celebrate Gettysburg. [http://celebrategettysburg.com/insite-gettysburg/]
[145] *Ibid.*

would be an encouraged investment. With the majority of England's own battlefields less popular and less funded, projects would have to prove their worth both for the battlefield and the community which works to maintain it. This technology could be too expensive and impractical for my own project for the time being. With the constant development of technology however, Augmented Reality could eventually become the norm for interpretation. In the meantime, the basic framework of the *InSite Gettysburg* application and its' emphasis on correct information but also interaction, can be a good example for my own project.

Wiley's *InSite Gettysburg* application is the first created by his company *VisiTime*, suggesting if successful it could be used as a framework for other similar applications.[146] During email correspondence with Mr. Wiley, he had much the same hopes for his application, he suggests the interpretation was 'pretty close to the way it should be done effectively,' so long as the hardware difficulties, such as slow technology and users incorrectly configuring devices, can be tackled.[147] When discussing the future of interpretation, Wiley agrees technology will have to come a long way before it is able to replace an interpreter, but feels self-guided tours with compelling multimedia shows the most potential. He suggests 'we have to get GPS and compelling videos right before we try to tackle AR from a wide perspective.'[148] His rental iPads have been used more than 2,000 times thus far (it would be more difficult to judge usage from the downloadable applications) showing there is a market for such technology. Whilst AR might be the future, my project could be the next step to making more local battlefields more interactive.

On a more practical level, I tested these apps with someone who does not often use applications and does not often visit the areas and we both found it easy to use and navigate. This is something which must be considered within my own application, as it must be as user friendly as possible. The applications tested were most useful in that without them, the sites and streets would have no obvious history to explore and there would be no information available unless actively searched for before or after a visit; with these applications you can learn about hidden history whilst there. This would greatly benefit battlefields in that significant areas of the site are not always evident or visible.

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[146] Zubenko, David (2014) *Online alumnus brings history to life through Gettysburg tour app*, Penn State News. [https://news.psu.edu/story/315077/2014/05/07/impact/online-alumnus-brings-history-life-through-gettysburg-tour-app]
[147] See Appendix 1a.
[148] See Appendix 1a.

The above applications have suggested that GPS tracking with significant locations pinpointed on a map would be the best and easiest method of navigating a site. A mixture of different media, from audio to images and text can appeal to a range of audiences. Whilst originally not intending to use video or audio, proof of its' success, results from my surveys and talks with Chris Berendt have suggested a variety of different media would make the content more appealing. The concept of a base application which contains other applications for different sites is interesting. A framework application could be produced to then be catered to different battlefields, which could in turn be used to link themes and other locations. A Wars of the Roses application could contain walking tours for all the relevant battlefields and provide directions to other sites, links to how each impacted the other and in turn the wider implications for the Wars as a whole.

This format of technology would arguably be the least intrusive when it comes to the current battlefield interpretation and compliments existing physical interpretation, as it builds on the information already provided, does not require any extra man power from battlefield management and can even be used by existing battlefield guides to present images and other source material to their tour. Again, if able to expand this project and collaborate successfully with designers and the battlefield society, it could ultimately become a collective project to benefit the battlefield and all relevant parties. The society members and professionals could provide content and opinions on the effectiveness, whilst the application itself could help transform the site into a more immersive experience. As mentioned above, the project could become a framework to be built upon and expanded into a physical prototype to be experimented with.

Other options could also be considered throughout this experimentation process. With funding and collaboration possibilities, alternate technologies could be suggested as options for the site. Augmented Reality has proved popular for its' immersive nature at heritage sites, enabling visitors to experience characters and objects which are not widely accessible. With more practical considerations to consider such as funding, technological implications and user management, this technology would be more advanced but pose more questions for site management. More simple technology such as QR codes could also be an option, in that information could be accessed through codes placed on existing interpretation panels. This would not add to the sensory experience and merely act to present more information however cheap and simple it may be. The battlefield society has also discussed creating an immersive digital version of the battlefield for offsite use;

people worldwide can experience the site, creating wider interest in the site from those unable to access it physically. The possibilities are vast when considering how best to implement technology into heritage learning.

Concept application

Aims

One debate surrounding interpretation is that of the tone and its accessibility for a varied audience. During a project titled *Everyday Heroes* in which a memorial listing names and deeds of heroic people was transformed using technology, the creator emphasised that the same tone as the original was used for the visitor to make their own judgement on what they were learning.[149] This shows how strong an effect the tone of an application can have on a user, something of importance within the context of a battlefield. Whether it is an emotive or objective portrayal, whether visitors want to feel when they go to a battlefield or just want to be interested, there is a decision to made. The creator of *Everyday Heroes* shows the effort to balance tones, to make the application accessible whilst ensuring the information provided was still accurate.

It is evident from my surveys that immersive technology could divide visitors, possibly dissuading fans of more traditional interpretation from participating. The aforementioned applications show the potential to create intrigue even in visitors who have prior interest in a site. An application which provides extra information and sources, considers academic debates surrounding the site and provides professional opinions, would hopefully interest even the most technophobic of visitors. A method of reducing the risk of dissatisfaction amongst some potential users is extended communication. Feedback, both during the planning process and after trialling an application is crucial in making further management decisions and determining what is best practice. Pletinck and Helson in 2005 claimed that heritage management is a two-way communication; visitors not only receive information but contribute.[150] This could benefit battlefield survival as visitors will feel responsible for the future of the site through the connections created.

User feedback and evidence is important for understanding the best methods of future development.[151] This research will attempt to contribute to this by considering it within a battlefield heritage context. Sartori and Lazzeretti in 2014 suggest that user studies highlight the challenges of designing interpretation applications so they enhance the experience. This suggests the biggest risk of interpretation technology is not to over emphasise

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[149] Anonymous (unknown) *Everyday Heroes*, Arts and Humanities Research Council.
[http://www.ahrc.ac.uk/research/readwatchlisten/features/everydayheroes/]
[150] Davies, Jamie (2014) *On-site digital heritage interpretation: Current uses and future possibilities at World Heritage Sites*, MA, Durham University, p.14.
[151] Sartori, Andrea and Lazzeretti, Luciana (2014) *The role of digital technologies in heritage interpretation: a conceptual framework and some recommendations*, 10th ICOMOS General Assembly and Scientific Symposium, p.4.

its' importance, but to use it to facilitate a message or meaning.[152] Their article recommends the extended involvement of user research to ensure the application's practicality and success. From preliminary research on visitors and their needs, to the designing of the application involving professionals and community members alike to consider their approaches, to finally the evaluation of user responses for future development, discussion and co-operation will greatly enhance the project.[153] I aimed to do so with my own project, as I firstly conducted research about battlefield visitors and their interests, then discussed my ideas with industry professionals to gain suggestions. The design can in the future be fed back to potential users and professionals alike to see how they would improve the design and capabilities.

152 *Ibid*, p.6.
153 *Ibid*, p.7.

Concept application

I have named my concept mobile phone application 'A Snapshot in Time;' a battle is described as representing a particular type of event, a place where ideals and loyalties are put to the test.[154] Whilst a battle is one unique moment in one unique location, a battlefield has been surrounded by years of different histories and events to be portrayed. My aim is to ensure this moment in time is maintained for all generations to explore, and to enhance the current interpretation for Towton battlefield. Using the above research and taking note from the successes and improvements needed from existing trail applications I tested, I suggest a guided trail would be the most effective method.

A map will pinpoint the significant points of interest to accompany the existing physical trail, or for those who cannot access the site to better understand the course of events in the context of the various locations. I walked the existing battlefield trail using the Strava exercise application to map my route.[155] There are other locations external from the existing trail I wish to utilise, which can be seen either in an extra capacity for a user to explore whilst away from the site, or for a person to use within the context of their location at the site. Some, such as the point at Dintingdale, may not have anything of interest at the physical site, but the information relevant can be accessed at the specific location on the digital map for an understanding of the location and its importance. I have drawn out the battlefield route and my suggested extra locations, then explained some of the information and resources available at each point on my application.

I have created some concept screenshots for how the application could look, with considerations regarding my current capabilities and suggestions on how it could be improved if properly funded and produced. The potential of this application is that if successful in its use and practicalities, it could be implemented to other battlefield sites and create a database of interactive battlefield interpretation. I have provided screenshots of a suggested contents page for a series of applications which could be created under the wider banner of The Wars of the Roses. Using *Balsamiq Cloud,* a user interface design programme to design mobile and web applications, I created a concept design for my application.[156] Future creation of an application would require partnerships with an application designer to tailor an appropriate format to the specific needs of the project.

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[154] Fiorate, Veronica, Boylston, Anthea, Knusel, Christopher (ed.) (2007) *Blood Red Roses: the archaeology of a mass grave from the Battle of Towton AD 1461*, Oxbow Books, p.3.
[155] See Appendix 5a for a screenshot of the battlefield trail using the Strava app
[156] [https://balsamiq.cloud/#]

In an article providing research into ways a battlefield can continue to elicit affective responses in its visitors, Emma Waterton and Steve Watson discuss how the 'participants themselves frame the landscape and their view.'[157] They suggest interaction with the non-human elements of a battlefield help 'co-produce the site.' An application could encourage visitors to bridge the gap between observing a landscape and considering it within the context of research. It could assist in the co-creation of this heritage experience by providing questions and points a visitor might not consider thinking about whilst on location.

Point 1- The first point of interest on my application is one important for gathering knowledge about the prior events to Towton. The battlefield trail itself presents a good background to the Wars of the Roses near Dacre's Cross, detailing the key players on each side. The first part of the project will instead provide more detail about the days before and the fights at Ferrybridge and Dintingdale for users to understand how the armies came to be where they were at Towton and consider interesting questions about how academics would discuss sources and hypotheses. Firstly, a page would provide a timeline of Ferrybridge and Dintingdale and an image of Dintingdale as it is today.[158] This effectively depicts the distance between the prior skirmishes from the battlefield and provides a suggested timeline of events. Links will then direct the user to pages discussing either the events, a key figure or a question to consider.

The event page will describe what occurred during the attacks: the Lancastrians' aims were to weaken the Yorkist forces by destroying their means of crossing the River Aire. During a surprise dawn attack which shocked the Yorkist troops, Lord Clifford and his men demolished the bridge and used the remains to defend their position. Edward, the Duke of York rallied his army into a counterattack but met an impressive defence from the Lancastrians. Around 3,000 Yorkist men were supposedly killed. However, the tables were turned as Clifford took the decision to retreat and was ambushed by Fauconberg and his men, to be chased down and killed at Dintingdale, less than a mile from his allies at Towton. This could be a good place to suggest some further reading, such as Tim Sutherland's Killing Time article, The Battles of Ferrybridge and Dintingdale, or the section of A Boardman's book in 1994 which bring more light to the often-dismissed points of fighting.[159]

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[157] Waterton, Emma and Watson, Steve (2015) A War Long Forgotten, *Agelaki*, 20, 3, pp.19-20.
[158] See Appendix 4a.
[159] Sutherland, Tim (2009) Killing Time: Challenging Common Perceptions Of Three Medieval Conflicts - Ferybridge, Dintingdale And Towton- 'The largest battle on British soil,' *Journal of Conflict Archaeology*, 5(1) pp.1-18, Stringer, Alan (date unknown- post 2009) The battles of Ferrybridge and Dintingdale, 27-28 March 1461 *AND* Boardman, A. W. (2000) *The Battle of Towton*, Sutton Publishing Ltd.

The section on a key figure will provide further information about Lord Clifford, showing the Clifford coat of arms and a picture of his defeat, describing his influence during the Battle of Wakefield and want to avenge his fathers' death, making him a prominent Lord within the Lancastrian ranks.[160] The link to a 'question' page will then enable the users to consider their own opinions surrounding his death. It will propose that Lord Clifford died less than a mile from the majority of the Lancastrian army who were preparing for an inevitable battle with the Yorkists. It will pose the question 'why was Lord Clifford left to die?' The page will then provide options of explanations for this event and encourage viewers to consider them critically. One option will suggest political motives and upon clicking will explain the Duke of Somerset may have 'left Clifford out to dry' due to jealousy surrounding his praise after the Battle of Wakefield.[161] It could then question whether the user would consider being willing to lose such an important figure during the key moment in the War of the Roses. The next option will point to a topographical explanation, suggesting that whilst less than a mile away, the landscape would result in a slope towards Dintingdale from the Towton battlefield. It will encourage the user to look across towards this point on the app when at the lines of attack to see if they would be able to see Dintingdale from their location. The third option would be tactical and encourage users to consider their role as a potential strategist during the Wars of the Roses. In setting the scene, the user would imagine themselves on the eve of a major battle; how they would be busy planning the positioning of troops, weapons and defences. Would they trust one of their most able Lords to handle themselves during a mission to delay the oppositions' troops?

The user would next consider whether the sacrifice was worth it; the Yorkist advance was delayed and surprised, losing around 3,000 men of an army already significantly smaller than the Lancastrians. However, it could have been the crucial delay which enabled the Duke of Norfolk to arrive the next day just in time to reinforce the Yorkist troops. It is to be hoped the visitor will now be in the mindset to look more closely at the history and understand how perceived minor skirmishes can in fact have significant results.

Point 2- My second point of interest will be at the first board of the battlefield trail, further up the main road from the 'start' of the trail by Towton Cross. This is arguably the most significant point of the battlefield as it is the best way to consider the army lines and beginning of the fighting. The application will have a diagram of the initial archery battle and lines of troops for reference against the interpretation panel, which shows the lines

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[160] See Appendix 4b.
[161] Stringer, Alan (date unknown- post 2009) *The battles of Ferrybridge and Dintingdale*, 27-28 March 1461, p.8.

with an aerial view of the battlefield.[162] If able to zoom effectively on the application, the battle line diagram will provide better understanding and detail of the action, even depicting the supposed troops hidden in Castle Hill Wood. There are pictures of Towton battlefield in the snow, which enables viewers to appreciate the conditions at the time whilst observing the battlefield.[163] There is also a video which could be linked to or embedded, which uses motion graphics to depict the battle as it unfolds.[164] Arrows shoot through the snow and the video enables the viewer to watch the battle through the slit of a helmet. It effectively depicts the battle from a soldier's viewpoint and would be good to watch either after the battlefield visit or whilst there to consider the experiences of the soldiers.

The application would encourage the viewer to consider the topography of the landscape at this point, from the dipping of the flanks and considering the width of the attacking line, to as they are walking towards the next point along the path, seeing if they could see the Yorkist lines from the Lancastrian's viewpoint. The quote from Ellis in 1809 'When their shot was almost spent Lord Fauconberg marched forward with his archers, who not only shot their own sheaves, but also gathered the arrows of their enemies and let a great part of them fly against their own masters, and another part they let stand on the ground which sure annoyed the legs of the owners when battle was joined,' is an effective nearer contemporary quote to help users appreciate the effectiveness of the Yorkist archers and the ingenuity of the troops to re-use the enemies weapons against them.[165]

Point 3- The third point of interest can again be appreciated from the battle lines themselves, as if the viewer looks behind them, they can see Castle Hill Wood; the location of the supposed- yet never confirmed- Lancastrian force ready to ambush and flank the Yorkists. This is an interesting point to introduce the user to a few themes of the trail. A page can highlight the early excavations and archaeological research attempted there; in 1993 a trial excavation by the Towton Battlefield Society, in which a sample two of the mounds south east of Castle Hill Wood were excavated, proved unsuccessful. The excavation trenches became water logged, and no artefacts or human remains were encountered. Boardman in 1996 suggests that whilst the test was inconclusive,

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[162] See Appendix 1a.
[163] See Appendices 4d and c.
[164] Chris Maudsley (2012) *The Battle of Towton* (MA VFX thesis film exploring the use of vfx, motion graphics and voice over in historical documentary reconstruction.) [https://www.youtube.com/watch?v=Hi7dJJjcH5g]
[165] Ellis 1809, *in* Fiorate, Veronica, Boylston, Anthea, Knusel, Christopher (ed.) (2007) *Blood Red Roses: the archaeology of a mass grave from the Battle of Towton AD 1461*, Oxbow Books.

remains may have been preserved at a greater depth.[166] This explains some of the Towton's history of archaeological research, and the influence and efforts of the Towton Battlefield Society.

Point 4- The fourth point of interest is the Towton Cross memorial and actual start of the Towton battlefield trail. I would give references here of how far other locations are to walk to using the GPS locator in relation to the users' current location. I would also recommend if the parking is too full to perhaps try nearer to point 10 down Old London Road. I would emphasise, as the physical panel does, that this is privately owned land and to stick to any paths. This would be an appropriate point to watch the Towton Battlefield Society video introducing the battle.[167] The video on YouTube is five minutes, but the clip itself is only around three minutes long. An application developer could adequately cut such clips and either link them or embed them onto the application itself with the cooperation of the Battlefield Society. Alternatively, an audio introduction could be created to familiarise the user with the themes and concepts of the project within the context of the battle.

The quote from Jean de Waurin, 'so followed a day of much slaying between the two sides, and for a long time no one knew to which side to give the victory so furious was the battle and so great the killing: father did not spare son nor son his father,' would add emotion to the scene.[168] An interesting fact from the British battles website suggests that 'the usual Yorkist (and Lancastrian) practice of sparing the common soldiers and putting captured nobles to death was put in abeyance for the Battle of Towton. All captives were put to the sword,' also brings forth the grim reality of war in contrast to the notions of chivalry present from the medieval period.[169] From this point onwards it will be effective for the visitor to look towards Cock Beck and appreciate the slope the Lancastrians faced as they fled the battle with Yorkist troops on their tails.

Point 5- My point five of interest correlates with the battlefield's fifth interpretation panel concerning battlefield archaeology. Aside from the mass graves discovered at Towton and plethora of non-battlefield related finds, there was also evidence discovered of the use of guns during the battle. In 2008 Simon Richardson discovered a lead shot, and in early 2009 fragments of bronze with a 'curved outer face and tubular inner surface with black residue,' analysis determining this to be fragments of very early cannon which exploded upon use. A

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[166] Boardman 1996 *in* Fiorate, Veronica, Boylston, Anthea, Knusel, Christopher (ed.) (2007) *Blood Red Roses: the archaeology of a mass grave from the Battle of Towton AD 1461*, Oxbow Books, p.33.
[167] Wetherbyracecourse (2017) The Battle of Towton. [https://www.youtube.com/watch?v=KOL-5HrgP6I]
[168] Jean de Waurin *in* Fiorate, Veronica, Boylston, Anthea, Knusel, Christopher (ed.) (2007) *Blood Red Roses: the archaeology of a mass grave from the Battle of Towton AD 1461*, Oxbow Books, p.1.
[169] Grant (unknown) *Battle of Towton*, British Battles. https://www.britishbattles.com/wars-of-the-roses/battle-of-towton/

recent video on YouTube by Tim Sutherland speaks of the battlefield archaeology and finds from the cannon.[170] It suggests that as it was the first known composite lead shot from a European battlefield, it symbolised the transition from archery to heavier firepower weapons.

The visitors could be asked the question why evidence of guns was not more frequent in the archaeological surveys and posed multiple suggestions. It could not be that only one or two people only possessed a medieval gun, so could it be that the potential firing line for the guns was too far from the excavation sites? Could it be that corrosion has withered away the evidence? Or agriculture has buried or broken up the remains? Could it be that unlike the lead shot, some were made up of other material not recognised by a metal detector? Could it be that some were the victims of the looting of battlefields? These suggestions could present the different factors that threaten battlefield archaeology. The video also shows Sutherland and a reporter for Look North tracing the battlefield and discovering a tooth, showing the potential the site still has for new finds. A picture of the artefact distribution from the site, so far as it has been published from Foard and Morris in 2012 provides an interesting map of evidence from the site.[171] The image could encourage users with questions surrounding whether they can spot where the skirmish at Dintingdale was, why the mass of finds were located where they were and whether they can use the mass of arrowhead finds to accurately depict the exchange when considering the Yorkists advanced whilst using the Lancastrians own shots against them.

Point 6- In relation to the interpretation panel depicting Arms of The Wars of the Roses, my application will suggest visiting the Royal Armouries in Leeds if visitors are interested in discovering more about medieval weaponry. From longbows to armour, the collections include a range of information and the museum more recently held an event about the battle of Towton.[172] It is a good addition to contextualise the history of the battle and is not too far away. The GPS system which can help visitors locate each point can also highlight the distance to the Royal Armouries. A longer video can also be added to this point, the documentary named *Instruments of Death: The Wars of the Roses, The Battle of Towton 1461*.[173] The documentary provides an example of the arms of the time, in context of points on the battlefield and even the injuries on the discovered

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[170] Tim Sutherland (2019) Towton Gun Fragments, *Towton Battlefield Archaeology Project.*
[https://www.youtube.com/watch?v=SkHEf8MyKKw]
[171] See Appendix 1d.
[172] [https://royalarmouries.org/stories/our-collection/the-must-see-objects-from-late-medieval-europe-in-the-royal-armouries-collection/]
[173] Master Huon Damebrigge (2018) Instruments of Death: The Wars of the Roses- Battle of Towton 1461.
[https://www.youtube.com/watch?v=0ATapiKOTv0&t=8s]

remains. The video shows interesting evidence of some of the skeletons attempting to defend themselves with injuries to the forearms and depicts how the injuries can be directly linked to the type of weapons which created them. I would also include to this point some pictures of the Towton Society re-enactors, which will be discussed further during the point of interest relating to armour.[174] At point 6 it is also impactful to look across the battlefield and notice the terrain steeply dipping towards Cock Beck and again appreciate the rout of the Lancastrian army.

Point 7- The rout of the Lancastrians is described in further detail on the seventh information plaque. My application would contain a map from Gravett's work showing a detailed depiction of the events to compare with the aerial view on the panel.[175] To emphasise the emotion of such an event, in which the Lancastrians fled as far as Tadcaster, some becoming a bridge for their fellow soldiers to escape across, information and pictures of the injuries to the skulls discovered in the mass graves will be provided.[176] Many of the crania had three blows to the head. Whilst this would be common in foot combat on the front line, with an archer getting two blows to the head to ensure he will no longer be a threat and a final third if there was still movement as the enemy advanced, Waller discusses how if soldiers were retreating three hits to the head would be overkill.[177] The excess force upon the unarmed fleeing men shows the merciless nature of war. 'Why were Englishmen whom a generation earlier would have stood united against the French Agincourt treat their countrymen in such a dehumanising way?'[178] Was this the nature of war? Was this the strength of the divide between the north and the south? Did the leaders Warwick and Edward demonise their rival factions to increase feelings of threat amongst their men? This is another question for the visitors to consider.

Point 8- In keeping with the consideration of head injuries, the eighth panel on the battlefield trail depicts the armour of the period. The Towton Battlefield Frei Compagnie Re-enactors provide invaluable interpretation of the contemporary armour and provide good entertainment during their events.[179] Through committed and authentic re-enactors, events can be better understood. The application would have pictures of

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174 See Appendix 4e.
175 See Appendix 4f.
176 See Appendix 4g.
177 Waller, J. (2014) Combat techniques *in* Fiorato, V., Boylston, A., and Knüsel, C. (eds), *Blood Red Roses*, Oxbow pp.148-150.
178 Cahill, Michael (2016) *The Battle of Towton 1461, a multi- disciplinary discussion based on scholarly analyses of this Medieval battle site*, p.10.
179 [https://www.towton.org.uk/re-enactors/]

the re-enactor party in full gear to portray the armour during combat. A question to be posed to visitors can again be accompanied by images of the skull injuries from the mass graves. How did most injuries occur to the head? Even Lord Clifford who was killed at Dintingdale died from an arrow to the neck. Were there no helmets? The reenactors and contemporary pictures depict helmets - were these accurate? Could many soldiers not afford proper armour and sacrificed helmets for weaponry? It could be that as the Lancastrians were fleeing, they removed their helmets to flee quicker. Studies also suggest that archers- there being plenty at Towton- could have removed their helmets in order to aim better. This video discussing the extent of injuries to the head, suggests that some soldiers could not afford helmets and indeed some helmets from the period would not fully protect the whole skull.[180]

Point 9- A point characterised by the topography steeply sloping towards the river, a visitor can truly appreciate the flight the Lancastrian soldiers. Users could imagine how the terrain covered in snow, ice and blood adds to the horror, using an image taken of the 'Bloody Meadow.'[181] I would also at this point use the application to consider the morality of researching and excavating a battlefield at the location where so many died. Robert Hardy in a foreword for *Blood Red Roses* wrote, 'the fields of battle keep many of their secrets- should we leave those secrets undiscovered? Should we reverence their dead and not disturb them? Or should we pursue knowledge in our search for the truth, with reverence?'[182] This point can ask the user to consider the role of battlefields, as resources for research and the last resting place for human beings who fought and died there. Lessons can be taken from these battles; this one fought between two men of power for the acquisition of the throne. Did these men know what they were dying for and was it worth it? The topography and archaeology can show us how a battle was fought and something about the methods of fighting at the time, but the mass grave excavation provides the most value in that it shows the impact battles had on real people.

Point 10- My extra point of interest aside from the recommended battlefield trail is a path which can be taken towards where the only bridge crossing the river supposedly was during the time of the battle. I would advise users that the path is a slippery, steep slope and if they do not want to risk the journey, the application

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[180] Skallagrim (2015) Go for the Head: Injuries from the Medieval battle of Towton (1461)
[https://www.youtube.com/watch?v=9hCIX3eRbMY]
[181] See Appendix 4h.
[182] Robert Hardy (2000*) in* Fiorate, Veronica, Boylston, Anthea, Knusel, Christopher (ed.) (2007) *Blood Red Roses: the archaeology of a mass grave from the Battle of Towton AD 1461*, Oxbow Books, foreword.

could provide pictures of the location and the walk.[183] The route does enable you to appreciate more effectively the route towards the river- as you stumble down the banking and slip through the mud, it is difficult to imagine hundreds of thousands of men racing down the hill for their lives. A page of the application when at the bridge would present the poem *Funeral Music* by Geoffrey Hill about the Wars of the Roses,

'Not as we are but as we must appear,

Contractual ghosts of pity; not as we

Desire life but as they would have us live,

Set apart in timeless colloquy.'[184]

This poem could help the viewers consider the soldiers and the pathos in how these men are remembered as merely a number in the 'bloodiest, largest battle on English soil.' It could help users question whether research is intrusive or in fact helping us learn through archaeology and the analysis of their remains. The user could also be asked what the poem means to them, whether we must pity the dead or take interest from it, so their death was not for nothing.

Point 11- As the visitor of Towton battlefield traverses the hill along the Old London Road path, they can appreciate the view which encompasses Towton Hall, the location of the majority of significant archaeological finds. The website of the Towton Battlefield Archaeology Project provides an interactive map of the excavations at Towton Hall.[185] The locations of findings can be clicked on to access further information and pictures, from Chapel Hill findings to the original locations of the mass grave findings. The website also reconsiders previous suggestions of battlefield evidence and primary sources, to suggest an alternative view of the proceedings, from the length of the battle to the true number of participants.

Some of these questions can be asked to the user of the application: were there really 28,000 killed at the battle of Towton? Evidence such as Jean de Waurin's writings, "…in this way was carried out the skirmish that lasted from twelve o'clock midday until six o'clock in the evening, and there died, as many on one side as the other, more than three thousand men."[186] Is Waurin discussing all three engagements? 3,000 would be more

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[183] See Appendix 4i.
[184] Geoffrey Hill (1968) *Funeral Music*, New and Collected Poems 1952-1992. [https://www.poetryfoundation.org/poems/48460/funeral-music]
[185] Sutherland, S and T (unknown) *The Towton Battlefield Archaeology Project* Website. [http://towtonbattle.free.fr/index.php/towton-hall-excavations/]
[186] Hardy and Hardy, 1891, translated by S. and C. Sutherland *IN* Sutherland, S and T (unknown) *The Towton Battlefield Archaeology Project* Website. [http://towtonbattle.free.fr/index.php/re-interpretation/]

common with the other Wars of the Roses conflicts. Could the number have been exaggerated by the victors to make their win more impressive and definitive? Was the battle of Towton, including Ferrybridge and Dintingdale, an anomaly or an exaggeration?

This point will be the largest of the application due to the vast amount of interesting information to present. There are two videos, one discussing the Towton Graves and the evidence from the bodies and another shorter clip, a time-lapse of researchers installing a skeleton found at the site.[187] The time-lapse is interesting as it shows just how much of the skeleton is intact. One page of my application will have a 'Did you know?' section, explaining that there was also an antiquarian excavation of a grave-pit carried out in 1816 in the Chapel Hill area of Towton Hall, which recovered arrow piles, a sword, coins and human remains.

The application will provide further information on the findings from the mass graves and the approximately 38 individuals which were discovered there. The ages ranged from around 16-50, and the varying physiques suggest that a wide variety of people fought in the battle- these were normal people as opposed to a single, standardised army. Researchers were also able to determine oral hygiene practices due to the quality of their teeth, and there were also interesting past injuries which could be determined due to the quality of healing. Towton skeleton number 16 had a large prior cut across the face which extended to his jawbone. This highlights that some lived a vicious lifestyle or would have fought in previous battles and indicates the extent of injury a person in the medieval period could survive.

Two further archaeological studies can encompass separate sections of the application. One, referenced on the interpretation panel is Chapel Hill, the supposed location of a Chapel built during the time of Richard III. Various historical sources suggest problems with the building, leading to historians questioning whether it had been completed. In 1483 Richard III provided a warrant of £40 for 'the building of the chapelle at Towtone.' Wheater in 1882 provides evidence of the construction not going to plan when in 1488 the Archbishop of York provides a further grant towards the cost, and in 1502 there is an allowance of 40 granted to complete the Chapel.[188] However, Leadman in 1889 writes that during the enlargement of cellars at Towton Hall 100 years prior, cornered stones and tiles were discovered alongside human remains believed to be from

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[187] Definition Media (2012) *The Towton Graves- War of the Roses*. [https://www.youtube.com/watch?v=Y-gcvq7Vk90] *AND* York Archaeological Trust (2015) *Time-Lapse: Installation of Male Skeleton Killed at the Battle of Towton.* [https://www.youtube.com/watch?v=-GQJL3MRnEI]

[188] Fiorate, Veronica, Boylston, Anthea, Knusel, Christopher (ed.) (2007) *Blood Red Roses: the archaeology of a mass grave from the Battle of Towton AD 1461*, Oxbow Books, p.12.

the chapel.[189] It could be that when the Lancastrians proved victorious, they wanted to remove evidence of one of their largest defeats- the battle of Towton. As suggested on the panel, in 1996 and during other surveys of Towton Hall, fragments of carved building material and two skeletons were located. Tim Sutherland performed another archaeological survey in 2003 to locate further evidence of the chapel. Questioning why the chapel was built and indeed, why there is a significant lack of evidence for it now is a question which could be posed to the application users.

The most recent archaeological work is again by Tim Sutherland on a section of the Old London Road the visitors will be stood on. The aim was to investigate whether a formal road ran along the same alignment. The route was important for the Lancastrians during their rout and evidence suggests there was a substantial boundary or track of some form existing during the battle of Towton. This shows the potential further excavations could provide to research.

Point 12- My points of interest now deviate from the battlefield trail and invite the user to visit the village of Saxton and the church where Lord Dacre alongside other bodies from the first discovered mass grave are located. The church itself is an interesting location, as sources state it would have existed at the time of the battle and could have been a place of refuge for the inhabitants of Saxton. Lord Dacre's grave is of interest as prior to the mass graves it was one of the only physical pieces of evidence for the battle of Towton. In a video again from Tim Sutherland's YouTube page entitled 'Tomb Readers,' describes the efforts of researchers to use raking light in total darkness to attempt to read the heavily eroded encryption on the tomb.[190] There is also a monument erected beside the tomb to commemorate the battle of Towton, which has also unfortunately fallen into ruin. A picture of the newly erected monument can be seen on the Towton Battlefield Society Facebook page for a comparison with what it now looks like.[191]

Point 13- My final point of interest is the Crooked Billet pub within Saxton village, home to the Towton Information Centre.[192] Within my review of the Battlefield Centre, I explained it was quite difficult to access and had minimal advertising since its' renovation in 2017. I wish to use this application to highlight the useful resource and the information it possesses. It would be an interesting stop either before or after a visit to the

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[189] *Ibid*, p.13.
[190] Tim Sutherland (2019) Tomb Readers, *Towton Battlefield Archaeology Project*.
[https://www.youtube.com/watch?v=8bF5cvuAosk&t=380s]
[191] See Appendix 4j.
[192] [http://www.crooked-billet.co.uk/local-area.html] *AND* [https://www.towton.org.uk/display-centre/]

physical site as a way of consolidating all the aspects of the trail. A video about the Towton Battlefield Society and its' efforts, events and contributions to the site can be added to the application to highlight its' importance for how it maintains a community atmosphere and living aspect to the medieval site.[193] I have attempted to design some concept screenshots of how the application could potentially look and work.[194]

**Screenshot 1:**
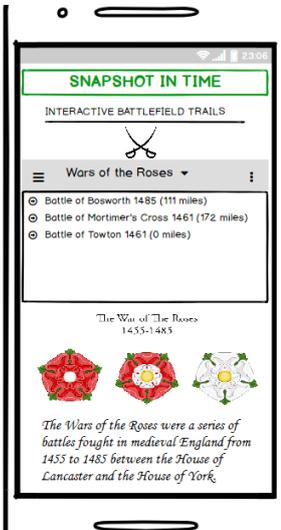
Screenshot 2:

The first screenshot depicts the contents page of the application if it began to envelop the whole series of battles from the Wars of the Roses. This catalogue of episodes could show the battles closest to the current site and suggest others for future visits. The second screenshot depicts an example information page. The interactive battlefield trail, as with other applications I researched can map your location in relation to the points of interest, as shown in the bottom right corner as a page that can be returned to. The page depicts the first point of interest, showing the timeline of events for Ferrybridge and Dintingdale, alongside several pages to access. Clicking on these options will take you to further information pages.
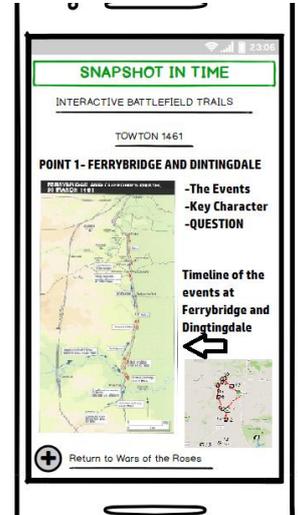
Screenshot 3:
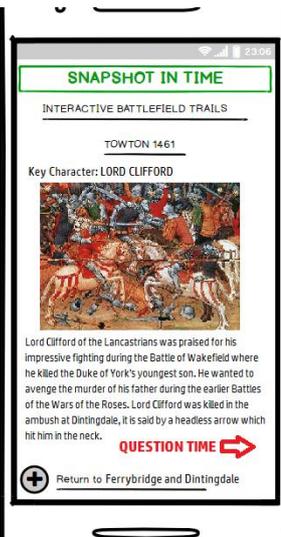
Screenshot 4:

The third screenshot is a small introductory page about Lord Clifford, suggesting how much information might be necessary on each page to keep people interested whilst not providing too much detail to read on a small screen. The fourth screenshot is a question page suggested in my above trail description. The arrows can be clicked on to provide suggestions for the user to consider. The final screenshot attempts to encourage the visitor to look at the topography of the landscape and consider it in relation to the history. This page could also include the relevant video I suggested.
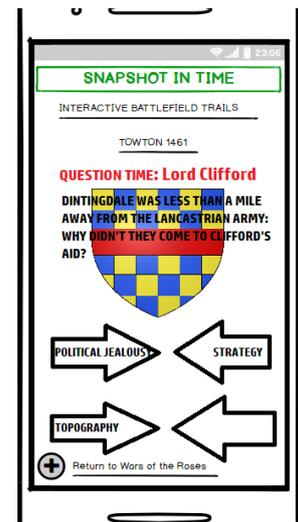
Naturally, within the more capable hands and partnership of an application developer and with funding available to create voice clips, quizzes or a character to direct visitors along the route, the application could be

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[193] Si Gamble (2013) *Towton Battlefield Society*, Impact Films. [https://vimeo.com/42199450]
[194] All screenshots made using https://balsamiq.com/

made more interactive and enticing. Whether this is the next step for the application and the future of ensuring new people remain interested in the site and its' history, is something to be explored in future research.

This application has attempted to introduce the world of academic thinking in a relatable and more simplistic format, in a way that will encourage visitors to think about the complexities of researching a battlefield and the questions those discussing it will consider. If the application could be developed into the well-produced, well-designed interactive experience some of the applications I reviewed proved to be, this could be an invaluable and interesting interpretation resource for battlefields.

Future Research and Conclusions

Previously discussed within my technology section, the potential of Augmented Reality as a viable option for heritage sites is steadily growing more popular and widely available. Augmented Reality is the 'combination of real and virtual, interactive in real time,' providing the opportunity for users to directly manipulate material in a non-intrusive manner.[198] Studies by Jamie Davies (2014) Marina Puyuelo Cazorla and co. (2013) and Jeffery Guin (2017) all review the use of Augmented Reality, suggesting the benefits and revisions it requires. Carzola's project suggests AR increases accessibility and communication by extending vision and increasing participation with the site.[199] Davies suggests onsite AR mobile interpretation should be invested in for the future at World Heritage Sites due to their accessibility, whilst also encouraging greater sustainable technology integration with onsite interpretation.[200] Guin provides several effective an emerging approaches to augmented reality in heritage settings, highlighting the ability to contextualise elements of historic sites whilst also acknowledging the financial implications and practical, developmental considerations.[201] The use of Augmented Reality at Gettysburg as seen in my interview with the creator shows the potential results a battlefield can expect with the required funding and support. Accessibility and other requirements differ so vastly from battlefield to battlefield however, that Augmented Reality may not be physically possible in certain locations. This could be something for future research to consider. It could be that being able to visualise the events of the battle at the battlefield is the future. Or is this reducing the ability of a visitor to create their own impressions from the landscape?

The debate surrounding young people and facilitating interpretation to their needs is ongoing in all aspects of heritage sites. Whilst some visitors strive to learn as much as possible and want historically accurate, informative interpretation, others such as families and children want to be entertained and for information to be easily accessible. A project in 2016 discusses the challenge of creating an app for children in museums.[202] It provides a route tailored to 'age, knowledge and interest,' which involves quizzes and writing their own exhibit descriptions, again presenting a personally tailored experience and link to the site. This could make the blank

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[198] Cazorla, Marina Puyuelo, Sanjuan, Lola Merino and Val Fiel, Monica (2013) *Accessibility and Augmented Reality into Heritage Site Interpretation*, ACHI: The Sixth International Conference on Advances in Computer-Human Interactions, p.17.
[199] *Ibid*.
[200] Davies, Jamie (2014) *On- site digital heritage interpretation: Current uses and future possibilities at World Heritage Sites*, MA, Durham University, p.62.
[201] Guin, Jeffery (2017) *Augmented Reality Tactics for Heritage Interpretation*, Voices of the Past.
[202] Papp, Eszter and Kemenes, Panna (interviewees) (2016) Zponia- the ultimate challenge of creating an app for Kids in Museums, *Museums and Heritage*. [http://advisor.museumsandheritage.com/features/xponia-ultimate-challenge-creating-app-kids-museums/]

canvas of a battlefield more interactive for children in that they could make strategic decisions, decisions about which sources are more accurate and locate areas where artefacts were discovered.

In contrast, Harry Mount in 2017 wrote a piece entitled 'How the National Trust is spoiling its treasures,' detailing how 'no facts are allowed to intervene in National Trust Kiddy World.'[203] He complains how heritage sites have been dumbed down in favour of 'accessibility, interpretation and storytelling,' bemoaning the fact visitors are not allowed a free thought without being 'bombarded by idiotic, history free, patronising messages.' This extremely contrasting view shows the alienation some visitors could feel by the emphasis on families and children at heritage sites. An example of such can be seen at the battlefield of Bannockburn. The battles previously discussed 'immersive visitor experience' received conflicting reviews for both its' inventiveness and trivialising of a serious subject.[204] There needs to be a balance to not only entertain younger generations but also ensure they are learning something valuable from their experiences. Future developments could ideally encompass all these concepts to create a fully immersive, viable form of interpretation. An application with multiple sections and technologies could appeal to the vast range of battlefield visitors; a section for children, a section for tourists and a section for avid followers of the topic. Augmented Reality could eventually be implemented for areas not widely accessible due to privately owned land or modern development, and interpretation could effectively be used to encourage and emphasise the need for proper conservation practices in this way.

This thesis has proven technology can be successfully incorporated into battlefield interpretation in a non-intrusive, cooperative way with existing traditional methods. It is hoped this research can be used as framework for other battlefields, to alter as needed when considering their differing conservation requirements or interpretational capabilities. A battlefield with less available physical land to interpret would require different interpretation to one with a fully available battlefield but fewer contemporary sources or available archaeological information, for example. This project however, has shown how to effectively include users in the process of considering such setbacks in interpreting a battle and incorporating them into the research of the site and its' history.

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[203] Mount, Harry (2017) *How the National Trust is spoiling its treasures*, The Spectator.
[https://www.spectator.co.uk/2017/03/how-the-national-trust-is-spoiling-its-treasures/]
[204] Murphy, Adrian (2015) *Bright White: the Battle of Bannockburn and understanding the potential of virtual environments*, Museums and Heritage.

Appendices

Appendix 1: Professional Correspondence

Appendix 1a. Email correspondence with Nicholas Wiley, creator of InSite Gettysburg Application (August 2018) (Mr. Wiley's information is shown in italics)

Nicholas Wiley <wileni01@gmail.com>

Tue 21/08/2018, 16:13

Hi Lauren,

I'm currently traveling but answered some of your questions below. Feel free to reach out to me first week of September. Will I be cited in your research? I would really like to read it after you finish. I hope this helps.

On Mon, Aug 20, 2018 at 3:14 PM Lauren Foster <laurenfoster15@hotmail.co.uk> wrote:

Dear Nick,

Apologies to bother you, at the beginning of summer I emailed about my battlefield related Masters project- I thought I'd sent the information to this email but appeared to have sent it to the one you said was unmonitored. If you are still able to assist me with my research, it would be much appreciated and greatly enhance my work.

I have been reading up about your InSite Gettysburg application and its' themes and objectives run along similar lines of my own project. If you are willing to discuss your project, I have attached a few suggested questions to help understand your input in Gettysburg (and battlefields in general) interpretation. I understand you may be busy, so even a response to one of the questions would be very helpful.

1. How has the application been received? *the application is much better received by technologically savvy people. I have gotten everything from extremely angry to extremely satisfied, but it's all based on the person. It's about 60% positive range and 30% neutral, 10% negative*
2. Has it been used often? *yeah, it's been used more than 2000 in the rental setting*
3. Are there any difficulties it has faced? *the difficulties are all hardware related. (iPads can be too slow, cameras not strong enough, or users can configure their devices the wrong way.*
4. How does it appropriately combine entertainment and education? *this required a lot of thought. You must be careful portraying violence because these are the stories of real death and war.*
5. Do you think such technology is an appropriate means of portraying information? *yes, I think right now it's more appropriate for wayfinding than for*
6. Should it replace traditional interpretation or work in conjunction with it? *technology will have to come a long way and each story will require a ton of production value before it's able to replace an interpreter.*
7. Who do you think would benefit most from the technology? Is it a good means of attracting new visitors? *younger generations definitely. I don't think that AR had attracted new tourists to Gettysburg.*
8. Where do you think the future of interpretation is headed? *self-guided digital tours with compelling multimedia. I think we have to get GPS and compelling videos right before we try to tackle AR from a wide perspective. From a narrow-controlled setting I think AR could begin to make a splash.*
9. Do you think your application could be used as a framework for other battlefields? Would there be limitations etc? *yes. The UX we used is pretty close to the way I think it should be done effectively. I still think the hardware difficulties would need to be tackled before doing it effectively. (Devices are not uniform; they all vary in accuracy and modes for calibrating the AR experience.*

Many thanks again,

Lauren Foster

Appendix 1b. Email Correspondence with Mr. Gary Adelman, Director of History and Education of the American Civil War Trust, and License Gettysburg Tour Guide. (August 2018) (Mr. Adelman's input marked in italics)

Garry Adelman <gadelman@battlefields.org>

Mon 20/08/2018, 22:52

Hello Lauren. I hope the below, in line, is helpful. Best of Luck! Garry

From: Lauren Foster <laurenfoster15@hotmail.co.uk>

Sent: Monday, August 20, 2018 9:10 AM

To: Garry Adelman <gadelman@battlefields.org>

Subject: Re: Masters research: battlefield interpretation and technology

Dear Garry,

I hope you are well and having a productive summer. I am currently resuming my Masters research, and have a writing up period until January to complete it. If during that time you have any time to answer any of these questions, (even if you only have time for one it would be much appreciated,) it would greatly enhance the quality of my study. I understand you are busy so thank you in advance for any response.

1. How do you view the past and present state of Civil War battlefield interpretation? How does it combine education with entertainment? *It's mostly stuck in the 19th century with rather few differences between the days of old and today—signs, trails, brochures and the occasional interpreter. Sure, there are exceptions with tech, and I think we are the leader of it for battlefields, but until the site managers do more, we shall remain in the interpretive past. Also, many sites are scaling back their human interaction which is a mistake.*
2. How has the application been received? Has it been used often? Are there any difficulties it has faced? *Quite well. We have 18 Battle Apps with a total of some 400,000 downloads. I do not have good figures on to what degree people are using them on battlefields versus at home, but I think it may favour the latter.*
3. Who do you think would benefit most from a mobile phone application? *Travelers in groups of three or less who don't know what they are looking at*
4. Do you think a mobile phone application is an appropriate means of portraying information? Should it replace traditional interpretation or work in conjunction with it? *It's surely an appropriate means but should not replace other forms. Like in a museum where some people cruise through and only look at photos and objects while others use docents and others read every word, Battlefields are the same way with people who have little time and other who have loads of time. Not everyone can get a human interpreter and not all have smartphones, and even those with phones do not always have connectivity in rural battlefields areas, so you need signs and trails.*
5. Where do you think the future of interpretation is headed? *In the end it's still about stories of people, places, events and objects. The delivery vehicles will continue to evolve and evolve but the core stories that can touch variety of people with varied interests should remain the responsibility of interpreters, site managers and content creators. I think technology does offer outstanding possibilities of showing people things they cannot or could not experience. Virtual and augmented reality are buzzwords of today, but I suspect that we will inch closer to putting people into the past using digital means.*

Kind regards,

Lauren Foster

My personal view is that whilst new technology can be a very useful supplement to more traditional means of presentation there will always be a need for signage on the ground to catch the Visitor's eye (they may not even be aware they are on a battlefield) and interest them in it. Should they go on to download something useful & of interest that is great, but downloads, Q codes etc do not capture the casual passer-by or visitor.

As a Battlefield Guide, I have two tasks, as I see it. Firstly, I must be a credible and accurate historian. I must not present as fact that which is only surmise or conjecture (unless of course I have flagged up that is what I am doing). Secondly, I am a storyteller. I have to engage the audience in the events: what on more modern battlefields is sometimes called "Igniting the Cordite". Did the audience "Smell the Cordite?".

Clearly technology is a technique that can be used to ignite the cordite. At Waterloo there are, for a modest fee, 3D Headsets on hire for use on top of the Lion Mound which allow you to watch the battle unfold around you; in a more basic setting IT can be used to display arms, armour & tactics of the time. At their very basic, as at Naseby, it can simply provide a recorded tour and perhaps a map but without the visual aids, artefacts, pictures and props a live guide might use.

Mobile phone interview transcription: Lauren Foster interviewing Anthony Rich, 02/06/2018 20:59 via. Phone call. (attempted to transcribe as accurately as possible- the recording was quite distorted in places; my questions are in bold whilst the replies are not)

Hello

Is that Lauren Foster

Hello, it is yes sorry, I was just about to phone you, sorry to bother you I know you've had a long day

[Discussion about the Colonel's Rehearsal Troops of Colour in London, this was the final practice before the Queen's birthday, salute taken by Prince William

(can't hear very well)

You're doing your research into the presentation of battlefields

I am yes, I'm interested in your opinion about tour guiding really, I know you're quite experienced in guiding and it would be interesting to hear your opinions on some things.

Battlefield guiding tends to be on a commercial basis, tends to be one of the following: the bulk of the market is 20c battlefields particularly in conjunction with the 1st WW centenaries aimed at families of vets and school parties under the government programme. That is what most Guilded guides do commercially.

What are you more interested then is it Civil War or just battlefield history in general?

I'll come back to my story in a bit if I may, the second major branch that is a small commercial market in the UK for battlefield tourism, which tends to be very upmarket organisations charging quite a lot, where they will do a coach-based tour. Just trying to type one in... but you can look them up. There is also an element of overseas travel- then there is the battlefields trust type stuff associated battlefield societies doing the earlier stuff. There will be some people coming for experience that will take you for 2000 quid a head takes you on a weeklong inclusive tour doing Edgefield to Newbury. That is where most of the guiding is happening at the particular iconic battlefields. Then your battlefields trust doing their sort of general educational work.

There are not many battlefield centres in the UK as you know, there is a decent one at Hastings, but it's difficult to think of anything much after that. Bosworth is a good visitor centre but it's in the wrong place. You've got a little visitor centre at Edge Hill in the church, there's a little bit of Naseby in the church... and you've got the world's smallest battlefield centre up at Flodden.

Yes, the telephone booth!

If you go back up it would be worth contacting Clive Howard Baker- Mr. Flodden- worth getting in touch if you go back- he's basically saved the battlefield, cuts the grass, built the phone box, he lives just next door to it. Keeps a supply of replica weapons and they'll do walks around on request.

You asked about my guiding experience, my day job is a [civil servant] strictly forbidden from commercial activities and indeed paid activity. I am allowed to take part in the community and writing books and doing tours to make money for charitable work. For example, our local church is run down, I have been doing tours to raise money. Take them to battlefields near and abouts. Typically, up to 30... if you get 30 people all making 15 quid that gives you about 450£ going into the funds. If you can then get that Gift Aided, it means one's days out can raise £500. I'm doing something like that in about 2 weeks' time in for the Fusiliers. The old Warwickshire regiment is under threat from building.... regiment trying to save the fusilier property, mainly regiment members.

Do you find mainly the people that are interested in things are people that have a link to things or are interested?

They do vary- the thing about guiding is that it is a mixture of history telling and entertaining, if you go too much down either route you lose the plot.

If you go... I know some guides on some English battlefields who are very knowledgeable historians and very dry presenters. But I also can think of some people who are very great at telling the tale but are a bit ropey about some of the facts and details

The reenactors are often an example of that. At their best they can be very good, for example I know that over at the battle of (?) about 89 when they lost three roman legions, they got the guys in the roman kit and tried to do the reinforced march over where they had been and found there was a real problem, there was obviously a real knack to how you did this.

So, I think you have to do guiding in a way that lets them (?) it helps to understand history. I personally when I am guiding- I will adapt it to the individual. An individual group I'm doing and try and consider what interests they have. Will try and concentrate on the characters try and get that connection.

human interests- scandals etc

forge a relationship

......

some tours for the army/specialist tours- specialises in corporate problem solving/ team building and all the rest- Naseby to look at it for the management lessons in about how you motivate people- example of Fairfax as a good leader- I'm doing a specialist presentation on Northampton for the diversity and community relation judges- community liaison PR type- using Northampton as a specialised way of looking at how mediation goes wrong with different agendas- trying to broker peace and instead starts another war.

Bring up stuff about the artillery not working- what happens when you use new technology, you find it doesn't actually work and you can use that to engage- amuse- use that to start thinking about some relevant lessons...

So again, linking it to the person

At Naseby which is the one I did last year we looked for the mask of the Welshman... (?) very godly and righteous- pretty juicy diversity stuff.

Not surely, I've been answering the question directly.

Discusses Bannockburn interpretation (technology skills-based game about the battle)- it's kind of similar to that-

This is very good, Northampton battlefield society have produced a little board game that's a very good decision-making game, short decision-making games are wonderful teaching methods.

For all sorts of people's knowledge as well- it can immerse you in it?

How, say if you were guiding a group of people how would you balance your information considering some might have different knowledge?

Professional vs child?

You start by finding out very quickly. Case study- I did... edge hill local parish... interested in history like the personal stories, they are not historians, they are not civil war nuts, so you generally go for the personal stories... you engage people about concepts of conflict. That way if however, I was doing fusiliers etc they understand by and large military matters, I don't have to tell them military terminology to describe what's going on- they don't know about the period. They will smile at someone putting a lighted match in the hedges to mislead the snipers, they will empathise an recognise- much more military knowledge from them.

Some specific knowledge is probably better than mine- I can extract knowledge from them.

I was up at Mortimer's cross for the annual walk you get a lot of locals there. Topography well understood by them- don't know what happened at the battle but you want to emphasise the local bit. It varies with knowing your audience. If they are mixed, you do have a problem you have to keep group cohesion. You engage the serious historian whilst you make comments. That's about group leadership.

Trying to balance- human might be better than technology- at Mortimer's Cross- apparently debate about whether some people using an application but others saying it should only assist additional interpretation than standing alone?

I think you've got what's happening at Mortimer's Cross wrong. yes, looking long term at alternate educational outputs. First point at Mortimer's Cross is not interpretation, it's to find out do we have a story to tell- need to know the story need to get it right- primary sources/not always accurate- ancient sources may not be true primary sources but may be reflecting lots of primary sources or are sufficiently close in time to have some weight... you then need to strip back the topography to how it was at the time... and you then need to look at any existing archaeology and what it tells you.

Military possibilities- what sort of affrontive would they have? Possible locations where you can then start doing the digging- from the sources. That's how Glenn found Bosworth and developed Naseby.

Lot of stripping out the reminiscent conjecture- Northampton they've put the battle right up in boggy marshes which was due to translation of primary sources. Went back to basics... Mistranslation of Latin text??? (problems with locating battlefields) Topography is totally different today to the way it is 2000 years ago, not least due to the effect of agriculture in the meantime... Change in vegetation and drainage and all the rest.

Need the sources to also tell you things about the topography at that time?

That will help- someone did a detailed study of watercourses to prove the historical site would have been flooded... couldn't have fought in a flooded field?

Technology to find and enhance things like that and make that discovery easier?

When you look at something like Barnet, what happens when you don't find things? Which can be due to a number of issues, one it was never there in the first place... two, it is there but you missed it, three it is there but it has decayed away so can no longer be spotted or identified, four, it was there but has been removed either in antiquity or more recently by detectorists. There's a lot of evidence of battlefield damage by detectorists...

Just because something turns up doesn't mean it's something to do with the battle... found on the Scottish line of the Marston moor a coin not from the war.... and it turns out it's of the Emperor Adrian. Either silver did

remain in common use for another 1600 years/1500 years unlikely but possible, alternatively, there's a major roman garrison just down the road in York and someone dropped it in antiquity and its' quite coincidental that where it dropped was later part of the battlefield.

We were at Moreton Corbet as well and a lot of shots were just from later dates which get mixed up, and obviously there's the issue of reenactors.

Another part to guiding you may want to... Scotland there is a site of Culloden? (?) a good facility set up, very good indeed. But that is part of a national myth...

So, they feed off the tourism, but they're doing it on the back of- its a bit like people going to Alnwick Castle to see Harry Potter, but it can then lead to other bits and pieces which is on the boundaries of battlefield tourism

So, there's a deeper interest because of that

Yes, you've got the myths of Culloden which appeals to Americans.

So, would you say that's a risk to battlefield research, or does it just bring in people so it's a good thing?

Lots of people visiting don't know much about it, part of it is teaching history because (Culloden) has become politically captured to tell those myths and stories which the powers may be feel is important for their own agendas. We have stopped doing the coherent history of the British Isles or history of the English nation, to give the context of which people are living.

Risk in the future of it completely disappearing? The societies etc will keep it going?

I think it'll move on.

The key is keeping people engaged. I have some chainmail/coils etc which I pass on so people can start making the connection and start talking about the individual the human-interest story

So, one of my aims with the application is to show pictures etc whilst they're actually there, I was thinking it'd appeal to younger audiences to make them more interested in battlefields as I am.

I think it will actually. Horrible Histories is very popular, there's lot of factual and historical knowledge. There is an interest in history it just has to be captured and directed. Certainly, the modern generation now want things done in a technological manner.

The want to see things and touch things- living history

That's the key you have to be interested in what you're telling them

The risk is... if you go to Vimy ridge it is a sight of great importance to Canadians in the first world war and the very best of Canadian youth volunteer, there's a very competitive selection process and they are posted there as guides. They're representing Canada, they do take it seriously. But they have been told incorrect facts? ((His experience as a soldier proved something they said wrong! /challenged something they said))

I guess that's where the personal experience comes in so it's more interesting from someone who's experienced it?

I was telling that story to illustrate how myths can happen- on principle she was correct but 'in context tells another story.'

What else can I help with?

I've found it very interesting we've covered quite a bit and it's created a good framework for me.

Likewise, if you want any help or contacts... (suggests some people)

If you look at guild of battlefield guides you could speak to the secretary... he can certainly tell you about the guild association, how to get badge which I found a very well-rounded process.

The basic process to get the badge is an assignment 1, 20 min presentation with questions after on the phases of battle, in which you demonstrate that you understand, that you can put it over, that you know what you're talking about, that you can let the audience 'smell the gunpowder.'

Once you're through that you move onto the other bits of the process, more assignments, another 2 are live where you have an interview where you're given a number of theoretical problems on a tour, e.g. you are guiding a school trip to France, teachers drunk overnight, what do you do now?

You then get a live presentation on sources in which you demonstrate ability to understand and use sources. You do about 5 written papers as well.

Very extensive then, you know you've got the right amount of knowledge for it

Its only really available for those with some experience of battlefields. It's not a training course it is validation. It's a peer review. But it is achievable, and it will take the average person who has tried hard about a year.

Would you consider the Guild- a guide of the Guild higher than a normal guide?

No, they have a badge validating what they do. Some of the best guides I know are not badged.

…

Does that cover everything you wanted to cover?

That was perfect thank you

Do feel free to come back… wish you all the best

Thank you

Appendix 2: Surveys

Appendix 2a: Towton Battlefield survey (A study into Towton battlefield interpretation and the use of mobile applications) questions, Survey Monkey.
[https://www.surveymonkey.com/r/Preview/?sm=CoidLzJOeqEuDo7UiR9SGQeQhGx3SE1KW3G3Z9fe_2B_2BnJkAlpxnte_2FGyu7pFBjhL8]

1. Have you visited Towton battlefield? (if answer is never, skip to question 6) 🔽
   ◯ Never
   ◯ Once
   ◯ Several times
   ◯ Frequently

2. What aspect of Towton do you find the most interesting? 🔽
   ◯ The history   ◯ Towton battlefield society events
   ◯ The archaeological research and findings   ◯ All of the above
   ◯ Other (please specify)
   [   ]

3. What do you think of the current Towton battlefield interpretation? (information panels, website, guided tours etc) Why? 🔽
   ◯ Excellent   ◯ Could be better
   ◯ Good   ◯ Disappointing
   ◯ Ok
   Why? What could be improved?
   [   ]

4. Have you been on a guided tour of the site? What did you think? 🔽
   [   ]

5. Have you ever used or considered using a mobile phone app for a battlefield or heritage site? Why? 🔽
   ◯ Yes   ◯ No
   ◯ Maybe
   Why?
   [   ]

6. What would you want most from a battlefield mobile phone application? Rank from most interesting to least 🔽

⠿	◆	Extra information about the history of the battle and the archaeology/landscape of the battlefield
⠿	◆	Pictures and videos relating to the battlefield
⠿	◆	A quiz/ some activities relating to the battle
⠿	◆	A GPS trail showing key points of the battle
⠿	◆	AR (augmented reality) see what you're looking at via. the screen to help better understand the events of the location you're in
⠿	◆	Access to social media

7. Do you think the site would benefit from a mobile phone application, using a GPS enabled map to identify key points with extra information provided? Why? 🔽
   ◯ Yes   ◯ No
   ◯ Maybe
   Why?
   [   ]

8. How old are you? 🔽
   ◯ Under 18
   ◯ 18-25
   ◯ 25-60
   ◯ 60+

9. What is your gender? 🔽
   ◯ Male
   ◯ Female
   ◯ Prefer not to say

10. Please leave your Name and contact details if you'd like to provide any further information 🔽
    [   ]

Appendix 2b: Extra survey results (side-by-side view of Towton Battlefield society survey(L) and general responses survey(R).
[https://www.surveymonkey.com/analyze/12PFNUrvGK16N_2FJz8EXDRJC7MG3_2FwPJetSrTqw30xK4_3D] AD
[https://www.surveymonkey.com/analyze/rn4Zy1INcHFdf_2Bubc17Redxzg0hngFl4cQLsA5d0IRA_3D]

Q1

Have you visited Towton battlefield? (if answer is never, skip to question 6)

Answered: 41   Skipped: 0
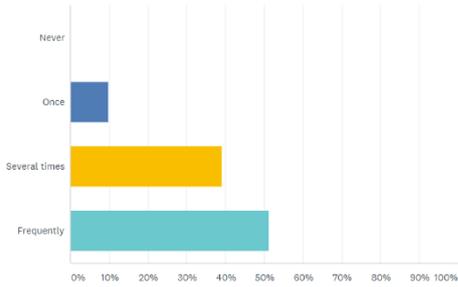
ANSWER CHOICES	RESPONSES	
Never	0.00%	0
Once	9.76%	4
Several times	39.02%	16
Frequently	51.22%	21
TOTAL		41

Q1

Have you visited Towton battlefield? (if answer is never, skip to question 6)

Answered: 27   Skipped: 1
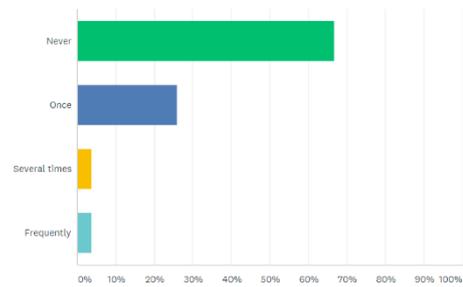
ANSWER CHOICES	RESPONSES	
Never	66.67%	18
Once	25.93%	7
Several times	3.70%	1
Frequently	3.70%	1
TOTAL		27

Q2

What aspect of Towton do you find the most interesting?

Answered: 41   Skipped: 0
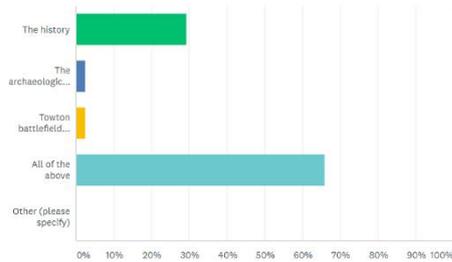
ANSWER CHOICES		RESPONSES	
The history		29.27%	12
The archaeological research and findings		2.44%	1
Towton battlefield society events		2.44%	1
All of the above		65.85%	27
Other (please specify)	Responses	0.00%	0
TOTAL			41

Q2

What aspect of Towton do you find the most interesting?

Answered: 12   Skipped: 16
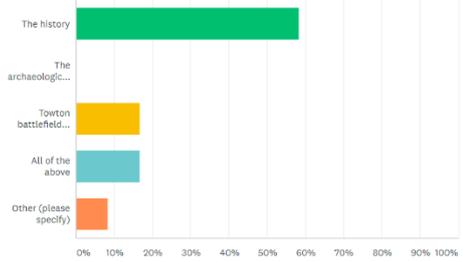
ANSWER CHOICES		RESPONSES	
The history		58.33%	7
The archaeological research and findings		0.00%	0
Towton battlefield society events		16.67%	2
All of the above		16.67%	2
Other (please specify)	Responses	8.33%	1
TOTAL			12

Q8

How old are you?

Answered: 41   Skipped: 0
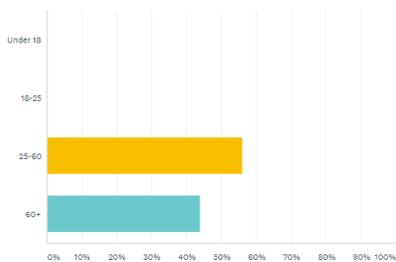
ANSWER CHOICES	RESPONSES	
Under 18	0.00%	0
18-25	0.00%	0
25-60	56.10%	23
60+	43.90%	18
TOTAL		41

Q8

How old are you?

Answered: 26   Skipped: 2
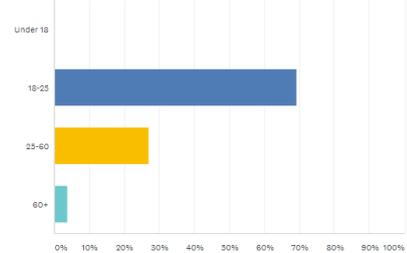
ANSWER CHOICES	RESPONSES	
Under 18	0.00%	0
18-25	69.23%	18
25-60	26.92%	7
60+	3.85%	1
TOTAL		26
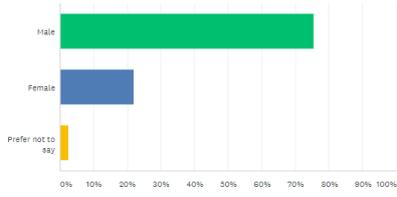
ANSWER CHOICES	RESPONSES	
Male	75.61%	31
Female	21.95%	9
Prefer not to say	2.44%	1
TOTAL		41
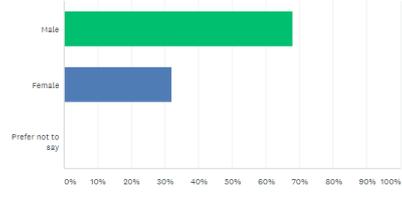
ANSWER CHOICES	RESPONSES	
Male	68.00%	17
Female	32.00%	8
Prefer not to say	0.00%	0
TOTAL		25

91

Appendix 3: Towton battlefield interpretation

HOUSE OF YORK

HOUSE OF LANCASTER

5 Thousands of Lancastrian soldiers are chased and drown as they try to escape. Their bodies create a dam across the River Cock

River Cock

Direction of wind and snow

Crooked Billet public house

Cock Beck

Bloody Meadow

LANCASTRIANS

TOWTON

B1217

SAXTON

YORKISTS

A162

1 Yorkist longbowmen fire their arrows, with the wind behind them, into the Lancastrian forces. The Lancastrians retaliate but, because of the wind and snow, their arrows fall short

2 Rising casualties force the Lancastrian army to attack the Yorkists through the arrow storm

3 The Yorkists advance to meet the Lancastrians, but the Lancastrians slowly gain the advantage thank to strength of numbers

4 The Duke of Norfolk and his reinforcements enter the fray on the Yorkists' side in early afternoon. They start to turn the tide. The Lancastrians lose ground, fall back and are routed

1,000 yards

5 miles

Towton

York

Saxton

Area of detail

Castleford

Sherburn in Elmet

Ferrybridge

Selby

Blore Heath 1459

Ludford 1459

Mortimer's Cross 1461

Wakefield 1460

Hexham 1464

Towton 1461

Tewkesbury 1471

Bosworth 1485

Edgcote 1469

Northampton 1460

Barnet 1471

St Albans 1455 & 1461

Appendix 3a: Battlefield map courtesy of The Sunday Times, Towton Battlefield Society Website. [https://www.towton.org.uk/the-battle-2/]
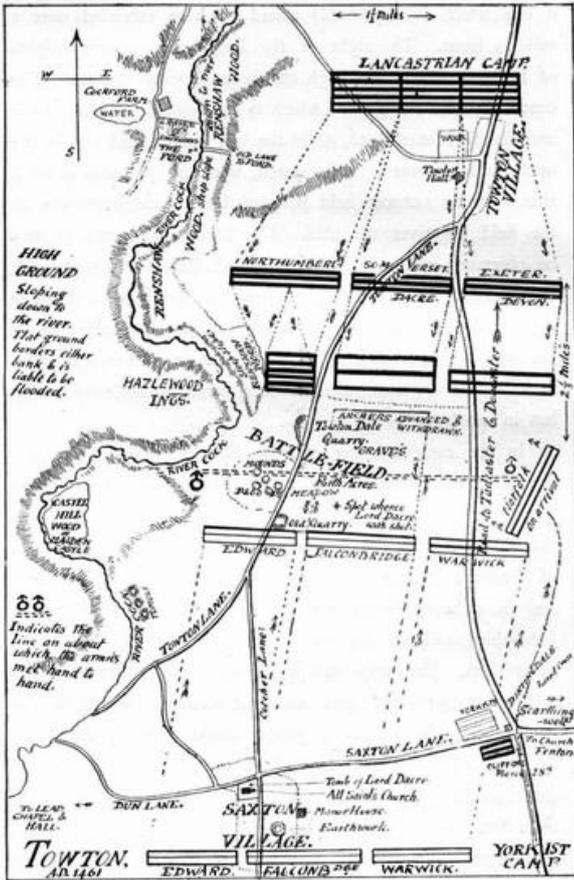
Appendix 3b: Barrett's plan of 1896 showing the deployments and action. Barrett, 1896, p.158 Copyright © Glenn Foard 2004. [http://www.battlefieldstrust.com/resource-centre/warsoftheroses/battleview.asp?BattleFieldId=46]


Appendix 3c: Evidence of ridge and furrow works (look towards bottom right near Towton hall) Towton air photo 3, RAF vertical air photo of 1940s, English Heritage (National Monuments Record) [http://www.battlefieldstrust.com/resource-centre/warsoftheroses/battleview.asp?BattleFieldId=46]

ALSO use Panel 10 of Battlefield Trail for ridge and furrow evidence
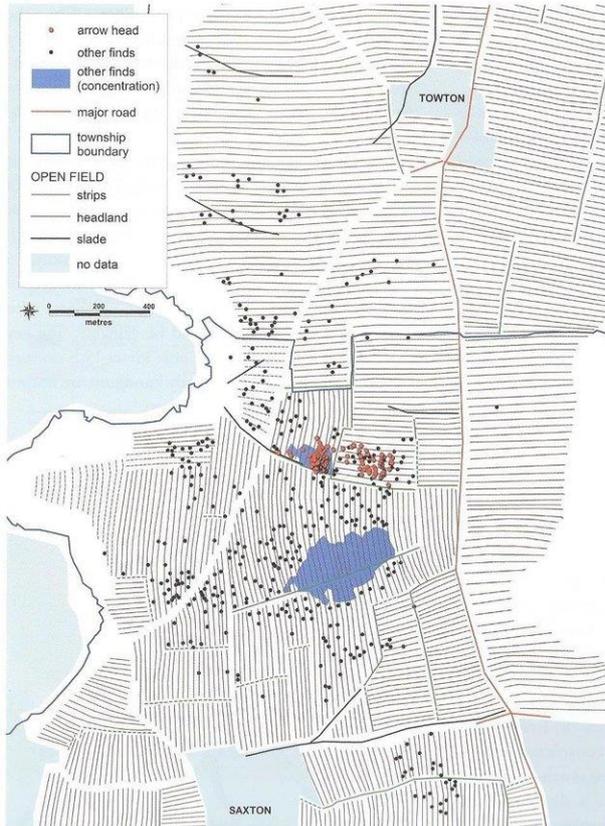
Appendix 3d: Map of Towton 1461 showing the artefact distribution, in so far as it has been published, against a background of the open field furlong pattern as reconstructed by Hall, Foard and Morris 2012, p.86, IN Cahill, Michael (2016) The Battle of Towton 1461, a multi-disciplinary discussion based on scholarly analyses of this Medieval battle site.
[file:///C:/Users/laure/Downloads/Academia-Towton1%20(2).pdf] p.7
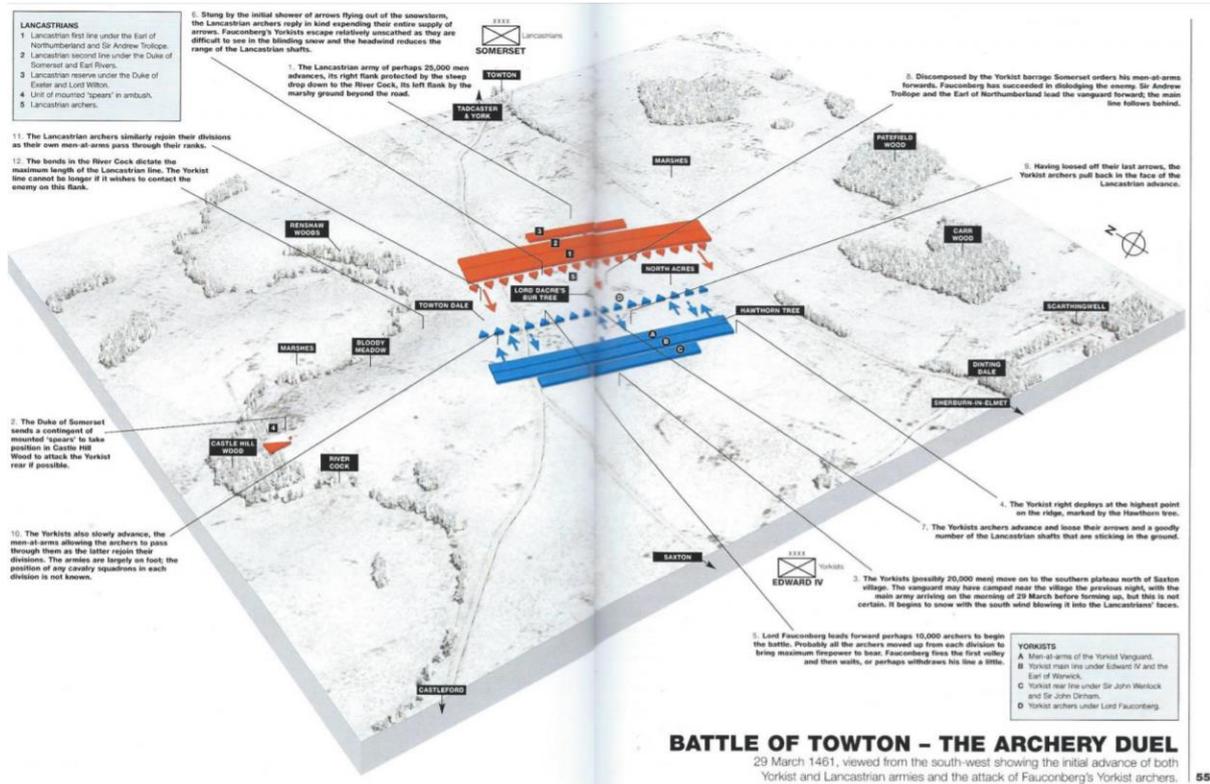
Appendix 3e: Description of battle lines and initial events. Gravett (2003) pp.55-56. [Gravett, Christopher (2003) Towton 1461: England's Bloodiest Battle, Osprey Publishing. [file:///C:/Users/laure/Downloads/Academia-Towton1%20(2).pdf]
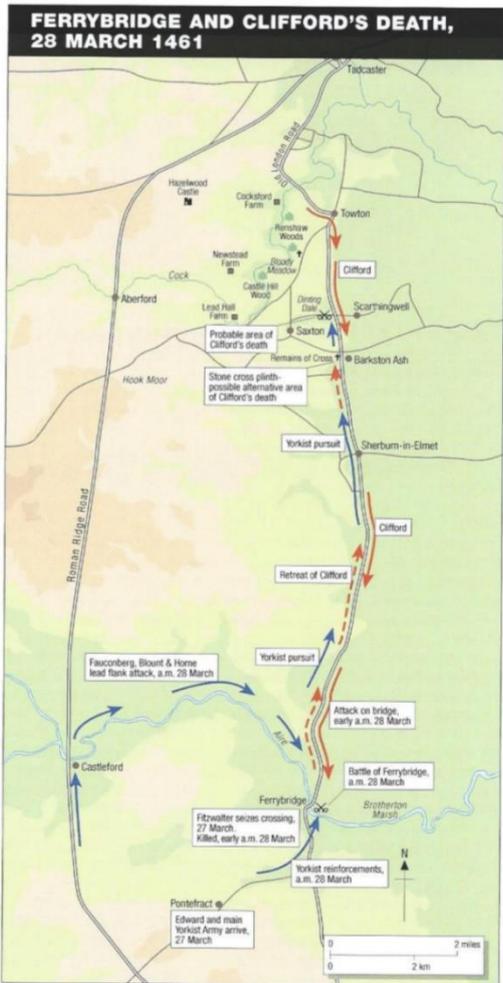
Appendix 4a: Ferrybridge and Dintingdale timeline, Gravett, Christopher (2003) Towton 1461: England's Bloodiest Battle, Osprey Publishing, p.31.
AND Picture of Dintingdale: Looking east along Dintingdale towards the A162, which was the main London-York road in 1461. It was in this valley that the initial skirmish took place on the evening before the battle. Photo: G Foard (2003)
[http://www.battlefieldstrust.com/resource-centre/warsoftheroses/battleview.asp?BattleFieldId=46]

*Appendix 4b: Defeat of Clifford: Battle of Towton fought on 29th March 1461 in the Wars of the Roses.*
[https://www.britishbattles.com/wars-of-the-roses/battle-of-towton/]

Appendix 4c: Towton in the snow (Nov 2012) from Towton Battlefield Society Facebook page. [https://www.facebook.com/Towton-Battlefield-Society-174158255993807/]

Appendix 4d: Towton in the snow (Palm Sunday 2013) from Towton Battlefield Society Facebook page. [https://www.facebook.com/Towton-Battlefield-Society-174158255993807/]

BATTLE OF TOWTON – THE ROUT

29 March 1461, viewed from the west-south-west showing the arrival of the Duke of Norfolk's division and the resurgence of the Yorkist line. The Lancastrians break in rout and the Yorkists begin a bloody pursuit.
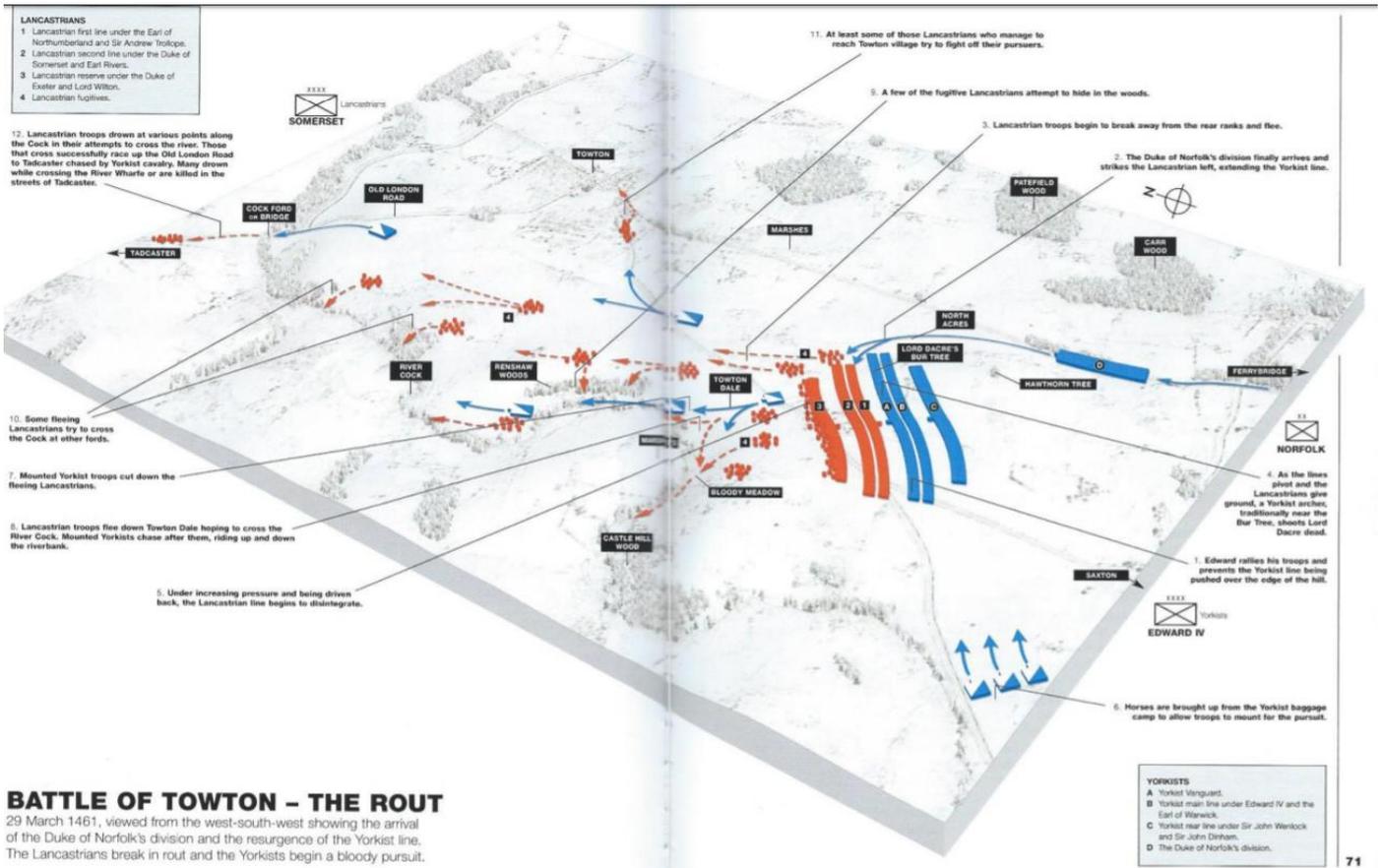
Appendix 4f: Diagram detailing the rout of the Lancastrians, Gravett, Christopher (2003) Towton 1461: England's Bloodiest Battle, Osprey Publishing, pp.70-71
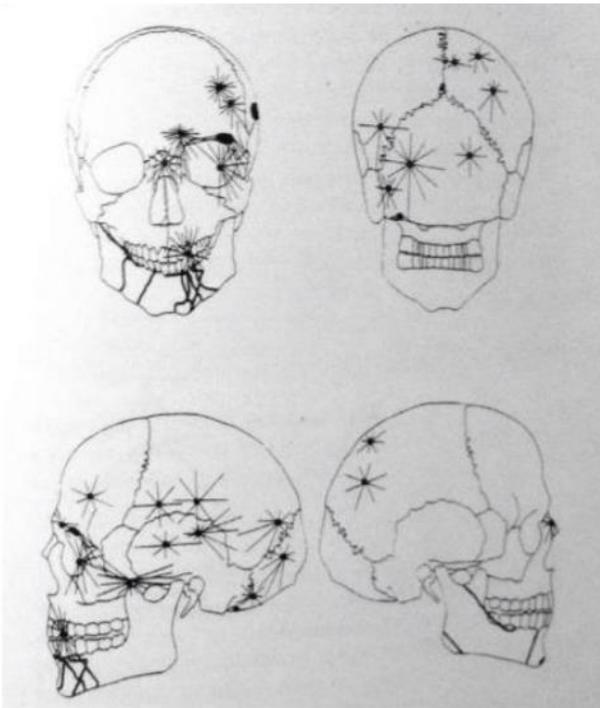
Appendix 4g: Diagram of distribution of perimortem blade wounds on cranium IN Novak, S (2014) Battle Related trauma in Fiorato, V., Boylston, A., and Knüsel, C. (eds), Blood Red Roses, Oxbow, p.96.

NOTE: Injuries seen both at front and back of skull- some Lancastrians turned to face the Yorkists, some died whilst fleeing?

Appendix 4h: Photo of 'Bloody Meadow' covered in snow, photo taken from AlisonRhodesHowarth (@AlisonRH) twitter (Mar 2018) [https://twitter.com/AlisonRH/status/979265896727314432]

Appendix 4i: Pictures of the extra trail towards the 'Bridge of Bodies' location, looking up towards the hill the Lancastrians would have fled down. Personal photograph (Jan 2019)

TOMB OF LORD DACRE, SAXTON CHURCHYARD
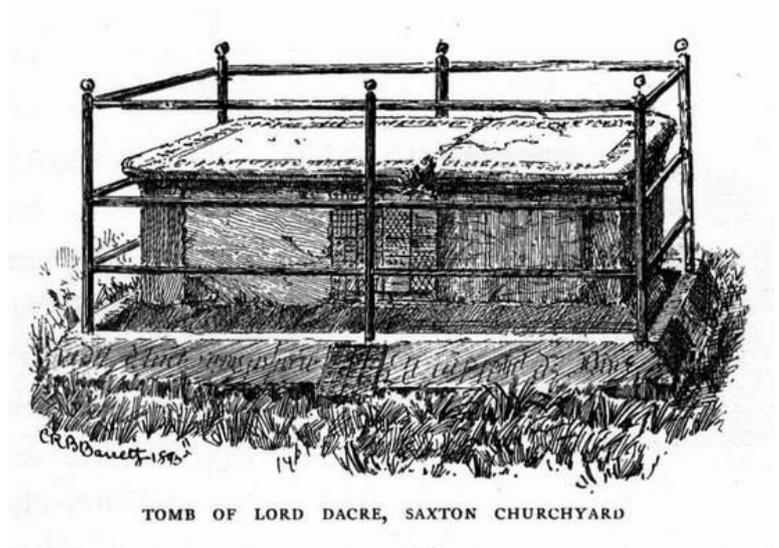
*Appendix 4j: Lord Dacre monument after installation to compare to how it appears now (taken from Towton Battlefield Society Facebook page [https://www.facebook.com/Towton-Battlefield-Society-174158255993807/]) **AND** Image of Lord Dacre's grave from 1896 to compare to modern view (Tee Dacre tomb in Saxton churchyard, as it was in 1896, Barrett (1896) p.165, Copyright © Glenn Foard 2004. [http://www.battlefieldstrust.com/resource-centre/warsoftheroses/battleview.asp?BattleFieldId=46])*

Appendix 5: Application project screenshots
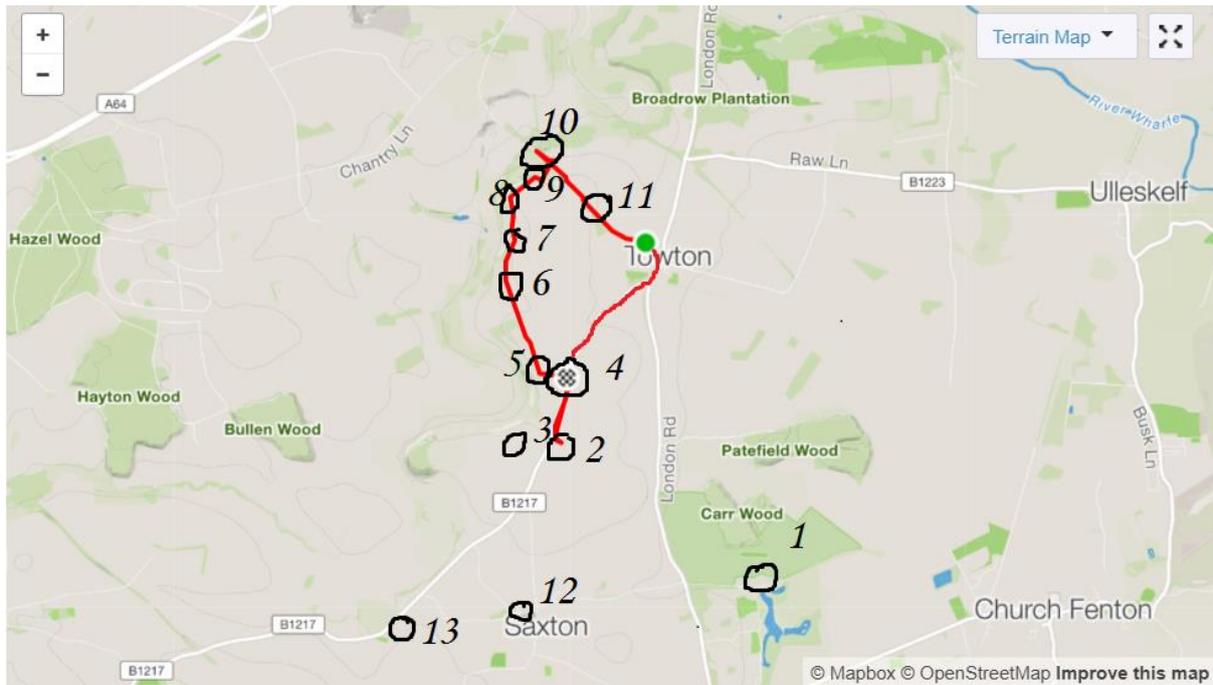
Appendix 5a: My battlefield concept interactive trail, points of interest highlighted, and the user can either click on the point for further information or will inform the user when they are nearing a point. Green dot is the user walking around the trail. Made using https://www.strava.com/dashboard (records your route) better software would enable an interactive application trail to be created like one of the above examples.

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