Mobile Outreach

Social Media and Apps in Public Archaeology

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After a long period of reading, research and writing, my thesis is finally finished. I became even more interested in the fast changing topic of ‘mobile outreach’. At first I tried to keep up with all the new literature published every month on the topic, but this proved to be an impossible task. I hope this thesis will inspire archaeologists to engage more with social media and mobile applications.

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Abstract

In this thesis the topic of ‘mobile outreach’ in public archaeology is discussed. The term mobile outreach is used to describe the means of public outreach that can be accessed on mobile devices like smartphones. This thesis aims to provide more information on mobile outreach by combining literature from the field of archaeology with sources from other disciplines. To provide more information on archaeology and social media an online questionnaire was completed by 450 archaeologists.

The thesis is divided into three main parts: social media, apps and the results of the questionnaire. The history of the medium is discussed and their implementation in archaeology is further examined. Apps, but especially social media, have dangers and negative components, like exclusion, looting dangers and vicious commenting. Archaeologists should be aware of these but they should not be a discouragement. Apps and social media can help to inform the local population so they can help to protect the local heritage. Social media and apps need a good strategy to be successful, but a strategy is often missing. Archaeologists should also reflect more on their practices and improve them accordingly. This thesis provides general guidelines on how to set-up a successful strategy.

Apps and social media offer great potential to interact more with the public. Social media however is struggling with a negative image among archaeologists to be used for serious discussions and apps are still relatively new means of outreach for excavations. Social media discussions and the spread of information often stays inside a small centre, where most of the participants are archaeologists themselves. At the moment archaeologists are not using apps and social media to their full potential and much can be improved.
1. Introduction: Mobile Outreach in Public Archaeology

‘Archaeologists do not use social media enough. There are so many nice and interesting things to post on a daily basis, be it one object a day or a picture of a beautiful sky above a trial trench!’ (comments from online questionnaire).

1.1 Archaeology and the public

In the early days of archaeology knowledge was for scientists only. Engaging with the public was not even considered or it was seen as a waste of time. Archaeological theory, with the recognition of historical contingency and the multivalency of interpretation has been a major influence for the archaeological valorisation (Merriman, 2004, p.3). Valorisation is making knowledge accessible for the public. In contrast with archaeology in the early 20th century, archaeology is now seen as a communal good. In many countries it is expected of archaeologists and many also choose to communicate with a variety of audiences (Franklin and Moe, 2012). Since archaeology is part of the past of the community, the archaeological knowledge should be accessible for the community. An increase of the public value can also lead to an increase in funding and new project sponsors. Outreach and education can also help to combat the antiquities trade and it can help people to appreciate diversity in the past and present (Little, 2012).

Debates exist concerning whether public archaeology refers to archaeology with the public, for the public, of the public, or archaeology of public resources (Franklin and Moe, 2012). ‘The public’ is a confusing term. There is no general public, because the public is a hugely diverse range of people, with different age, sex, class, ethnicity and religious interests and affiliations (Merriman, 2004, p.2). Merriman writes: ‘It is only valid as a shorthand term to describe the huge diversity of the population who are not professional archaeologists. It is only their characteristic of not being a professional archaeologists or archaeology student that united the public in this context; by any other measure the public does not exist.’ Since there is no ‘the public’ it is important to define who should be reached with the valorisation. A public in one project is different from a public in another. A public can be defined as a bounded collective of individuals who have come together under a common set of principles, affinities or beliefs (Hinton and Hjorth, p.41). Merriman (2004, p.5) claims archaeologists must work harder to understand the diversity of their audiences. Public archaeology is engagement, informing, debating, educating, and interacting with those who are not
archaeologists themselves. Just like there is no ‘the public’, there is not one public archaeology, but many. One form of public outreach is what I call ‘mobile outreach’ in this thesis. Mobile outreach is the use of mobile platforms, which are often used on smartphones, like social media and mobile applications. Social media is used in archaeology because it is seen an easy way to reach the public. Mobile applications are rarely used in outreach programs today but the interest in this fairly new technology is growing. It is however unclear if these methods are really reaching the public.

1.2 Thesis Focus

We do not know if social media is truly a suitable medium to reach the public because archaeologists do not critically reflect on the use of social media. Archaeologists should ask themselves: Are we reaching who we want to reach? Social media cannot be done without a coherent strategy but are social media strategies used in archaeology? Mobile applications are even a less explored field of public outreach. It is often unclear what applications can do for archaeology. Mobile applications are seen as nothing more than expensive eye-candy (comments from online questionnaire). As Al-Subhi, Bell and Lashmar discuss (2015, p.4), the literature on heritage and mobile technology is also overly focused on museums and there is a gap in literature regarding the use of mobile outreach in wider heritage locations like excavations.

With this thesis I want to provide more information about social media and applications in public outreach programs. The main question of the thesis is: What can social media and mobile applications mean for public outreach in archaeology? The focus will not be on museums but on excavations and completed excavations. Sub questions are: Are archaeologists reaching a wider public by using these techniques? Did the public get more influence on archaeology because of mobile outreach? As the main question indicates, the thesis is divided in two subtopics: social media and mobile applications. In chapter two, social media, the following questions will be addressed: What is social media? What are the dangers and shortcomings of social media? Issues like: privacy, access, terrorism and exploitation are discussed. How can archaeologists create a successful strategy for their social media page? Since there are many types of social media, the focus will be on Twitter, Facebook and YouTube. These are the most used, and most discussed, general social media platforms. In the third chapter mobile applications are discussed which aims to answer the following questions: What are mobile applications? How does one make an archaeological app? Are apps
replacements of other types of outreach? Can apps be used in all excavations? What is augmented reality and how can it be used?

To answer these questions literature from the field of archaeology and other fields of expertise was used. Yet, after extensive research it was still not clear how archaeologists were using social media and if there were strategies concerning social media and the success of social media use. Therefore an online questionnaire was made to research social media use among Dutch professional archaeologists. These results can be found in the final chapter of this thesis.

In archaeology there is often not much attention for the history of recent technologies. In this introduction some more information will be given on the mobile technologies and provide more background knowledge on the topic. The use of smartphones and tablets is called the mobile revolution. To place the recent changes of the mobile revolution into context it is important to have some knowledge about the rise of the internet in general and the history of archaeology and computers. Smartphones and tablets gave the opportunity to carry the internet with you, they made the internet ‘pocketable’ (Bollini et al., 2014, p.653). The mobile revolution was more than a technological innovation. It changed how people communicate with each other, how people deal with the unknown and it changed their perception of space. For many the internet and technology became a personal part of their lives, this experience will only enhance in the future with more wearable devices and new implementations of technology.

1.3 Archaeology and the digital world: from massive computers to smartphones

The 1960s saw the birth of archaeological computing and it was a time of technological optimism within Western society. Archaeological computing was welcomed by the processual archaeologists because it was seen as a new tool for better scientific research and performing calculations (Lock, 2003, p.9). In the early years the only computers available were in universities or large institutions due to their costs and special requirements. Computers were therefore products for the (scientific) elite. Robert Whallon (1972, p.29) saw the 1960s as a period of experimentation where the computer was gradually adopted as one of the major archaeological tools. Some archaeologists used computers for statistics, modelling, information retrieval and data processing. Many archaeologists were observing all the new techniques from the side-line with attitudes ranging from hostility to interest waiting for the techniques to prove themselves more. According to Cowgill (1968 p.17), the interest and
comprehension for computers was rapidly increasing among graduate students and ‘depressingly low’ among archaeologists above 35. Using the early computers was not an easy task and it required a large team of operators. Communication with the machine was done by using punched tape or punch cards. Getting output from the machine could take up to 24 hours. The early computers were far from ideal but archaeologists saw the potential this machine had. In the late 1960s archaeologists in the US had the vision to create a worldwide database of all the archaeological finds (Chenhall, 1971, p.159). The early computers were not made to process this much data and other archaeologists were rejecting the idea of digitalising all their data, so it became a database of one institute.

A major step in popularizing computers was the arrival of the first commercially available desktop computers in the 1980s (Brookshear, 2012, p.8). Computers were starting to lose their elite image and archaeologists started to use computers for more than calculations and data storage. The first computer-generated visualisations in archaeology can be seen on figure 1. They were created in 1983 of the Roman baths and temple of Sulis Minerva in Bath (Wittur, 2013, p.9). The image got a lot of media attention and was even used in a BBC television series (Reilly and Rahtz, 1992, p.150). The images were used to help visitors comprehend what they were looking at when they visited the monuments.

![Figure 1: Reconstruction of the Roman bath complex and temple of Sulis Minerva in Bath (Reilly and Rahtz, 1992, figure 12.1 and figure 12.2)](image)

In the 1990s there was a new technological revolution with the introduction of the internet, the World Wide Web. The internet has its origins in the military in the 1960s but in the 1990s the internet became not just a way to send files from one place to another but a web of information that anyone on the internet could retrieve (Brookshear, 2012, p.8). Computers now became connected. Since computers and the internet became more accessible, the machine that was once used solely on research facilities, became a tool for the whole family.
According to Morrison (2014) archaeologists were in general relatively slow to get into these new technologies. Because of the post-processual development in the late 1980s and 1990s archaeologists were trying to find ways to inform the public (Morrison, 2014). There was a greater reflection on the role of archaeology in society and how archaeologists should produce knowledge. The World Wide Web created new possibilities of outreach, although sharing information on the early web proved to be difficult for archaeologists. Technical skills were needed and there was no form of direct interaction. Blogs were therefore used by archaeologists to spread information online, this development is further discussed in chapter 2.

In the 2000s the internet became more interactive. This is the so called Web 2.0. Internet users could now not only download data but everyone could also upload data on the web (Goskar, 2012, p.69). Internet users were now in control of what would be on the web, and this is not always a good thing. Much more information became available but it is also more difficult to assess the trustworthiness of this information. Information could now be provided by non-archaeologists without professional control.

Websites became easier to build in Web 2.0 and they became almost a mandatory part of archaeological excavations to inform the public. Since the early 2000s a lot of archaeological website emerged, some were primarily gateways to other archaeological websites, others presented museums and exhibitions, organizations or excavations. More scientific websites were created as well, such as websites to upload papers, websites that focus on universities and journals and websites where scholars can present and discuss their data. Online publishing is becoming more and more common. There is less or no control before publication and some online publications lack in academic respectability. Illegal copying and plagiarism are also hard to keep under control when publishing online. Digital publication does allow the publication of a greater variety of material than would have been possible on paper. Accessing information has become much easier because of the internet for many archaeologists around the world (Richards, 2006, p.217).

Surfing on the World Wide Web was something done one a laptop or PC in the early 2000s. The computer, camera and mobile phone were combined in the smartphone. Information became easier to access and spread around the world. Smartphones also brought the opportunity to present archaeological data on sites with apps. People use their smartphones for different kinds of activities, but accessing social media is one of the most used features on mobile devices. Social media already existed before the mobile revolution, but it became much more popular because of the smartphone.
2. Archaeology and Social Media

‘Many archaeologists don't want to discuss with a more general public on social media because they value ‘expert’ knowledge’ (Walker, 2014, p.227). ‘Social media is something that can be done when you have some extra time, it is to trigger people but of course, not a medium to be used by specialists’ (comments from online questionnaire).

In this chapter social media and archaeology are discussed. What is social media? What are the dangers of social media? How can archaeologists use social media? In the last part Twitter, Facebook and YouTube are further explored.

2.1 What is social media?

In general the term social media is used to describe the collection of software that enabled individuals and communities to gather, communicate, share, collaborate or play (Fuchs, 2014, p.35). Social media is part of what in some sciences is called computer-mediated communication, although this is a wider concept which also includes digital types of communication like e-mailing. The internet has no single definition, its meaning changes with the context of the people who use the internet. Social media is very similar, there is no generic definition that covers all its different aspects. All these different aspects and different types of social media can also make it difficult to decide in which ways social media should be used to reach the public. The most common definition of social media is from Kaplan and Haenlein (2010, p.61): ‘Social Media is a group of internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of User Generated Content’. Many later definitions derived from this, but added words such as interaction and relationship. An example is the definition by Nistad (2013, p.15): ‘Social media are internet-based solutions that create social interactions and relationships.’ But are these interactions and relationships always positive?

On social media the content is generated by the users of the service (Cann, Dimitriou and Hooley 2011, p.7). Without its users most social media platforms would be empty canvases. Social media encourage participation by making the production, distribution and storage of contents less challenging and most of the time free (Hinton and Hjorth, 2013, p.75). This means that everyone with an internet connection can use social media, this leads to problems that will be discussed later in more detail. Many social network sites share some
common features such as private messaging, connection lists, comments and profiles (Hinton and Hjorth, 2013, p.34). A profile is how the users identify themselves. Profiles are not unique to social media, but they are an important part in most social networks (Boyd, 2011, p.43).

2.1.1 Social media and Web 2.0

In the definition of Kaplan and Haenlein (2010) social media is linked with the development of Web 2.0. The ‘first web’ was difficult to use and there were almost no possibilities to get real interaction. It was, like the older media, a one way flow of information without interaction. The user had to move from webpage to webpage until new ideas, like blogs, made the use of the internet easier (Laracuente, 2012, p.85). A blog is a website that features periodically published postings that shows the newest posts first (Fuchs 2014, p.179). Blogs created a combination of the private (opinions) and the public (the internet) and they played a crucial role in the successful incorporation of the internet in society (Lovink, 2013, p.95). The early internet was difficult for many people, because everything had to be written in HTML code. This was slow and inefficient compared to today’s standards (Morrison, 2014). Many people did not want to involve with writing on the internet because it required too much effort and knowledge. However, those who did involve with the early web, provided more informative and serious information than we see on the easier to use social media platforms today. There were blogs in the 1990’s that were easier to use. Blogging made writing online much more accessible and it invited many people to start writing for an online audience. For archaeology this was a great opportunity to start writing what they wanted people to hear, without being depended on the media. Some of the oldest archaeological blogs offer information that represents many books and they are offering commentary and information about specialised topics (Morrison, 2014). The early internet was still a controlled environment where the truthfulness of information was not questioned as much as it is today.

Web 2.0 was the answer for the shortcomings of the early web as it is easier to use, it facilitates sociality, and it provides users with free publishing and production platforms that allow them to upload content in any form, be it pictures, videos, or text (Lovink 2011, p.50). Web 2.0 implies a radically new and sudden change but according to Fuchs (2014, p.33) the introduction of Web 2.0 was a marketing strategy, and a result of the internet crisis in the early 2000’s, the so called dot-com boom. The market values of many internet companies were driven up, but their profits could not hold up with the promises of high market values.
Many start-up internet companies went bankrupt. After this crisis the investors had to be convinced to invest into new internet businesses to rebuild the internet economy. The period that is identified with Web 2.0 saw the rise of social media, but the term was created to identify the need of new economic strategies for internet companies. Web 2.0 was introduced in 2005, but social media existed before that. Web 2.0 was not so much an introduction of new technologies but it was a novelty in usage patterns (Fuchs 2014, p.35).

The keyword of Web 2.0 is interaction, as it became much easier to publish and share information with others on the Web. Interaction is also the main feature of social media. Social media communication led to a change from one-way mass media to interactivity and engagement with media audiences (Lipschultz, 2015, p.xiii). Web 3.0 is already expected ‘to happen soon’ by many authors, as a web largely driven by geolocations and a large connected interactive network (Bollini et al., 2014, p.653). Just like the criticism on the use of the term Web 2.0 it is much debatable if Web 3.0 is just a marketing term. Many changes that should distinct wen 3.0 from web 2.0 are already happening right now and it is therefore a more gradual process than the use of terms like Web 2.0 and Web 3.0 imply.

2.2 Social media issues

Lovink (2013, pp.6-7) writes that is has been very difficult to perform a thorough and critical research on social media. Social media researchers condemn themselves to capturing vanishing networks and cultural patterns. Social media reflects and responds to changes in society so it changes fast (Hinton and Hjorth, p.136). This can be a discouraging factor to engage with the topic in more detail, but it is unlikely that social media will vanish in the near future. Hinton and Hjorth (2013, p.54) write that it would be wrong to dismiss social network sites as nothing more than a fashion, as they reflect social practice as much as they create it. The popularity of social media is not because they create social networks, but because they provide a space for social networks to exist. They provide online relations, but also structure relationships in the real world. Most people communicate more often with people they already know well in real life than with people they have never met (Hinton and Hjorth, 2013, p.38). Social media creates and strengthens certain relationships, but it does have its dangers and debated issues.

The rise of new technologies often creates an eruption of feeling that briefly overwhelms reason (Fuchs 2014, p.202). Perry and Beale (2015, p.153) write that archaeology as a profession and academic discipline has struggled to establish good social media practices
because of this eruption of feeling. Archaeologists seem to use social media without a good strategy. This can be dangerous as social media are not all positive. The internet gives the opportunity to be someone else or to be ‘completely’ anonymous. Cyber-bullying, online harassment, privacy violations, disconnections from the real world, social isolation, and identity issues are some of the problems that come with social media. Social media has an impersonal nature. Users can meet more people, and have more ‘friends’ but these relationships often lack the strong ties a real life friendship can offer (Ngai, Tao and Moon, 2015, p.41). There is also less control on social media. People can say almost everything they want without consequences, this can result in cyber-bullying. People determine how, or as whom, they want to present themselves to the online community. Social media is most of the time very self-focused according to Bergland (2013). The individual seems to be an important factor on social media. On social networks the user can decide what to share, in other words a new (and often better) self is presented to the public. Bergland writes that social media are mostly about boosting ones self-esteem. Getting likes, views and followers makes people feel accepted and popular. Carpenter (2012, p.482) calls this self-centred behaviour ‘anti-social behaviour.’ Nistad (2013, p.15) gives a second definition of social media: ‘social media are interaction and relationship-based people-centric virtual networks.’ The ‘look at me’ is a very strong factor on the current use of social media.

When maintaining an archaeological group or page on a social media platform one must be aware of these issues and there should be a matching strategy on how to act in these situations. People can be very vicious in their comments or post false information. Should the comments be deleted (not always possible), responded to or ignored? Because everyone can say everything, many archaeologists don’t want to use social media in a professional matter. How can archaeologists have a good discussion when non-experts can give their opinion as well? Credibility is also an issue on social media, in the questionnaire multiple people commented on this matter. Social media isn’t very reliable since people usually copy messages. It can be hard to find the original source and value that source on its reliability.

If archaeologists do use social media one of the factors that need to be considered is what is to remain private and what is suitable for everyone to see and comment on. Information on social media sites can be searched without permission or knowledge by anyone and it can be permanently stored (Lipschultz, 2015, p.141). Oversharing of information is a fear of many archaeologists who are afraid that confidential information will be misused. Social media can be a very easy, cheap and direct way of communicating with the public but it is most certainly not without risk. If something is posted online it can be very
difficult to maintain control of the use and spread of that digital information. The original purpose might have been to inform people, but when not handled with care the shared information could even harm the project in many ways. Looting, unsupervised publishing, misuse in other research, political issues and misinterpretations by the public are some of the dangers. Mobile media can however, also protect heritage by engaging the local population and giving them the opportunity to report potential dangers and finds (Lazari, Lecci and Lecci, 2014).

2.2.1 Social media access

According to Walker (2014, p.218) the internet is not a utopian space as it cannot transcend existing offline contexts of inequality. Social media access is not the same for everyone: internet access, local regulations, ethnicity, wealth, age, education and living with a disability all influence the social media access (Tierney, 2013, p.67). The use of internet and social media have in many ways increased the inequality in the world. Some people have access to all the information and knowledge that is available on the internet, others can never engage with this digital world. These inequalities could also limit how successful social media is to transform how archaeology is conducted (Walker, 2014, p.227). This division is not only there on the geographical and material level but also on a psychological level. Some people are afraid to speak up because they don’t want to be criticized on their opinion. Another important factor is personal interest, someone who is not interested in archaeology and heritage in any way is extremely difficult to reach. Immigrants usually have little interest in local archaeology and the notion of heritage is also culturally dependant. It is a question if one should want to achieve reaching everyone, since there is little gain. According to Ngai, Tao and Moon (2015, p.41) understanding whether any differences exist in the adaptation and usage of social media in different cultures is important. Social media has no boundaries and although most users are from Europe and the United States, social media is used worldwide. South-Korea for example has the highest visitation rate in social media (Ngai, Tao and Moon, 2015, p.41). Minimal research on cultural considerations in social media has been conducted according to Ngai, Tao and Moon. When using social media in a different country in a public outreach program, it might be a good idea to engage with locals to learn about possible differences in social media behaviour and how the local heritage is perceived.
2.2.2 Social media and terrorism

The world has become more transparent because of social media (Nistad, 2013, p.144). Social media can spread news faster than the traditional media. Social media also changed how people respond to major events such as terrorist attacks. After terrorist attacks people comfort, update and express their feelings through social media (Nistad, 2013, p.145). Social media can also strengthen terrorism itself, but it does not necessarily cause revolutions or protests (Fuchs 2014, p.207). Revolutions are embedded into contradictions and the power structures of contemporary society. In a society in which social media are prevalent, they are not completely unimportant in situations of uproar and revolutions. Knowledge between terrorists can be shared and they can get in contact with likeminded people. People that were outcasts with their ideas in their local environment can find people with the same ideas on social media. This can lead to radicalisation. This does not have to mean they are part of the terrorist group but they can perform acts, like destroying archaeological sites, because of the examples on social media or social pressure. The Islamic State is also on many ways depending on social media for contacting its members, recruiting new followers and the spread of propaganda. IS also uses social media to spread the images and threats of destruction of archaeological heritage sites. For IS the heritage sites don’t have the same notion they have for the Western world. Destroying these sites is for them cultural cleansing and an effective medium to shock and anger the Western world.

2.2.3 Exploitation

Since social media need user generated content and this can be seen as exploitation. Jenkins, Ford and Green (2013, p.128) claim that the profits companies make from audience labour on social media is not true exploitation since it benefits the user as well. Fuchs (2014, p.64) agrees with this, suggesting users are motivated by social and communicative needs and desires to use social media. The fact that users love to post videos, blogs or photo’s does not make it less exploited. Of course it is a form of ‘free’ advertisement for businesses, and in the archaeological case museums and excavations, but the owner of the used medium earns a lot more. Is this exploitation of free labour and user generated content bad? Archaeologists don’t really see it as exploitation and people don’t seem to mind, probably because we can’t envision it any other way since it is normal in today’s society. To change this exploitation, the internet would have to radically change, something that will not happen in this way in the near future. The exploitation is therefore not seen as a bad thing, but to claim like Jenkins, Ford
and Green that it is not exploitation, is a wrong statement. Fuchs (2014, p.257) sees an alternative internet without exploitation as a much needed development. To achieve this changes of the design of the internet and society’s fundamental structures are needed.

Archaeology benefits as well from free labour on the internet. Archaeology has a long history of working with volunteers and amateurs, which explains the lack of attention the topic was given (Perry and Baele, 2015, p.158). Crowdsourcing and crowdfunding for example can help archaeology to find volunteers, project investments and public engagement. Crowdfunding and crowdsourcing are seen as part of social media. Archaeology can always rely on people that have a curiosity and genuine interest in the topic. Archaeology exploits volunteers to get ‘free’ labour, but it can also offer something in return. Knowledge, engagement with the local past and safekeeping that past. If it requires an individual cost to take part in an excavation, can it still be considered an inclusive community project? When the public is charged for involvement in archaeology, the wider public is excluded. Many excavations have free visitor days now, only providing these services for money would be a huge setback for public archaeology in general.

Social media is not without its dangers and negative components. Negative comments, unequal access, terrorism and vandalism risks, the exploitative nature and the self-centred nature of social media are all part of these worldwide media. Even with all these negative aspects it can be very rewarding to engage with social media in a professional matter. The most important thing that is needed is a coherent strategy. In a strategy it can be discussed for example how the page moderator should respond in unpleasant situations. It might be a good idea for all excavations to make sure there are general social media guidelines for the project. All staff should be informed about these regulations to make sure no mistakes are made. Social media are not that different from a conversation with a journalist from more conventional types of media. Just like conventional media, the information has to be clear, unambiguous and interesting without revealing too much about the preliminary results. One important issue of social media is the question if it reaches the people that should be reached.

2.3 Archaeology and social media: creating a strategy

Social media are praised in archaeology as a means toward inclusion, access and better communication (Perry and Baele, 2015, pp.155-156). Social media usage in archaeology can be roughly categorized in internally or externally focused (Walker, 2014, p.218). Internally
focused social media is communication towards archaeologists and external social media is trying to engage the public from other disciplines. The latter is more widespread, but also criticized for its lack on informative content in the questionnaire. The real impact of archaeology on social media has been rarely discussed. Perry and Baele (2015, p.156) call this naïve from a discipline with such long-standing concern for communication. Perhaps the lack of impact studies is connected to the scarcity of impact research in public archaeology in general (Bonacchi, 2012, p.12).

According to Nistad (2013, p.133) strategy is the most important process in social media programs. A good strategy is characterised for being concise, clear and measurable. Strategies also require revisions and adjustments (Nistad, 2013, p.133). Social media is not used by many organizations on a daily basis, but this would improve the page (Ngai, Tao and Moon, 2015, p.39). Social media users in archaeology are often subject to victim-blaming, institutional obliviousness, and employer incompetence (Perry and Baele, 2015, p.157). This does not make it easy to create a successful social media program. Social media works differently than other types of marketing communication (Nistad, 2013, p.120). Social media creates dialogue with and between people who are interested in archaeology. Just sharing a piece of information is not sufficient. According to Nistad (2013, p.121) it is better to have a good relationship with the people who follow the company than to strive to get as many followers as possible. This is important for archaeological pages who often don’t get that many likes or followers. Likes and followers are not a measurement of authority on social media, they show the pages’ popularity. Authority can be achieved by being consistent in quality posts that are accessible to read (Koch 2013). Achieving authority takes time and commitment. Success on social media is about creating genuine added value and creating discussion (Nistad, 2013, p.121). Kietzman et al. (2011, pp.249-250) propose the idea of ‘the 4 Cs’ as a guideline for developing a social media strategy. The guideline is for commercial firms, but can in this aspect also be applied to archaeology:

1. **Cognize**: The social media landscape needs to be understood. In a social media strategy the goal and the target of the social media outreach are clearly stated (Nistad, 2013, p.135). Who needs to be reached with the social media pages and what should be achieved with this connection?

2. **Congruity**: Strategies need to be developed that are congruent with different social media functionalities and the project goals. How can the chosen public be reached and
how will the project present itself to do this? What kind of information will be shared and how? How will success or failure be measured?

3. **Curate**: A project, institution or company needs to act as a curator of social media interactions and content. Who will represent the project, institution or company online? Policies should be made and all employees need to be informed about who will be the representative. When the moderator has knowledge about how to use social media, it takes not that much time to write informative posts. People usually scan a page instead of reading everything, this also applies to social media (Van der Mark, 2011, p.20). If the user interest is triggered, for example with a picture or a good opening, sentence scanning will turn into reading. Media needs to have some kind of trigger, but this does not have to be exaggerated and sensational. Messages do need some creativity and they should be original. An important thing is that there is no need to present the excavation, company or institution differently on social media to gain attention. Don’t try to attract people that have no interest in archaeology at all, it is highly unlikely that the social media page can change that. Try to connect with potential visitors and people who have an interest in the topic. They are easier to reach, satisfy and interact with. If the goal is to get more attention from youth for example there could be made a special page for this purpose. Stay with your own ideals and don’t change your language because it is a social network site. People that are interested in the excavation or institution will appreciate this and it will result in quality posts that attract people because of its informative value, not because its sensational. An example is a post on Facebook from the Dutch Broadcast Foundation, NOS, where they used the words: “Check this. (...)” (NOS, 2015). The use of words resulted in many slightly confused, irritated and also amused comments by users. Social media promote decision making, collaboration and compromise, yet users tend to retreat to conversations with like-minded individuals and organizations (Lipschultz, 2015, p.220). Being active on social media will help to make the page more successful. People don’t read a page if there is very little information available or if all the information is outdated. Archaeology on social media should offer quality over quantity. Credibility is an important matter for social media communication (Lipschultz, 2015, p.75). Many archaeology-related online media is not cited. Perry and Baele (2015, p.157) discuss this, suggesting that intellectual integrity and cumulative knowledge-making play little part in social media practices. The comments in the questionnaire showed people would like to see more posts which refer to a
credible source. Interaction is also important on social media. Just posting something is alright, but responding on relevant comments and questions in a professional manner makes the page better. Implementing the existing channels of communication in the social media strategy is also needed (Nistad, 2013, p.136). How can the existing channels of public outreach help to build long-term relationships on social media? Having a social media page will not magically result in a successful outreach program.

4. **Chase:** A social media page needs feedback. What do people find interesting and how can the social media page be improved? A new audience can be found by engaging in other discussions on more elaborate archaeology pages. Having a social media page alone as a medium of public outreach will not work in the beginning if no one knows the page exists. Directing a potential audience to the page can be accomplished on various ways like handing out flyers on the exhibition site or by adding a dedicated section on an information screen. Previous social media success and failure should be used as study material. Archaeologists try to learn from the past, so why not from the much more recent past? Lipschultz (2015, p.22) writes that more can be learned through use of social media metrics and analytics. Facebook insights and Twitter analytics can help to study the behaviour of the people linked to the page (Lipschultz, 2015, p.112; Richardson, 2014, p.97). It’s also a way to discover trends and to adopt the social media plan accordingly. Richardson (2014, p.98) wanted to use the analytical programs in her PhD program to investigate archaeological trends, but for many analytical programs a basic skill in programming was necessary to get in-depth results. She lacked the time and skills to conduct the research, but recommends it as a valuable area of future exploration in digital public archaeology. Reflection is always a key component, but is it happening enough in archaeology?

Social media is still seen as a medium where only the younger people can be reached with. Walker (2014, p.225), for example, writes that academics over the age of 45 are less likely to use social media. Walker refers to a study from 2011. More recent trends show that teenagers tend to leave social media networks and among people above 40 the use of social media is growing rapidly (Oosterveer, 2015). The questionnaire also showed that there is not much difference between students (usually younger people) and professional archaeologists in their social media use and perception. There is a recent increase in elderly people on social networks (Oosterveer, 2015). Elderly people are seen as important ‘consumers’ of archaeology, but they probably don’t know about archaeology on the social media platforms.
Raising their awareness through other media or during meetings with the local community, might invite them to join the social media page. Perhaps this growing average age and changing image will help to turn social media in a more serious platform of outreach and discussion.

At this moment social media does have a negative image in archaeology of not being trustworthy and scientific. In the questionnaire it was mentioned that some people would like to get more approval from other archaeologists for actively promoting archaeology on social media. Social media is about discussion but online contributions tend to have very little impact on the discipline as a whole. Using social media in outreach programs is sometimes perceived as ‘showing off’. The image social media has can be summarized as: ‘it can be used to reach people but it does not provide high quality information.’ Social network sites like Academia.edu, where people can upload their research and LinkedIn are perceived with a more positive feeling. LinkedIn is a popular social network focused on professionals, with over 364 million members worldwide (LinkedIn, 2015). LinkedIn and Academia.edu often lack the opportunity to go into detailed discussions, but sites like Facebook and Twitter suffer from their bad image. The only people who can change this are archaeologists themselves. Don’t ignore false information but open a discussion with well-founded arguments. Post credible information on the different groups and inform people about the facts. People who post wrong information should not be looked down upon, they are interested in archaeology and they try to share this passion. Often it is not the intention of people to post false information. Pointing it out and providing credible sources is better than to ignore the non-expert postings. This might seem as a tiresome and never-ending task to some, but more active engagement of professionals can really improve social media discussions in general.

2.4 Reaching the public on Twitter, Facebook and YouTube

There are many different types of social media platforms, but the three most used platforms are discussed further, namely Twitter, Facebook and YouTube. As time develops the differences between social media sites become less obvious (Nistad, 2013, p.16). The social media platforms provide overlapping functions, resulting in more blurred boundaries between the different social media. Essentially Twitter is a micro-blogging site meant for content sharing, Facebook a social network site and YouTube is a video sharing platform (Lipschultz, 2015, p.30).
2.4.1 Twitter

In 2004 a software company wanted to improve communication between its employees (Laracuente, 2012, p.86). An open-source communication tool was made named TWTTR. As more people started to use TWTTR it became more useful. Around 60,000 people were using the tool when the company used TWTTR to create a new company, Twitter Inc. in 2007. Twitter is a micro-blogging site. Microblogging is like sending a text message online to a large number of people. People have public profiles where they can post a message, a Tweet. Tweets have a maximum of 140 characters. 140 characters forces the author to strip the message to its bare essentials (Laracuente, 2012, p.89). This can result in over-simplification but this should be avoided if the aim is to get high quality posts. To provide more information Tweets often provide links to blogs, websites, videos or other online sources. Because of its brevity, Twitter is not often used as a stand-alone feature of outreach, but as a part of the larger ‘social media toolkit’ (Laracuente, 2012, p.87). Not everyone has the skill to write a good tweet, and some pages use the same format for every tweet they post. Of course this does not improve the quality of the page. One of the most followed archaeology pages, Archaeology Magazine, uses this method by providing links in every tweet to their main website (Archaeology Magazine, 2015). They don’t use the page to its full potential, because they could interact more with their public. The public is very important on Twitter because it goes beyond the followers of a page. Every conversation between individuals can be read by anyone without informing the writers who are reading their Tweets. Users do not build a full profile on Twitter and the information flow is much more a one-way interaction than on, for example, Facebook (Davenport et al., 2014, p.213). Twitter users can click on the follow button if they want to get notified on new posts from a Twitter page. People can respond or talk to each other using the @-sign or retweet (copy and post) messages on their own page. Hashtags, the #-sign, connect conversations of strangers.

When people find the information on a Twitter page interesting they can follow that page. According to Laracuente (2012, p.88) this results in social ‘islands’ where everyone is of the same mind-set. This is common on the smaller archaeological pages. Twitter is one of the most open social media platforms. Users can decide whose message they want to receive but this does not mean users can decide who can receive their messages, blocking a user is the only way to make sure people cannot follow the page (Fuchs 2014, p.180). This is very different from Facebook, where the user needs to accept people as friends. Facebook relationships are therefore reciprocal, while Twitter relationships are not (Davenport et al., 2013, p.213).
There is no complete online anonymity, most certainly not on Twitter. Twitter (2015) writes in their policy: ‘When using any of our Services you consent to the collection, transfer, storage, disclosure, and use of your information as described in this Privacy Policy. (…) Irrespective of which country you reside in or supply information from, you authorize Twitter to use your information in the United States, Ireland, and any other country where Twitter operates.’ Twitter continues that all the information you provide is to be made public, as well as all the metadata. Twitter also collects log data: ‘When you use our Services, we may receive information (“Log Data”) such as your IP address, browser type, operating system, the referring web page, pages visited, location, your mobile carrier, device information (including device and application IDs), search terms, and cookie information. We receive Log Data when you interact with our Services, for example, when you visit our websites, sign into our Services, interact with our email notifications, use your account to authenticate to a third-party website or application, or visit a third-party website that includes a Twitter button or widget.’ Many people agree to Twitter’s terms of use without reading it properly or they just don’t understand what kind of data they are handing over to Twitter. Twitter collects and stores a lot of information about its users and visitors. Twitter shares this information with third parties, to provide for example personal advertising. A user can ask for more privacy in the setting but the default option is ‘open’. Critics of online services argue that the default option should be not to share this information and that people can agree to share it if they don’t mind to do so (Lipschultz, 2015, p.145). Twitter continues: ‘When you share information or content like photos, videos, and links via the services, you should think carefully about what you are making public.’ Twitter even warns for sharing too much information in their own privacy policy and they also state: ‘What you say on the Twitter Services may be viewed all around the world instantly. You are what you Tweet!’ But is this true?

On Twitter one can easily pretend to be someone else. Almost every social media user is very selective in what they post, so you never truly are what you tweet. Perhaps ‘tweet as who you would like to be’ is a more accurate description. As mentioned it can be very difficult to assess the trustworthiness of information on social media. One can never truly be sure if the poster is an expert or if the poster is who he claims he is. If the credibility is doubted it can never harm to ask the poster about this. Most of the social media should not be used as a source because of the low quality of the information. Archaeologists can change this themselves by adding links to more reliable sources. Because it is not done this way now, does not mean it cannot be done at all. Don’t just follow trends, create new ones.
It can be difficult to use Twitter and its massive stream of short messages as a medium of public outreach. Tweets can ‘get lost’ easily in this stream of information. To match the relatively slow process of archaeological research with the fast pace of Twitter, archaeologists often use a simplified version of reality. It is easy to go for the quick and sensational tweets to get attention, but this will not help the field and the project on the long run. The media sensationalise archaeology more than enough, let archaeologists themselves than show what archaeology is really about. People who are really interested in archaeology and heritage will appreciate this. The page will not get millions of followers, but what is there to gain to get as many followers as possible? It is better to have a dedicated audience than to have many followers that will probably never check the page again.

2.4.2 Archaeology and Twitter revisited

In January 2014 I wrote a research paper on archaeology and Twitter. The archaeological pages that were investigated were Archaeology Magazine, Vindolanda, Irish archaeology, Guard archaeology and Raap (2015; Kovshenin, 2015). The pages were reinvestigated a year later to find out if there were any new usage patterns. The Tweets about archaeology got slightly more negative in nature in general (Topsy, 2015). This seems to be related to the destructions by IS. People use Twitter to share their thoughts about these matters. Archaeology Magazine was the only page that did not change its Twitter protocol. As mentioned earlier all the Tweets are links to their website. Vindolanda interacts much more with the public by answering questions and commenting on Tweets about the site. Vindolanda Trust is a charity running the Roman army museum and remains in the central sector of the Hadrian’s Wall. They linked to blogposts about post-excavation research and they provided regular updates during excavations. In 2014 they did not use hashtags, and they copied their Facebook posts on Twitter resulting in broken sentences. Facebook and Twitter are still linked, but Twitter gets its own short message and hashtags are used in most tweets now to give the tweets an anchor in the fast flow of tweets worldwide. They also engage more with topic related groups on Twitter and they provide more interesting information for people with more knowledge of archaeology. Irish Archaeology offered a multidisciplinary page related to a blog but they became much more commercial in one year. The page asked questions in 2014 to its followers and seemed to be a page where professionals could discuss about finds. The page lost that part and is now much more focused on archaeology around the world by retweeting, and local nature and heritage sites. Two commercial archaeology pages were
investigated Guard Archaeology, an Irish company, and Raap, a Dutch company. Both companies use Twitter more and have increased the quality of their tweets. In 2014 they seemed to write for a professional public. Now they provide information for a broader public but they still keep the tweets informative.

All of the discussed pages got more followers. This might indicate that following archaeology is becoming more popular on Twitter, or it is an indication that public outreach can work with Twitter. The use of Twitter didn’t grow that much in this year and in the Netherlands alone the use if Twitter even decreased (Oosterveer, 2015). Vindolanda and Raap showed the most changes in their Twitter plan. They’ve become more active, more aware of Twitters possibilities and they try to connect and interact with their audience. Twitter has many silent readers, who do not own or log in to a Twitter account. Their growth in public might therefore be much bigger than can be seen from the Twitter page itself.

Twitter can be used to reach a large audience, but it is not a standalone medium. The brevity of the messages requires archaeologists to link to other media to provide more information. Twitter does not take much time but it does take skill to write a good Tweet. Tweets do not have to be sensationalised, but depending on the audience they should be understandable for non-experts. Twitter is the most open social media platform so the poster should be aware that the Tweet can be seen by everyone on the internet. The investigated pages show that there is a growing interest and use in archaeological pages. They seem to have good strategies on how to use Twitter.

2.4.3 Facebook

Facebook was founded in 2004 and is with more than one billion users the most popular social networking site today (Fuchs 2014, p.153; Lipschultz, 2015, p.xiii). A social networking site is a web-based platform that integrates different media, information and communication technologies. Facebook uses a profile page, a connection list and it allows communication between users. Facebook calls connections friends, but they don’t have to be considered a friend by the user (Hinton and Hjorth, 2013, p.34).

It is only possible to like pages and posts, but not dislike them. Facebook wants to spread the affirmative atmosphere, in which people only agree and do not disagree or express discontent and disagreement (Fuchs 2014, p.160). A like does therefore not necessarily mean that someone likes the message but it became also a way to show that one cares and is supportive. Adding a dislike button could be a risk for Facebook, since some companies, that
are major advertising clients for Facebook, could obtain many negative assessments. An idealistic place, inevitably distorting reality, where people can only like things is therefore much more profitable for Facebook. People show their discontent by commenting, and this can get a very aggressive nature. It can be difficult to decide what is still an appropriate discussion and what is not. Facebook is known for not responding to reports and vicious comments are rarely deleted. In Facebook groups, people can be blocked but they can still spoil the experience for the other users. It is the page owner’s choice how to respond to these comments. It is one of the negative aspects of social media in general, where people use the online ‘anonymity’. Archaeologists should try to remain professional in their responses and actions.

Facebook monitors the users online activities when they are logged in, this data is then sold to advertisers (Lipschutz, 2015, p.150). Facebook avoids speaking of selling user generated data, demographic data and user behaviour (Fuchs 2014, p.166). They use the phrase ‘sharing information’. In their 2012 privacy policy the words sharing and share are used 85 times, sell is not used even once. Personal data on Facebook is used to show matching advertisements. Facebook claims it will not share personal information with advertisers unless explicit permission is given, yet the targeted advertising can’t be turned off or denied. Users must agree to this targeted advertisement mentioned in the long privacy statement to use Facebook. Facebook shares user information when they have permission, give notice or removed personal details from the information (Lipschultz, 2015, p.146). Accounts can be deactivated but data is then stored for possible reactivation. Accounts can also be ‘permanently’ deleted, but some of the data is stored up to 90 days. Deleting a Facebook account has been the topic of many discussions.

Despite its shortcomings Facebook is a great medium for archaeology departments to contact and inform their alumni, students and potential students. Many departments have an archaeology page like the University of York archaeology department (2015). Potential jobs, presentations, research performed by the university and in the field in general are usually all mentioned on the page. These pages often work well in reaching the specific student public. When using Facebook, data should be collected about what kind of stories are liked and commented on. This way it can become clear what kind of information people like to see. Facebook can also be used by other archaeological institutes or companies. Excavations, like the Theatre Royal Excavation (2015) use Facebook to provide updates on the work conducted. They provide regular updates with videos and images. The public, however, seems to have background knowledge since the process of archaeology itself is not explained. The
project could interact a bit more with their audience, they don’t invite people to start a
discussion and they don’t answer all the questions in the comments. People need to know they
are being heard on social media since it is not a one way process (although some pages make
it seem like it is). They give updates on the project, mainly through giving links with
interviews, but they could give some more information about the project. What seems to be
boring research for archaeologists can be interesting information for people if they get some
background information. It might be that local regulations limit how much they can tell and
show online.

In the questionnaire it was mentioned that Facebook is not a suitable medium for
archaeological discussions. This could be different if more archaeologists used the medium to
share their opinion. Facebook offers the opportunity to get interdisciplinary discussions but
they rarely happen because of the networks negative image among scientists. Facebook might
be the most egocentric social media platform, but this does not mean there is no place for
archaeology. There are many people with an interest in science and history. Archaeology
should not change itself because it is on social media nor should it be avoided. It can be a
great place to get discussions among archaeologists and to inform and discuss with a wider
audience with an interest in cultural heritage. Facebook, and other social media, offer the
possibility to contact different people all over the world.

The success and reach of a page is often measured in likes. In the questionnaire this
was mentioned as to be a viable form of research. Likes do, however, say very little. People
can like a page or post but never return or think about it again. Analytical programs can be
used to measure the success of a Facebook page in a better way. As mentioned earlier, pages
should not strive to get as many likes as possible. Sensationalising messages to get more likes
is not the answer. People start to expect these kind of messages from the pages and the initial
goal, to provide truthful and interesting information about archaeology can get lost. A post
gets more views than likes and comments indicate, many people don’t like posts or place a
comment.

Facebook and archaeology can be a good match but it is not used to its full potential
now. Facebook has many different functionalities like creating groups and posting videos and
pictures to aid the message. More active engagement could help archaeology to inform a
larger audience about excavations and the work after excavations. Facebook is self-centred
but this does not have much influence on archaeology or companies in general. It is the most
used social media platform so there is also a large potential audience for archaeology.
2.4.4 YouTube

The first YouTube video was a nineteen second video called “Me at the zoo” uploaded on April 23 2005 (Lipschultz, 2015, p.3). The video demonstrated that there was an interest in non-professional videos. Now, 10 years later, YouTube is one of the most popular social media websites and the third most-visited website worldwide. YouTube has over one billion visitors who watch over six billion hours of video every month and upload 100 hours of new content every minute (Alhabash et al., 2015, p.521). People can upload videos, comment on videos and share videos with others. Users can also like and dislike videos. Commenting can be turned off by the videos poster, but a lot of the social element in social media disappears with it. On YouTube the concept of virality can be clearly seen. Virality is when a social media posts becomes very popular in a short period of time. YouTube videos can, often suddenly, gain millions of views as a chain reaction. This also happens on Facebook and Twitter (Favstar, 2015). Virality is closely connected with social pressure. You have to be able to ‘talk about it’ in real life and social media conversations.

On YouTube there is a clear division between visitors who are just watching and those who participate (Ridell, 2012, p.28). Amongst the participants, there are those who upload videos that were initially not made for YouTube and those produce videos for YouTube. Participation on YouTube occurs at three levels: production, selection and distribution (Jenkins 2008, p.275).

A problem with YouTube is that the original work is not safe. It can be used in other videos and on other websites. Videos on YouTube can be reported for violating the rules and stealing video or audio content. Confidential information should not be placed on the internet, this applies to YouTube videos as well. Videos can be made private, but this won’t help in public outreach programs. Most YouTube videos, and especially the most viewed videos, reflect popular culture elements of interest to young people (Kavoori, 2011, p.4). Not very surprisingly because more than half of the users is 24 years old or younger (Google, 2015). The data are about logged on users, the majority of the people who just watch a video without logging in to an account are not counted in these demographics. The different age groups watch different types of videos, the more serious and informative videos will be generally watched by adults and not by teens for example. Depending on the type of crowd the video should reach and the purpose of the video the tone (images, storytelling and sound) should be altered accordingly. YouTube’s audience is slowly getting older on average, because the platform becomes more developed. There is more quality material on YouTube and of course the first users aged. Kavoori (2011, p.7) claims: ‘Watching YouTube is fundamentally
different from watching television or film: You make time to watch television or film, you watch YouTube when you have little time.’ This might have been the case a few years ago but for many YouTube users it is an important part of their entertainment. YouTube became a competitor to and to same groups even more important than television. YouTube is no longer watched as only offering some quick relaxation. The main difference between YouTube and television is that YouTube engages with the viewer. Television is only a medium to send a message, YouTube can be used to send and receive. YouTube is also mobile, it can be watched anywhere if there is an internet connection and a mobile device. Since YouTube is so important for its entertainment value it is questionable if archaeology should also be entertaining on YouTube. Since there are already many programs who use archaeology as entertainment, archaeologists themselves could perhaps use YouTube in a more educational manner like the page Jamestown Rediscovery (2015).

YouTube can be used to provide more in-depth information about the archaeological process. Time-laps videos are for instant a great way to show the progress of an excavation and they don’t cost a lot of money to make. There are not many excavations that use YouTube to provide information about the project. Project Eliseg (2012) is one of the excavations that did use YouTube as a vlog, a video blog. Eliseg provides project information and they show the daily work of an excavating archaeologist. Sadly the sound is not always very good, subtitles might have helped here. Music was used, but it was not part of every video. Music can be very distracting, and the potential difference in loudness between speech and music can be unpleasant, especially when the viewer is wearing headphones. Eliseg provided a lot of commentary and the vlog is directed towards people who already have some background knowledge since archaeological terms are not explained further. A more accessible channel is the American channel Jamestown Rediscovery (2015). Jamestown Rediscovery gives a clear overview of the excavation with good sound, good explanations and they also give more information about their interpretations and the steps after excavation, like the conversation process. The ‘why do we perform archaeology?’ is also explained. Jamestown Rediscovery gives regular updates about the project and interested people respond they really enjoy watching the videos and that they have learned a lot from Jamestown Rediscovery. This shows that educational videos can be successful on YouTube. Both Eliseg and Jamestown Rediscovery answer questions in the comments and Jamestown Rediscovery uses google+ as well to spread the videos. Jamestown uses different hosts who introduce themselves and talk about their expertise. They give detailed information about the finds, but also about processes like Radar and Magnetometry. Almost all videos only provide audio commentary, but they
also have videos with only music on the background, for example a video about the process of making a 3D printed and painted reconstruction for public archaeology. The video shows all the steps from excavation to presentation in a clear way without giving commentary. On the channel, virality can also be seen. They provided a video about survival cannibalism in the region and it got over 280.000 views to date. A more sensational topic will get more views, and this is not always a good thing. Apparently they got a lot of unpleasant discussion in the comments since comments are turned off for this particular video. On the less viewed videos (views for most of their videos lie between 1500 and 7000 views) the comments are usually complimenting the project. The channel has over 2000 subscriber and over 680.000 views.

Jamestown Rediscovery is a very informative channel that shows the work of archaeologists in an understandable way to everyone without infantilism. Infantilism is a danger of YouTube, but videos can have a serious tone without being boring. Archaeologists should try to show their passion and enthusiasm to the people. If there is a clear explanation where professional terms are explained or avoided and if the explanation comes with good video footage people can learn a lot about archaeology though YouTube. Of course every project is different and the videos (or any social media post) should be aimed towards the targeted audience. There is no single right way to engage with social media, it is very project, audience, institution and company dependant.

2.4.5 The Campus Archaeology Program

One example of how educational institutions could use social media is the Campus Archaeology Program at the Michigan State University (MSU Campus Archaeology Program, 2015). The program was started in 2008 to engage the university more with its own history and make sure the archaeology was protected during construction (Laracuente 2012, p.92). The work and outreach is supervised by professors of the archaeology department, but most of the work is done by the students. In the fast changing campus world their social media campaign had to be renewed to inform the students about the work that was done and how they could follow it.

The project has a clear public, people who are connected with MSU. With social media they try to connect with students, staff, alumni and retired staff (Goldstein, 2015). They also provide information for people who are interest in archaeology in general, but this is not their main mission (Laracuente 2012, p.92). YouTube, a blog, a website, Twitter (figure 2) and Facebook are used in their digital outreach (MSU Campus Archaeology Program, 2015).
The project has an app as well, of which a newer version is under development (Goldstein, 2015). Social media is not just a medium of interaction but also a way to record online how the work was done. They want to develop new ways to build conversations, since most people are silent followers now. They want the audience to be more interactive with the program and each other and at the same time they want to provide more transparency about the work that was done (Goldstein, 2015).

An important part in their strategy is a strong digital identity. The logo, name and description are the same on all the social media. The website is the central focus, with the other platforms referring to the website if needed. The information they post is not the same on all the media, they use different media with different tools to reach different publics. The MSU program is active on all media and the messages are all consistent and in line with their goal. They provide feedback and also show their appreciation if someone replies to their posts. Items that were found are shown with pictures. They also provide information about upcoming events such as seminars on the topic. Pictures are not just from the excavations, but also from the lab and other activities done by the apartment.

The YouTube video that introduces the project is informative and gives a clear answer to questions that may arise as to why the project is done, why archaeology matters and about the rich campus history. YouTube engagement could be improved, the project could be updated with the usage of YouTube and questions in the comments should be answered. The Facebook page is more diverse and regularly updated. The blog provides longer insights and background information and Twitter provides many pictures of the work done by the department. They use hashtags (#) to connect all their information.

Figure 2: A live Tweet from Campus Archaeology about the excavation. (Campus Archaeology, 2015).
A project like the Campus Archaeology Program shows how using social media in a project ‘close to home’ can educate archaeology students about outreach and help to raise awareness among the other staff and students.

2.5 Suggestions for the future

It is unclear what the total impact of social media on archaeology is. Walker (2014, p.226) thinks this is due to a lack in empirical impact studies and a failure to engage with the research from new media studies. Engagement and impact of social media use cannot be measured with ease. Liking or retweeting has not a self-evident meaning. Archaeologists seemed to measure their social media successes this way and this was one of the reasons to conduct the online questionnaire. After the questionnaire it became clear that most archaeologists only use likes and follower counting to measure their impact. Non-contribution is the overriding norm on social media. This means people can see and read or watch a post but they don’t like, comment or let the poster know in any other way that they saw the post. There are many analytical programs available to access how many people one’s own outputs reach (Fielding, 2014, p.1066) but these are rarely used in archaeology.

To increase the findability of a page, projects could work together and create one joined social media platform where different project updates can be shared and discussed. This also saves time and money, but it does need mutual trust. Starting a website with a database about all the archaeological social media projects could be a good idea to spread awareness and increase findability. If the website becomes more established projects could give their social media link with some additional information to the website. Sites could be searched on topic, location or period. This does cost a lot of time to make, and time is money.

As discussed there are improvements to be made by archaeologists if they want to have successful outreach programs on social media. A social media strategy is needed where the goals and rules are clearly stated. The questionnaire proved a coherent strategy is often missing. Archaeologists should be educated on how they can successfully reach their public. Archaeologists should use more analytical tools to reflect on their social media strategy. Another problem for archaeologists is the image of social media in general. A well maintained and regulated social media page could offer quality to archaeologists and the public alike, but archaeologists should give it the chance to do so.
3. Mobile Applications, Archaeology and Augmented Reality

‘Multimedia such as mobile applications can offer meaning in their own right. They can not only help visitors to understand the excavation or objects better, but some applications are also creative art objects on their own’ (Witcomb 2010, p.28). When made well they can provide extra media attention for the excavation and result in a boost in visitors. Applications can enrich the visitor experience in both fun, surprising and informing ways. Mobile applications can help to tell the visitor the story of interpretation and inform about the excavation process.

In the questionnaire it became clear that many archaeologists don’t understand the potential archaeological apps have and they would like to see more discussion and information about the topic. This chapter clarifies the topic of mobile applications with a focus on augmented reality. What are mobile applications? How does one make an archaeological app? What is augmented reality and how can it be used? Some small case-studies are used to clarify the topic and to show what archaeological apps can do.

3.1 What are Mobile Applications?

Mobile applications, or apps, are programs designed for mobile devices. In 2014 research done by American company Flurry showed that apps have become the most important feature on smartphones (Khalef, 2014). Apps are extremely varied in content and they offer the possibility to present a lot of information in a convenient and easy accessible way. Some apps are preinstalled on the device and others can be downloaded from platforms from the operating system such as the App Store for Apple products and Google Play for Android devices. The apps on the different operating systems are not compatible. Therefore a choice has to be made by the developer on which devices the app will be available. Building an app for both systems can even double the costs, as seen with the London Streetmuseum app (Jeater, 2012, p.137).

As De los Ríos et al. (2014, p.662) emphasise, apps don’t have a big impact on archaeology and cultural heritage at the moment, but they do have great potential. There are many ways an app can present the site in an informative and appealing way. Research towards potential app users was conducted by the TAG CLOUD (Technologies lead to adaptability &
lifelong engagement with culture throughout the CLOUD), a research project that addresses the engagement with cultural heritage in Europe through social media, augmented reality and storytelling. The studies show that, in most cases, people that frequently visit cultural sites do not prepare their tours in advance with guidebooks or by searching the web (De los Ríos et al., 2014, p.663). They enjoy a spontaneous experience where they can discover the new environment. TAG CLOUD also showed that most visitors carry smartphones and that people would benefit from mobile applications that offer additional information about the site they visit. Most archaeological excavations already digitise a large part of their data, making it easy to implement this information in an app. Applications can therefore be a nice possibility to present the research in an informative and also entertaining way.

3.2 An Archaeological App

It is hard to create a successful app in the ever changing world of mobile development, but this should not be a discouragement for archaeologists. There are some features all archaeological apps should offer. The app should always be appealing, interesting, user friendly and up to date. Apps can also incorporate social features such as a platform for discussion, a news feed or even some form of quiz where people can invite each other to play an excavation or archaeological object related game. Most archaeological apps will offer some sort of digital tour, since mobile devices are very suitable for this type of application. There are many possibilities, but the most important rule for app development is to be simple. Archaeological apps should always be easy to use and navigate through. One easy accessible and proper feature in an app is better than many features that leave the visitor confused.

Apps have some advantages over the more conventional ways of presentation but there are risks and downsides as well. The biggest advantage of presenting an excavation with the use of an application is that it will not interrupt or inflict harm upon present and future excavations or other activities on the site. Apps offer the possibility of interaction with the site, without damaging the site in the process. No vandalism sensitive information boards have to be placed all over the site. Apps can easily link the location with objects that are no longer in situ, giving visitors the opportunity to discover the finds of the site. After development the costs of the maintenance of an app are not very high. It is much easier to add changes and update an app with new findings or upcoming events than it is to change all the signs or other methods of presentation. It is easier and less inconvenient to make an app in multiple languages than it is to make multiple signs or audio tours.
Downsides of developing an archaeological app are the production costs, it depends on visitors having smartphones or tablets, it requires people to download the app so a good internet connection is needed and some people will be against using their mobile web plan for downloading the applications. The case of access was also discussed in the social media chapter. There are also people who don’t like to hold a phone or tablet all the time when they are visiting a site. Background activity can also be an issue, if the app drains the visitors’ smartphone battery too quickly it will probably be deleted immediately. Apps with reconstruction also have the downsides of reconstructions in general. It should also be considered that the site will still need an information sign for people without mobile devices.

3.2.1 The steps in building an archaeological application
Like social media, apps need a coherent strategy to be successful.

The first thing that has to be done is to investigate if an app is a possibility to present the excavation (figure 3). There can be local rules that limit the possibilities or there could be no internet coverage at the site.

If making an app is a possibility for the project the project goals have to be defined. Is making an app the right decision for what needs to be achieved? There are other ways of presenting an excavation, an app is not always the right choice. This is mainly dependant on the type of excavation, the area and the audience. Does the target group use smartphones? Should it be an app for children, for adults or should it be accessible for both groups? Is the app meant for the local population or for tourists? What language will be used in the app? What is the target device? A short draft has to be made about what the app must display. What should be presented in the app? Are there reconstructions needed? If there is already an idea about what the app should do in the first stage, later discussions with the designers and other parties involved will be more fluent.

![Figure 3: The steps of building an app. (This is only a guideline and not a strict rule).](image-url)
The next step is planning. What is the budget for the app? What (or who) will fund the app? Who should make the app and in what time span? Who will take care of the later maintenance? The possibilities should be discussed with possible contributors. If sponsors are needed they should be contacted and the possibilities should be discussed with them as well.

The following step is to decide what kind of functionalities the app needs. What kind of images will be used? Will there be sound in the app? What kind of interaction will the app offer? How will the app work? For example augmented reality can work with markers but also with GPS (Global Positioning System). How will the app be offered to the public and how will it be presented on the site? Deciding which programs should be used to make the app should be decided as well. After it is clear what the app should do, what functionalities it should have and what it should look like, the app can be designed and programmed.

When the app is finished the area should be made ready for the app. A sign should be placed to inform people about the site and the existence of the app and if markers are used these should be placed on the site as well.

The next step is testing the app. Does it offer the experience that was intended? Ask the target audience for input and use the input to make a final version.

After testing the app should be published and made available to the public. This also involves contacting the media to give the app as much attention as possible. Social media, a website and other ways of communication that could benefit the distribution should be used. Archaeological apps usually have the advantage that they are not depended on the chance people will find it in their distribution platform like the app store. This chance is rather small and most companies are dependent on good marketing and distribution plans to generate app instalments. Of course, good marketing and media attention will help a lot to distribute an archaeological app, but it is most likely that the majority of the downloads will be from visitors and potential excavation visitors. 92% of arts and cultural organizations in England stated that marketing benefits most significantly from digital technology (Bakhshi, 2013, p.5), therefore a lot of marketing can be done with the use of digital platforms such as social media, blogs and news websites.

Reflection is an important part of mobile outreach and public archaeology in general. The visitors should be asked for feedback and the feedback should be used to make the app better. To keep the app interesting archaeological apps will need updates when there is new information available. Bugs should be fixed as soon as possible as a defective app will only create annoyance.
The app needs to be maintained and updated on a regular basis. An app with flaws or outdated performance will not result in satisfied visitors.

3.2.2 The costs of building an app
The costs of an app were mentioned earlier as a negative component. The costs of building an app depend on the functionalities that need to be added. A multiplatform app with GPS support, informative movies, HD 3D reconstructions and a tour on the site will costs of course a lot more than a text based app. The most advanced and innovative apps can costs more than 100,000 euro’s, but on average a commercial app costs between 5000-20,000 euro’s (Van der Loo, 2013). The London Streetmuseum app for instance cost approximately 20,000 pounds in 2010 (Jeater, 2012, p.138). This first app was made for iPhone, since research showed that there were more iPhone users in London than Android users (Jeater, 2012, p.137). Due to popular demand an Android version was produced which cost 28,000 pounds (Jeater, 2012, p.138). Apps can also be built by archaeologists themselves, after studying the topic, like Stuart Eve did (2014, p.121). Already built templates can be used to develop an app with relative ease (Fernández-Palacios et al., 2014). Building the app could also be a joined project that would offer great opportunities of interdisciplinary discussions. For many projects there could be ways to fund an app with sponsors and local initiatives to ‘place the area on the map’ to attract tourists. The local population can help to make the app if there is a strong emotional attachment to local heritage. An example is the Iron Age project in Sweden where a game producer recreated his hometown in the Iron Age in his spare time.

3.3 The Iron Age project
Daniel Westergren (2014) wanted to show others the history and beauty of Uppsala, Sweden, the area he grew up in. Uppsala was a major cultural centre during the Iron Age and Westergren made it a personal project to let others experience a virtual Iron Age. The Iron Age project is a real-time visualisation, meaning people can walk in the digital world and interact with the environment (Digital Digging, 2014). He wanted to show more than Uppsala alone so he searched for excavations from the Swedish Iron Age and he mapped them out in his project. The map became a compressed miniature-version of Iron Age Sweden with geographical liberties taken to fit in certain key locations. Westergren used archaeological data from reports and publications were it was available and added the missing parts with his own creative freedom, while still respecting local tradition. Some parts of the settlement and
area were still a matter of debate among archaeologists and new discoveries were added to the project when the archaeological data became available. He took the local climate of the past into account by recreating the vegetation and the vegetation density. Westergren used plants that were confirmed by archaeological research to have grown there in the Iron Age. A project with the digital detail of the Iron Age project will, at this moment, work only on platforms with better graphical capabilities (figure 4). Starting a similar project with the help of professional archaeologists could lead to interesting results.

Figure 4: Image showing the detail of the project. This house was made as an art test and is a common Swedish house type from medieval times (Westergren, 2013).

The Iron Age project is of course quite a romanticised image of the Swedish Iron Age. It is Westergren’s interpretation of the data and his present day perspective influences the reconstructions. There are different possibilities to reconstruct archaeology, depending on the interpretation of the excavators, researchers and artists. The knowledge and view of the visitor are also an important factors, since the visitors are interpreting the final reconstruction in their own way. The problem of interpretation is present in all apps that offer some form of reconstruction. The visitor can start to see this reconstruction as an undeniable fact. For apps it should therefore be clear how the interpretation and reconstruction came to be. This can be done with a time-laps video for example that are also present on YouTube. The app could show different possibilities of the reconstruction to give the visitor an idea of the possibilities. This also gives the visitor more information about the archaeological process in general. Reconstructions will be mostly used in apps that have augmented reality functionality.
3.4 Augmented Reality and Apps

Unlike virtual reality (VR), which shows a completely imaginary world, augmented reality (AR), is the overlapping of the reality the user sees with virtual objects with the use of technology (Kang, 2012, p.1448). Kang (2012, p.1449) calls AR the door of time that appears in reality. AR uses mathematics, models, location services, camera technology, and advanced algorithms to provide an image on the right location (Shamah, 2013). The use of smartphones and tablets gave new opportunities to use this technology (Van Krevelen and Poelman, 2010, p.1). AR was first created by Ivan Sutherland in the 1960s as a device to present 3D graphics. In the 1980s and 1990s wearable computing became more common and this helped to develop AR further. The first mobile AR was a system that provided navigation with special audio overlays to assist the visually impaired. MARS (Mobile Augmented Reality System), created by Feiner et al. (1997) in 1996, was the first prototype of a mobile AR system that provided 3D graphical tour guide information on buildings and artefacts the visitor saw.

By the late 1990s AR became a more distinct field of research. Symposia were held and new AR research organisations emerged (Van Krevelen and Poelman, 2010, p.2). Heritage applications have always been an inspiration for the AR research field as they show the potential of the technology at its finest. Many museums use some type of virtual or augmented reality in their exhibitions, but there are not many excavations that use AR. AR is also quite rarely used for the interpretation of data, and mainly used for the presentation of data (Eve, 2014, p.21). This is also seen in other fields of study that use AR.

On a technological scale, building an AR application is much more difficult than a virtual reality application. This is the main reason AR took longer to mature than VR. The key components of building an AR application are still the same as Ivan Sutherland developed in the 1960s. AR uses sensors to track the user’s position and orientation. In the early days of AR this was often done with the combination of a camera and compass, now the GPS function on a phone or tablet is used. AR is still mostly focused on visual display, but sound and touch can be used as well. Combining the real world with the virtual also involves taste and smell, but these are much less developed and almost non-existent in AR today (van Krevelen and Poelman, 2010, p.2). A notable exception used within archaeology is the ‘Dead Men’s Eyes’ project by Stuart Eve, which will be discussed later.

As Kang writes (2012, p.1447) there are much more possibilities with AR than only a few years ago because the technology develops fast. The earliest AR project in archaeology was the Archeoguide project in Olympia.
3.4.1 Archeoguide, the first mobile AR experience in archaeology

The Archeoguide, developed in the early 2000s, was a very ambitious project aiming at providing a personalized electronic guide and tour assistant to the visitors of cultural heritage sites (Vlahakis et al., 2001, p.131). Archeoguide is an acronym for Augmented Reality-based Cultural Heritage On-site Guide. The system used very advanced digital reconstructions and methods for the time. Archeoguide was meant to connect recreation, education and science and make culture and history more accessible to a wider public (Vlahakis et al., 2002, p.52). The user could see 3D reconstructions of monuments presented over the real-time natural surroundings. At the same time audio commentary was given to explain the buildings and artefacts in more depth depending on the user’s location.

Archeoguide gave the option to choose from a set of pre-defined tours (Stricker et al., 2001, p.89) or it could define a personal tour based on the user profile and behaviour during the tour (Vlahakis et al., 2002, p.52). The reconstructed buildings had to be observed from selected viewpoints. To place the digital reconstructions an accurate model of the sites was obtained with the digital elevation model and aerial photography.

![Figure 5: The Archeoguide setup and reconstruction (Vlahakis et al., 2002, p.57).](image)

The user’s direction view and position were needed to provide the matching reconstruction and audio commentary. Archeoguide used multiple methods at the same time for exact tracking. The user carried a compass on a helmet, attached to a laptop, so the view direction could be determined and with a GPS receiver the location was decided (figure 5). To attain the vision-based tracking a camera was attached to the user’s helmet and the system could determine the user’s viewpoint with the video footage. In the database several reference images were saved and the system decided which reference image had the greatest overlap with the user view thus deciding how to overlap the digital reconstruction (Stricker et al., 2001, p.90). A head-mounted display, HMD, would show the digital reconstructions. To be
functional the side needed a sufficient number of Wi-Fi access points to connect the laptops with the server. The user could carry a stylus driven pen tablet which would give additional information, matching artefacts and pre-rendered reconstructions. The tablet was one of the first tablet pc’s that came on the market. The pen tablet could also be carried without the other equipment because it had a built-in compass and GPS receiver (Vlahakis et al., 2002, p.57). Visitors using the Archeoguide had to carry a lot of equipment to provide the same experience a smartphone or tablet can give today. This was not practical nor comfortable for the visitor. The newer prototype tried to make the experience more comfortable, by using smaller equipment attached to the glasses, but visitors still had to carry a lot (figure 6).

Figure 6: Version 2 of Archeoguide (Archeoguide, 2010).

Above the discomfort, the equipment costs were too high to make the Archeoguide attractive for the archaeology and heritage sector. Moreover a networks of large battery-driven antennas had to be placed on or near the site to provide the communication between the devices (Vlahakis et al, 2002, p.55). Carrying all the expensive equipment on site also had a lot of risks involved. The costs of the pen tablet used by the visitor were over $4000,- (Gray, 2000). The Archeoguide was ahead of its time but it did show what was possible with augmented reality. The introduction and widespread use of the smartphone and tablet seemed to have made further development of Archeoguide unnecessary.

3.4.2 Archaeological apps and locations
Locations play an important part in many apps related to archaeology. Often not much is visible when excavations are finished and apps can help to mark the locations that were studied. Positioning can be done with geo-referenced positioning and image-recognition (De los Rios et al., 2014, p.664). Image recognition would be the use of markers and QR codes
that trigger an action and geo-referenced based positioning uses GPS locations that identify
the user’s location and field of vision and it overlays the data on the camera view. The
smartphone opened up a wide range of new possibilities for GPS use. Where in the past large
constructions were needed to provide location based information, nowadays GPS is much
more incorporated in many devices and it became more accurate in giving locations.
Findability is the most important factor in GPS-based apps. The object has to be ‘discovered’
and located by the app, and the degree to which the environment supports navigation and
retrieval is also very important. Not all locations are suitable for a GPS-based app.
Reconstructions should not float somewhere on the display on roughly the right place. Bollini
et al. (2014, p.657) discuss an app in Milan connected to a novel. People can select a period
and discover places of interest with the camera of their device. Multimedia associated with
that place of interest will then be shown on screen in the form of balloons and tips. However,
audio and video uses a lot of mobile data, which will not please most mobile phone users.
Due to GPS and AR the device becomes a medium to connect the user with what
surrounds him. GIS (Geographic Information System) mobile applications are also used to
give information on the area in the forms of text, image voice and video in the field (Lazzari,
Lecci and Lecci, 2014, p.664). GIS applications are used in many excavations and they could
also suffice as applications for the public if altered and presented accordingly such as the
PaleoBas app from Lazari, Lecci and Lecci (2014). The app was created to increase the
heritage awareness of a specific region. The main aim was to display the location of the
palaeontological sites to show their geographical distribution, their scientific relevance and to
promote their enhancement. Android was chosen as the target device since it had the greatest
market share in the region. Android also allows monitoring the number of installations with
added information such as country, language and even telephone operator. The application
does not require network connections to work. Many remote archaeological sites would also
benefit more from an app that does not require to be online to work properly. When users do
go online with the app they get the opportunity to report new finds and risk situations. The
user plays a part in surveillance and protection, thus increasing their awareness of cultural
heritage preservation (Lazzari, Lecci and Lecci, 2014, p.675). Pointing out find locations on a
map would be too dangerous for many archaeological projects but perhaps it does work in a
protective manner as it did with the PaleoBas app. Just like social media, apps can be a risk
and attract looters, but it can also help to protect the site.
3.5 Interacting with the virtual world

The most important features of Archaeological apps are that they are all unique, since they are bound to a specific location, and they are interactive (De los Ríos et al., 2014, p.668). Apps have in this way much in common with social media projects, where interaction and uniqueness are also key components. According to Kang (2012, p.1448) interactions gave users greater interest in the cultural-heritage sites they saw. Kang’s project in Seoul was highly inspired by user emotions and imagination. Kang wanted to add more interaction and his ‘teleportation’ to the past is therefore achieved by jumping (Kang 2012, p.1450). Blowing to the screen will result in a fogged up image of old pictures matching the location. Wiping the screen will reveal the images from the past. Kang added sound effects to the app to give the feeling that blowing and wiping were really having an effect on the surroundings. Adding sound to an application can enhance the user experience and make it more lifelike but sound can also disturb other visitors of the site when not used with headphones or earplugs. These types of interactions Kang used might be a nice way to interact with the public, especially smaller children. Interaction with an app can also be simpler, like rotating and touching artefacts and the environment. De los Ríos et al. (2014) also emphasize that receiving and interpreting visual inputs and coordinating movement foster emotions, which is potentially highly entertaining and stimulating. Kang is not the only one who wants to give the user a more elaborate experience. The Sutton Hoo App used the learning through play method and Eve (2012) developed an app which went beyond the more classical what you see is what you get approach.

3.5.1 Learning through play: Sutton Hoo

One of the most important aspects of AR is its educational use. Games can be a good way to combine education and entertainment. Children are more difficult to educate on heritage and archaeology and using AR will help children to learn about the site. The Sutton Hoo app was developed in 2011 and it incorporates conventional game-play mechanisms, goals and subtasks, choice and collaboration and it uses the real world as a ‘playground’ in the game environment (Angelopoulou et al., 2012, p.17).

The Sutton Hoo site in England is famous for its ship burial and rich Anglo-Saxon graves. The famous ship burial is dated around 600 AD and contained over 260 artefacts in the burial chamber. It was an impressive find, yet when visitors arrive at the site they do not see a burial ship or any of the artefacts (Angelopoulou et al., 2012, p.18). The burial mounds
were closed after excavation and only one mound was reconstructed to show its original size. Most of the artefacts lie in the British Museum and the number of objects in exhibition at the site is very limited. For the visitor three places have to be connected: the Tranner House, the house of the land owner who initiated the excavation in the early 20th century, the archaeological site and the exhibition area. An application was made to connect the different places for children between the age of 11 and 16.

The app does not use GPS but markers are placed on the site were the phone needs to be pointed at. The app involves the user in a scenario in which they have to explore the site and discover objects. The visitor takes the role of local archaeologist Basil Brown, who has been invited by the local landowner to start the excavation of the mounds. When the visitor is inside the house, pointing the phone on the window will show the mounds as they used to be before the excavation. The visitor will then start the excavation at one of the mounds. They get a basic archaeological toolset and tapping the screen with the right tool selected will eventually result in an artefact to become visible and a more appropriate tool needs to be used to further uncover the object (figure 7).

A series of quizzes and puzzles inform the visitor about the object and help them decide the importance of the object. The visitor is guided to the next mound and the visitor has to decide if the objects that were found are offerings or not. At the end the answers are revealed at the exhibition area. The app can also connect with the British Museum and in this manner, two teams can help each other to uncover the mysteries of the excavation. The fastest person in identifying all the objects correctly is named the winner and to increase competition the data of visitors that started playing at the same time is compared (Angelopoulou et al., 2012, p.20).
The Sutton Hoo app shows how archaeology, AR and gaming can be combined in a fun and informative way. There is not much visible on the site and the app helps visitors to understand the site and get more information about the archaeological process and the finds. Making a game app could benefit more archaeological sites in similar situations. Another way to engage the visitor more with the site is shown by Eve’s Dead Men’s Eyes project.

4.5.2 The Dead Men’s Eyes Project, experiencing archaeology on a new level

Stuart Eve wants augmented reality to be more intelligent by letting the virtual world interact with the real world. An old picture of a street placed roughly on the video footage of the present street view doesn’t add more than a guidebook would. Eve (2012a) wrote: ‘We need to think of ways that AR is going to add information or provide a new type of information, not just be a different (and less useful) way of displaying the same old information.’ According to Eve (2012a) AR as a technology has already reached its peak of marketing, expectation and excitement, but it hasn’t really delivered much. AR does not provide the world a seamless integration of the real and the virtual that was promised in the early 2000s. Using the debated Gartner Hype Cycle in his own adaptation, Eve places archaeological apps in the trench of disillusionment (figure 8). Promises were made and the technology failed to deliver in a short time so people’s expectations dropped dramatically. This does not mean the technology itself is a flaw. There is still much potential but people need to rediscover the possibilities, adjust their expectations and patience is needed.

![Figure 8: The Archaeological Hype Cycle. Adaptation of the Hype Cycle of technology (Eve, 2012a).](image-url)
Eve showed how you can add more interaction in a small project about a Roman fort (figure 9). The fort models can be bought at several museums in the UK and be constructed at home. With Eves app the model can be brought ‘to life’ with an iPad. Roman soldiers interact with the fort and with each other and do their daily chores. Buildings and soldiers can be clicked to get more information on that specific object. Eve wanted to do this on a much bigger scale and his Dead Men’s Eyes Project is using some of the same technologies as the Roman fort application.

**Figure 9:** Still of the Video Augmenting a Roman Fort showing the information on the granary (Eve, 2011).

The Dead Men’s Eyes project is located in Leskernick Hill in Cornwall. Eve focused on the area’s Bronze Age history (Eve 2014, p.41). The application is used on an iPad to make it affordable and accessible. With Eves application people can walk through the Bronze Ages village and experience the past (figure 10). Most AR projects focus on the visitors alone but Eve wanted to show that archaeologists can use AR for their research as well. Eve wanted his reconstructions to be experienced and evaluated. The models can be changed as the project proceeds (Eve, 2014, p.124). How the settlement looked from afar and from different viewpoints can be tested. Implementing the natural surroundings such as rocks so that they obscure the view was one of the most difficult challenges (Eve, 2014, p.100). Eve also tried to filter the modern buildings from the view but the iPads processor could not process the information (Eve, 2014, p.109).
Figure 10: Conference poster by Stuart Eve for the Dead Men’s Eyes project. The poster itself made use of AR as well, with an app the binoculars could be moved to show more of the virtual reconstructions (Eve, 2012b).

The user can also stand inside the reconstructed houses to look through the doors. For the location of the houses GPS was used and to view the interiors a marker-based approach was used. Eve experimented with a project that he called ‘The Dead Man’s Nose’ (Eve, 2014, p.110). With a box that holds certain smells, such as ‘Barbeque’ and ‘Woodsmoke’, the concept of experiencing the past is taken to a new level. When the visitor is at certain locations the box will trigger the fan and certain smells will be spread to the near vicinity (Eve, 2014, p.111). It was only a prototype but according to Eve it performed admirably well in the field. The first prototype could only hold one smell, but the system could hold up to five fans. Eve wants to experiment with different smell zones and blending smells together to recreate the experience of a Bronze Age settlement in combination with AR footage. Eve wants to use the smells that are linked to certain locations, such as the animal pens, the industrial area and the cooking hearth to get new interpretations about the site. Eve did the same thing with audio. Eve made all the code of his project publicly available on free software so it can be used by other archaeological projects using GIS (Eve, 2014, p.121). With archaeologists trained in GIS and when a digital elevation model of the target area is available, the configuration and deployment of the system should not take longer than three
days (Eve, 2014, p.122), making the Dead Men’s Eyes project a good starting point for excavations that plan on using AR. Eve’s project has some great potential and shows that AR can be used for much more than providing information to visitors. Apps can also be used in the research stage itself and help archaeologists to interpret the site. Eve could show the different stages of reconstruction in his project to improve its value.

3.6 Discussion

Applications have become the interface of the connection between the user, the real and the virtual world. As shown in the discussed examples apps have great potential for archaeology. Although not every excavation would benefit from an app for public outreach. For example a text based app might be cheaper and relatively straightforward to make, but I will not add anything to the visitor experience. A text based app is not better than the information that can be found on the project website (if there is a website) and more people will probably be informed with a multilingual guidebook. Seeing an app as a replacement of the website or guidebooks would not do justice to the potential of apps. The first London Street museum app just placed an image over the camera view (Jeater, 2012). It got a lot of criticism because the images where not placed correctly at all. Holding an old photograph would have the same effect. Now the app tries to blend the images more with the actual surroundings (Museum of London, 2014), but to show the images correctly the app is still very dependent on standing on the right location. AR has the potential to engage the visitor with the site and it offers multiple ways to interact with the visitor. Like YouTube, apps offer the possibility to combine education with entertainment. Educational games can be a nice way to appeal to the younger public and informative apps with 3D reconstructions can help to gain interest of locals and tourists alike

As mentioned, apps are a nice way to interact with the visitor, but interaction should not be overdone. For example Kang’s app (2012) which requires jumping and blowing would make many visitors uncomfortable. If features like those are added, there should also be an option to use the app without these interactions. Not everybody wants to do those things and not everybody can do those things. In the future AR might also feature smell or other senses. Smell will make it more real but that’s not always a good thing. The past is not known for its pleasant odour and it will not add much to the site in general. The Dead Men’s Eyes project scent box is a fun experiment but it’s not likely to be found all over the world in future outreach programs. Interaction can also be achieved on a much simpler level, by rotating
objects and on a more advanced level to give the opportunity to see 3D reconstruction from the outside and inside. Clicking the reconstructed objects could give the visitor more information about the objects or period. Reconstructions should always be used with care and the visitor must be informed that the reconstruction is an interpretation and not the truth.

AR and apps have the potential to help archaeology forward as it can also help archaeologists to come to new conclusions about the site. For example, when ideas about potential reconstructions are used to ‘rebuild’ the site, it can help to get new ideas when the reconstructions are ‘projected’ on the remains or scenery. It can also lead to interesting discussions between archaeologists on different locations, as they can simultaneously investigate the object or site. AR offers a non-destructive way for archaeologists, art historians and other scholars to examine objects without damaging or altering the objects (Fernández-Palacios et al., 2014, p2).

The average visitor will not read the excavation reports, but the same information presented within an app can reach people and teach them about the site and archaeology. For certain, AR can be more than ‘eye-candy’ and it should lose this image. In the conducted questionnaire the opinions about apps where mainly positive but there was still a lot of uncertainty in the archaeological community. It seems many archaeologists don’t know how apps can be used in archaeology. Some saw apps as nice addition to inform the public, but it should never replace the more conventional ways of reporting. Others would like to see AR as a standard component in excavation projects. Most of the comments talked about apps being a replacement of information signs. This was seen as a form of decline. As discussed apps are never a replacement of signs and guidebooks and they should not be seen as such. Apps are never the only way to inform the visitors since many people are excluded. Since apps are used on smartphones and tablets, the audience will be limited.

Building an app does not have to be extremely time-consuming and money-consuming, since many excavations already use digital reconstructions. Media attention is needed to gain more potential visitors and it should be mentioned on signs, the website and if present social media channels, where people can find the app. An AR app’s most important feature is findability (Bollini et al. 2014, p.652), but that is also true for finding the app itself. An app needs to be updated, promoted and maintained on a regular basis. Building an app just because it’s possible and new is not the correct motivation. It has to be clear what the app has to do, how and for whom. Apps are not magical objects that will transform the outreach program into a success, neither are social media pages. An app could be a nice solution to inform people about the past if there is not much left on the site (like Sutton Hoo and the
Dead Men’s Eyes project). Every excavation is different and every audience is different, but making an app should always be considered. If the conditions are right, the benefits are greater than the disadvantages.
4. Questionnaire Results

‘Since social media is used for almost ten years now, I think it’s logical that almost all questions have an affirmative answer’ (comments from online questionnaire).

This chapter presents the results of the online questionnaire about archaeology and social media. The questionnaire was held because it seemed that archaeologists don’t have a conscious strategy on social media use. Some literature mentioned there was little reflection on the use of social media, but there was no research done to see if this was actually the case in archaeology. Social media has also come of age, so like the comment stated that started this chapter one would expect that archaeological companies always have a coherent strategy and research the impact of their social media use. There was also the question if archaeologists use social media themselves to discuss archaeology with a broad audience. For social media to be successful it is crucial that archaeologists participate as well.

4.1 Methodology

The literature discussed in the previous chapters often included statements like: archaeologists do not investigate if their social media program is successful, social media in archaeology is widely accepted, archaeologists do not recognize the dangers of archaeology on social media and social media is only used in the museum sector. Walker (2014, p.225) writes that students and early-career researchers are more likely to use and adopt new social networking sites than senior scholars. This implies that students are more likely to adopt new technologies. These claims are made, but the different authors provide no study or refer to a study conducted on this topic. A questionnaire could give an answer to the question where Dutch archaeology stands at the moment in their social media use. An online questionnaire seemed to be an appropriate method because it could reach more people than interviews or personal questionnaires could. The focus of the questionnaire is on professional archaeologists and students. It would have been informative to also get an idea of the general public’s opinion of archaeology on social media, but I did not possess the means to start such a research on my own.

The questionnaire had to be easy to complete, understandable for people with no knowledge on the topic and the questions had to be easy to read and answer. A questionnaire
that is too complicated or too long results in unfinished entries. A lot of in-depth information could be obtained from the comment sections. The questions were written in Dutch and were translated for this thesis. For the research the professional website http://www.enquete.com was used. Different types of questions were asked, but all questions were multiple choice questions. Where needed, people could provide comments to clarify their choices. Questions that were irrelevant for a specific group were also automatically skipped. For example, students and PhD candidates did not get the questions about business strategy, and people that were not using social media themselves did not get the personal questions about social media use. People can get tired and annoyed if they have to click a button with ‘this does not apply to me’ all the time. Online questionnaires are often filled in between work or study so a smooth user experience was crucial. The questionnaire was open for exactly one month, but the first steps in reaching the public happened before the questionnaire was made public. A reliable sample size was needed, the initial goal was 100 participants. The questionnaire was anonymous because there was no need to force people to fill in their personal details in an online environment. The only registered metadata was how long it took the participants to fill in the questionnaire and what type of browser they used.

To reach the potential participants e-mails were send to all the archaeological companies, museums and business that I could find and knew of. People working at municipalities, heritage conversation and the cultural heritage agency were personally contacted. My own network on Facebook, E-mail and LinkedIn were used and some people were very kind to spread the questionnaire in their own professional networks. All Dutch universities and educational facilities were contacted to ask students and staff for their participation. Facebook and LinkedIn groups were contacted to ask for participation among the members. In the final weeks a very large audience was reached through a popular online newsletter ‘Erfgoedstem’. When the questionnaire closed, exactly 450 unique participants had answered all the questions. This was a great result as it is always a gamble if people will take the time to help. Only the completed questionnaires were used for this research.

The first questions of the questionnaire were about the social media strategy and social media reflection of companies and institutions. The second part was about personal social media use and archaeology. How is social media perceived by professional archaeologists? Are they willing to engage more and do they see the dangers of social media? As a final question the knowledge about apps and archaeology was tested. Do archaeologists see apps as a potential medium to present excavations?
4.2 Results

The first question was meant to place participants into categories so the different groups could be compared later (chart 1). Some people could be placed in multiple categories, but then the most suitable category was chosen based on the comments provided. People working for municipalities and provinces were placed in the government group.

![Chart 1: Categories, n = 450 participants.](image)

The student/PhD group consisted of 39% of the total participants. For the comparisons between students and the other groups this was a positive outcome. The otherwise category could be chosen if people didn’t see themselves in one of the categories, or in multiple of them. The otherwise group consists mostly of volunteers, amateurs and retired archaeologists. Commercial archaeology without fieldwork participation, the initial name of this group, changed into planning, policies and advising, during the questionnaire. Some of the first participants send some feedback about the name confusion.

The first questions were about social media strategy (chart 2). The first question was: Does the company you work for use social media? A negative reply would result in the participant skipping the following questions about strategy. This question was also asked to find out if there are companies who don’t use social media at all and if there are people who are not aware about social media activities of the company/institution they work for.
Chart 2: Is social media used? $n = 210$.

Social media is used in public outreach and contacting employees in 85% of the cases. People that didn’t know the answer to this question were mainly from the education and science group. Everyone in the museum sector answered yes. 60% of the people who answered no, are working in the commercial archaeology sector with excavations. This is almost one third of that particular group. The comments showed it was seen as something that took too much time in today’s difficult market. Social media will also not be a suitable medium for all companies, as they are either too small or they don’t have an audience that can be reached with social media.

The next question was about the social media strategy (chart 3). Does your company have a social media strategy?

Chart 3: Is there a social media strategy with rules and regulations? $n = 178$ (people that answered yes in the previous question).

One third of the participants didn’t know if their company or institution had a social media strategy. Almost 60% of the education and science group answered I don’t know and they form 50% of the total number of people that answered I don’t know. The most surprising data comes from the museum group. All museum participants answered that they use social media, yet over 60% have no social media strategy. Over 40% of the commercial archaeology group
does not have a social media strategy. Half of the government group answered yes to this question but planning, policies and advising is the most prominent group with almost 60% of the group choosing for yes. Social media from this group is probably not focused on reaching the general public, but social media might be used to get in contact with potential customers.

Museums are very dependent on public outreach and social media in museum practices is a much more developed topic than social media in excavations, so it is surprising that the majority of this group does not have a strategy. It might be that museums use social media because it is expected by the public and the heritage and archaeology discipline. Most researchers on educational facilities will not be involved in the social media practices of the faculty so it is not strange they are not aware of their institute’s social media practices. Yet it might be a good idea if this group became more involved with social media. Researchers could show and tell something about the projects they are working on. This would improve the quality of the social media page, something many archaeologists want according to the comment section at the end of the questionnaire. This question provided some interesting insights. There are not many Dutch archaeology related pages with a social media strategy. Social media has a great potential, but as discussed in the previous chapters having a good strategy is critical for good practice. It seems a lot can be improved here. Engaging with social media without studying the topic, and thus not having a strategy, won’t help much to improve the public outreach.

The following question (chart 4) is closely connected to the question on strategy. Is social media success measured? Do they investigate if they reach their target audience?

![Chart 4: Does the company investigate social media success? n = 178.](image)

57% doesn’t know the answer to this question. The more in-depth the questions get about the social media protocol, the less people know the answer. Companies and institutions should
inform their employees more about how social media is used. If social media is used it is part of the company/institution. It could be discussed on meetings or in a company news feed. This way people can come up with ideas to improve the page. 31% of the participants knows there is no research done to investigate if social media is used effectively. These are mostly people from commercial archaeology and the museum sector. It is remarkable that more people from the museum sector answered yes to this question than on the previous one. Does this mean there is no strategy, but success is measured? How can you reflect on the social media practices if there is no strategy to follow and reflect on? People could comment on the questions and the comments provided an answer.

People see counting likes, followers and retweets as investigation. Vague comments were given like: ‘Occasionally, depending on the employee’. This person answered that there was no strategy, and this is exactly what happens then. There are no rules, no overview and there is no one specific appointed to update the social media. This leads to confusion in the company. As mentioned in the social media chapter counting likes and followers is not a reliable method to measure success. People can like or follow a page but this says nothing about the real impact the page has. People liking or following a page does not mean they actively engage with that page and read the messages. Researching the impact of a page can be improved with analytical programs, questionnaires and even investigations outside the digital sphere. Only 2 people wrote they use analytical programs. One of those two also used visitor surveys, which was also done by another company. One person commented they performed research on the website with questionnaires. A different company wanted to start with questionnaires and visitor documentation in the future because they just started on social media. Success is also a very broad term, for one small excavations related company the use of social media was limited to finding clients with LinkedIn. Success would be if a costumer was found through social media use. From all the comments it became clear that most people probably don’t even know about features like Twitter analytics. If they don’t have a strategy though, it is very unlikely that they will implement research like this.

The next questions deal with personal social media use and archaeology. Are you active on social media was the first question of this section (chart 5). This question had to be asked to filter the social media users from the people who don’t use social media.
The question was answered by 91% with yes and 9% said no. People that are looking for work, the unemployed, all said yes. 4.5% of the students is not active on social media, but since the student group is much bigger than the rest, that 4.5% forms 19% of the total no voters. 21% of the government group answered no here. The fact that so many participants are active on social media is not very surprising since social media played an important part in finding the participants.

The following question was about the use of different social media platforms (chart 6). Which social media platforms are you using? This question was asked to see if the discussed social media platforms, Facebook, Twitter and YouTube are used among archaeologists.

86% of the people that use social media are on Facebook. This was seen in the Dutch average chart of Oosterveer (2015) as well. But the similarities stop there. The participants are all well-educated with a relatively high average age. LinkedIn and Academia.edu are used a lot more in these ‘groups’, so it’s not very surprisingly that these two pages are second and third
most used among the participants. YouTube is fourth and Twitter fifth. In the others category Research Gate, Instagram and Tumblr were mentioned.

It was interesting to find out if archaeologists themselves use social media to get information about archaeology (chart 7). All the people who answered this question were social media users. If people answered no, why wouldn’t they?

![Chart 7: Do archaeologists use social media to get information about archaeology? n = 408.](image)

Of the people who use social media, 83% use it to get information about archaeology. Almost all the participants who work in the museum sector or those who are currently unemployed or in the otherwise group use social media to get information about archaeology. For the other groups there are no obvious differences, the no voters come from all the other categories.

Those who don’t use social media to get information about archaeology are usually concerned about the lack of quality of the content. Comments are that archaeology on social media needs to have more informative in-depth content. People want to know the information comes from a reliable source so links to official publications or other sources should be provided. Everyone can place information in social media, which does not mean this information is reliable. As mentioned in the social media chapter it takes time and commitment to get authority on social media. This involves consistency and providing information that is understandable for non-archaeologists without infantilisation and sensationalisation. One commenter said: ‘Archaeology has to be on social media, because that’s the way it is. However, it is of course not a serious platform for specialists.’ Discussions on social media are often chaotic conversations, because people without archaeological knowledge give their criticisms. This was discussed as one of the ‘dangers’ of social media. Archaeologists should not avoid these discussions, but they should try to inform people about their field of research. Social media was also called a hype in the comment section. Calling social media a hype does not do justice to how it changed communication and how
communication changed the internet. There is much to improve on archaeology on social media, but that does not mean it cannot be an environment for in depth informative discussions.

The next question was about the combination of archaeology and social media (chart 8). Do archaeologists think it is a good combination or are there limitations? All contributors answered this question.

![Chart 8: Do you think archaeology and social media are a good combination? n = 450.](image)

76% of the people think archaeology and social media are a good combination and 13% thought so as well, if certain criteria were met. The differences between professionals and students were minimal here, with students favouring the ‘if…’ option more and they clicked ‘I don’t know’ 5% of the time, where the other groups combined said this 10% of the time. People thought it was a good combination if: the information provided is of high quality and reliable, if it is clear who is editing the page, if the pages are careful in what they say, if it became more transparent, if there are clear agreements made with the client about social media, if it does not replace other types of outreach, if they refer to a reliable scientific source, if it is not about sensation, if it is used to clear misconception about archaeology and if it is used in a professional manner. Some want to keep social media to a minimum, since they don’t want too much attention for archaeology. Archaeologists need to do their job on the excavation without being disturbed by visitors.

Most people wrote that they want social media websites that refer to reliable scientific sources in their post. The comments show discontent with the present situation. Messages have low scientific and informative value and are written in a popular manner with exaggerated and sometimes false information to get media attention. Many people seem to
think social media and archaeology have great potential for discussion and transferring information, but it is not used in such a serious manner now.

Question 9 was closely linked to question 8, do you see a future for social media and archaeology (chart 9)?

Comparing student data with the other categories showed almost no differences in answers to this question, thus far professionals and students are in perfect agreement. 84% of the participants sees a future for archaeology and social media. 6% sees a future: if people think and discuss something before they place it online, if it succeeds in reaching people that could not be reached without social media, if it is used with realistic goals in mind, if archaeologists get more media training, if it brings archaeology into a new perspective other than being unnecessary or of scientific value, if it stays in perspective and if it’s not used on a very large scale. Some good remarks are made here, posts should not be made without careful consideration. Having a social media strategy can help to decide what to place online and what not, and when. Placing archaeology into a new perspective can be achieved with posting more about the actual work of archaeologists, explaining the ‘why we do it’ and interacting more with the locals about the heritage in their area.

What is the purpose or goal of archaeology on social media (chart 10)? People could click multiple answers and provide their own suggestions.
Chart 10: What can be the goal of archaeology on social media? Multiple answers could be given, $n = 450$.

People who previously clicked that archaeology has no future on social media clicked ‘archaeology should not be on social media’ here. Informing is the most important goal of archaeology on social media, 92% of the people selected this. It should make people curious was selected by 81% and showing new discoveries was chosen by 71% of the people. Educate was selected by 40%, other types of communication should be used for this goal. Entertain was pick by 39%, in the previous questions it was already mentioned multiple times that people want quality. Presenting information in an entertaining way can reach more people, but social media might not be the best platform to do this. Apps for example are better at this (chapter 3).

Comments mentioned social media as a way to connect to alumni of the faculty and binding current students. Story telling was mentioned as an important feature of social media outreach. Provide networking and bringing the different target audiences together were mentioned by multiple participants. It was mentioned social media goals should change every time when the project and context change. This is true, a different audience means a different goal and different method. That archaeology on social media should lead to discussion was chosen by 60% and not more people (social media are in general suitable media to discuss matters) might be connected to the poor image social media has. That could also be the reason the more serious goal of education was only chosen by 40% of the archaeologists. Triggering, by making people curious, was chosen a lot more. This shows that people don’t see social media as platforms for more serious content.
Chart 11 shows the results on the statement: Discussing archaeological objects on social media is dangerous.

Here there were some differences between students and non-students, therefore these graphs are also shown next to the combined result. With the student and education groups combined the graph became more like the average results, so students seem to have a different standing here. 44% of the students slightly agreed with this statement, against 27% of the non-students. Non-students slightly disagree and strongly disagree more with the statement than students. Non-students seem less aware of potential dangers, or they know the risks but they don’t perceive them as real dangers for archaeology. It could also be that students have gained more knowledge of dangers like looting through the increase of lectures on the topic.

The earlier comment about archaeologists needing more education on social media use seems to be true. There are dangers, but when people are aware of these dangers they can be taken into account in the social media strategy. Social media is more open than people are aware off, if valuable objects are discussed on a restricted group the dangers are still there. It is about mutual trust, the poster needs to trust its audience (and take into account that people that are not part of the target audience can see the posts as well) and the audience needs to trust the poster that the information is true and honest. People commented that a different danger is that people think archaeology is about objects instead of the context. This could indeed happen if social media pages would only post about the project finds like it is a treasure hunt. Social media pages should be about the whole archaeological process and showing people what archaeology is about. One comment stated: ‘I understand the question is
about the possibility of robbing, but social media also create civic responsibility. It is therefore essential the developments are shared when it’s appropriate.’ It was mentioned that both apps and social media can provide protection from looting by raising awareness among the locals. A different danger is that unpublished information can be misused and stolen. This is true, everything must be carefully considered before placing it online. People seem to understand the dangers of looting, so post about finds should never have detailed geographical positions. If excavations are afraid of looting they could post about the finds during the investigation process and not when they are in situ during the excavation process. Others comment that looting is an issue with or without social media. The whole story needs to be told, including the finds and the context. Talking about the finds and their context can indeed be done for some excavations, but for other excavations with a different context (think of the period, location, nature of the finds and local rules) this is not so easy.

Chart 12 shows the answers to the statement: Using social media is a good way to reach a large audience.

![Chart 12: Using social media is a good way to reach a large audience. n = 450.](image)

Almost all people strongly or slightly agree with this. This shows Perry and Baele (2015, p.156) were right with their statement that archaeologists praise the effects of social media outreach, but they don’t discuss or investigate the actual impact of social media use. The general comments on social media and archaeology were mostly focused on increasing the quality of social media posts. People also mentioned they don’t have money to take on these outreach projects, while others said they like using social media since its free. People see the potential to reach a larger audience but at this moment social media information is shared within the same small group of archaeologists. This is true, but as mentioned in the previous chapters, social media and apps, especially in the start-up phase, should be linked to
other types of outreach to create a foundation for the social media page. An idea is proposed to use social media as a professional database for archaeologists, with examples of traces and finds and protocols. People could ask other archaeologists if they can identify finds. This can be difficult as identifying finds from a picture is not easy.

The final question of the online survey was about mobile applications. I provided an image of an app for clarity next to the question. The question was: mobile applications are a good way to present excavations (chart 13).

![Chart 13: Mobile applications are a good way to present excavations. n = 440.](image)

10 people answered I don’t know, these people are not shown in the chart. Most people seem to be very positive about the idea, with students being a bit less agreeing to the idea of apps presenting excavations. During this questionnaire there was hardly any difference in data between students and non-students. If there was a difference it shows the opposite from what might be expected. 37% of the people that do not use social media to get information about archaeology were students. They seemed to be a bit more negative about social media use and archaeology and social media in general. With the apps the students and PhD candidates are again less positive. It might be that students are more critical, but then the same answers would be expected from the people working in the educational sector, and that’s not the case. Even though students are a bit less positive about apps the overall impression of archaeologists about apps is still a very positive one. In the comments someone writes that apps should be used more, be advertised more and that it should become a standard component on excavations. Someone else writes that archaeology should be working together with tourist organizations. If they use apps, archaeological points of interest could be pinpointed in those apps.
4.3 Questionnaire conclusions

In the comments people spoke of the indifference among archaeologists for social media and even that social media users are seen as show-offs for being active in online outreach. Providing more information and education about the topic might help here. However, amongst the participants of the questionnaire, the potential of social media is noted and the general impression is a positive one. Dutch archaeology on social media needs to change however. The current practice is not providing the quality people ask for. Companies and institutions should create a social media strategy and implement this in their social media use. This is not done enough now. Archaeologists should also reflect more on their social media strategies. Counting likes is not a reliable and elaborate method of investigating the success of the strategy. Some archaeologists also express concern that social media might replace other forms of outreach and that printed publications will become obsolete. Replacing printed publications with digital publications is already happening because it is more accessible and cost efficient. Only social media like Academia.edu are involved here, since it is very unlikely that scholars will only publish their research on Facebook. Academia.edu is mainly used for papers, whole publications can be bought or achieved elsewhere. More and more journals change to a digital format because they don’t have the means and demand to print them anymore. This has nothing to do with social media. Social media should also never replace other forms of outreach, it is an addition.

As mentioned there were not that many differences between students and non-students. The comment that students are more likely to be positive about new technologies are not proven with this data, students are in fact more negative and reluctant. Many archaeologists also comment there should be more quality on social media. Many of those are not actively contributing themselves on providing more quality. Changes don’t happen automatically. Archaeologists should change their negative image of social media, adopt a matching strategy and start themselves to gain authority on social media networks.
Concluding Remarks

Social media offer the opportunity to engage with the public in a different way than provided by the more conventional media. They can create and strengthen relationships, they can be a platform to discuss, inform, show, listen, solve misconceptions, entertain and educate. Social media can be used to discuss matters with professionals, amateurs and people with an interest in archaeology alike. In the questionnaire it was often mentioned that archaeologists want a more serious and professional social media platform for discussions. For more serious discussions about archaeology it might be a good idea to start a new professional network focused solely on archaeology and heritage discussions, not just a page on Facebook but an actual platform. Using the existing platforms is also possible, but the more general public should not be avoided here. If we would only use social media to talk among archaeologists we are building an ivory tower on social media.

Social media is not ideal. We do not live in an ideal world, and social media is a reflection of that world. Real world problems as privacy issues, looting, exploitation, bullying, radicalisation and inequality can all be found on social media. These problems should be known by archaeologists on social media, but they should not be a discouragement to use social media. Mobile media can also protect heritage by engaging the local population and giving them the opportunity to report potential dangers and finds. There can be rules in the country of excavation that limit the possibilities using of social media, but it might still be used to provide different updates about the excavation or start discussions. Social media and apps are not available to everyone or used by everyone, they should therefore never replace other forms of outreach.

Creating a social media strategy is the most important thing archaeologists should do before they start using the platform. The questionnaire showed that not enough archaeologists use strategies on social media. A strategy should provide information about the target, the goal, the type of messages and how to reflect on the strategy. Counting likes is not a good way to measure social media impact for example. Archaeologists should use more surveys and analytical programs to reflect on their social media use. Archaeology on social media should offer quality over quantity. More social media messages should have links to a reliable source. Archaeologists on social media should also regularly update their pages to keep them relevant and interesting. It is important to remember that social media alone will not result in reaching a large audience. Social media, and apps alike, need to be brought under attention
through other media to get an audience. Twitter, YouTube and Facebook are the most used general platforms in archaeology. The research in Twitter showed that almost all the pages had doubled their number of followers in just one year. Followers don’t say that much though, people usually scan messages very fast and many readers will not like, comment or follow to let the page owner know they’ve read the message. Yet such an increase in followers does show new people were reached. YouTube is one of the most underestimated social media platforms in archaeology. Jamestown rediscovery shows what can be done with YouTube. It is a very nice way to show both excavations and the archaeological practice in an informing way.

Apps are not used much in archaeology yet. They have great potential to present an excavation in both an informing and appealing way. Apps are dependent on the use of smartphones or tablets so the audience and locations should be investigated beforehand to make sure an app would be used by the public. Apps are extremely suitable for excavations where not much can be seen on the surface, yet they can be expensive. With apps the past can come to life again without damaging the site. Apps should however always inform the visitor about the shortcomings of reconstructions and reconstructions should not be presented as a single truth. Apps could be made together with locals who are interested in their local archaeology or on a research facility with other disciplines. Apps offer the opportunity to interact with different age groups. Learning through play is an excellent way to interest the younger visitor. Augmented reality and apps offer ways to combine the virtual and the real world. Archaeology is already using virtual reconstructions to great extent, apps can be a good way to present these reconstructions in an interactive manner.

Apps and social media are similar in many ways. They offer possibilities that go further than providing information for the public. Interaction is with both technologies the key component. Apps and social media can enhance each other. Apps can use social media attention to get more established and social media functionalities can be implemented in the app to provide more interaction. Social media are more than an ‘easy’ way to reach a large audience and mobile applications are more than eye-candy. How mobile outreach should be implemented is dependent on the context of the project, the target audience, the project goals and available means. An app or post does not have to be entertaining, informative, educational and exciting at the same time. Mobile outreach does not have to appeal to everyone, that’s why a target audience is needed and the mobile outreach should be structured accordingly.

Mobile outreach needs more reflection to be called successful. It should not be done, because it is expected of archaeologists. Those who have this kind of motivation often lack in
building a successful platform because they are not informative enough, don’t interact, don’t research their audience and they do not research their actual impact. They seem to think that having a social media page or app will generate public attention automatically. Social media and apps need to be actively promoted and questions from the public should be answered as soon as possible. Did the public get more influence on archaeology because of mobile outreach, in other words did archaeology become more democratic? At this moment this question would be answered with no. Archaeology in general is failing to truly interact with the public through mobile outreach. Some projects are successful in giving the public more information about archaeology, but most of the time social media conversations are conversations without archaeologists or conversations among archaeologists. Social media and apps can help to reach more people but they need good marketing and dedication to succeed. Mobile outreach offers the unique possibility of combining interaction, entertainment and education together. The audience can be very diverse and, especially with social media, a worldwide audience can be reached. Social media and apps can mean a lot for archaeology, but some things will need to change first in archaeology to make them truly successful means to reach the public

As a final note I would like to propose more critical engagement with the topics of social media and especially mobile applications. There has been very little critical assessment on the use of applications by the archaeological community.
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