

Faces of the dead

An overview of the methodology, applications and issues of forensic facial reconstruction

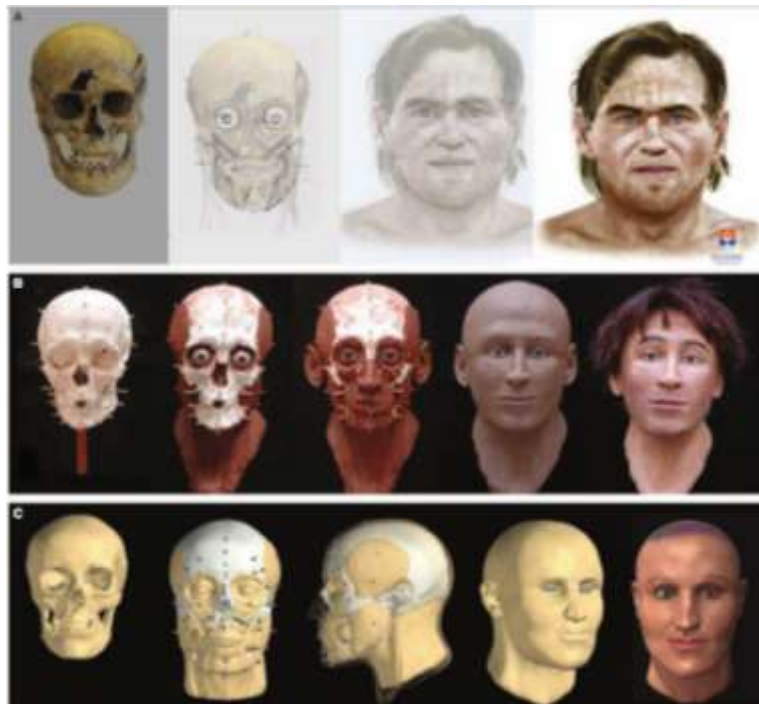


Figure 1 – Facial reconstruction methods: (A) two-dimensional manual, (B) three-dimensional manual, (C) three-dimensional computerized (Wilkinson, 2010)

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Dissertation submitted in partial fulfilment of a BA (Hons) in Archaeology with
Education studies

University of Wales Trinity St David

July 2018

Word Count – 10,550

Abstract

As we all know archaeology tends to often use the skills of a wide variety of disciplines, and visa versa. An example of this would be in the use of facial reconstruction. This piece of work will attempt to briefly explore and introduce what is this thing called facial reconstruction? It explores the three key and most commonly used processes of creating a facial reconstruction – Manchester method, 2D artist reconstruction and computerised method – and looks at the theory behind how these processes work and therefore create an accurate reconstruction. While doing this it also explores the differences between the three processes and pros and cons of each. The second chapter of this paper goes on to explore how we go about using these reconstructions and some of the key areas where facial reconstruction is prominently used such as for forensic, identification, display and also security reasons. Lastly the third area explored in this paper is an attempt to analyse what are some of the issues that have been brought up, when scrutinising the process of facial reconstruction in general. This includes some of the more scientific issues such as the question of how accurate they are and the reliability of facial reconstruction, to some of the more social issues such as the uses and presentation of them in museums.

Acknowledgements

I would firstly like to thank my dissertation supervisor Dr Ros Coard for all the help, support and advice that has been given over the period of both this year and throughout my four years here at Lampeter. I would also like to thank all of the other crazy staff and tutors in the AHA department for being absolutely amazing, teaching me everything I know about archaeology, and growing my love and interest of the field. Thank you to Mhairi Tavendale, for guiding me throughout my dissertation with readings and answering any questions I had surrounding forensic art and facial identification, I look forward to discussing and working with you in Romania this summer. The international departments both at Camosun College and at UWTSD both deserve a massive thank you for supporting me while on my semester abroad. Although it was only a short time of my studies, its one of the biggest things that has developed and grown me as a person. A special mention especially goes to my tutors in Camosun Nicole Kilburn, Tara Tudor, Jenny Holder and especially Katie Waterhouse, whose forensic anthropology class started the spark that was my dissertation and my new fascination in forensics. I obviously would like to thank my family, especially my parents for continually supporting me, through both the good and challenging times, hope I've made you proud. I would also like to thank all my doctors and nurses at Prince Charles hospital who especially over the last few months have physically kept me going and for all the regular pep talks. Last but not least the biggest thank you goes out to the many, many, many dear friends I've made here in Lampeter over the four years, from all over the world. I honestly don't think I could have gotten through any of it if it wasn't for you guys. There's way too many to mention by name but I know you know who you all are. Particular thanks goes out

to Ashleigh Lewis, Pip Roberts, Andrew Lock, Riley Sheriff, Alice Lovell-Young, Chloe McLaughlin, Heather Hayes-Bowlzer, Rosie Nye, and my Canadian bean sprouts - Danielle Frinton, Madi Fenerty-Ziehr and Mikaila Hogan. You guys have particularly kept me sane, put up with countless hours of complaining and you've done nothing but support me to get me through everything. I quite literally don't think I would have even done my work without you. Lampeter will always hold a very special place in my heart and I hope this dissertation is a good way to close yet another chapter in my life, with many more exciting adventures to come.

Don't forget it's never a goodbye it's just a see you later

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Introduction

No matter what period of time in history or where in the world you look at, one thing that is of major importance is someone's identity. A huge part of this being the visual identity, and how you look, be it how you should look but also how people actually look and their individual traits. Visual traits can also be predefined and be controlled based on where they come from but this also adds to your national collective identity. One of the biggest displays of these characteristics is within the face. The face is often the source of most of our noticeable visual characteristics, and creates a large proportion of our entire individual identity. It is also part of us that contains the most things that make us individual and are used to differentiate between people. It contains both characteristics we control to make us individuals, such as hair and eye colour, but also generalised geological and societal features that we cannot alter, such as our actual facial structure. Just like a fingerprint, our faces are also one of the most unique things and it is claimed that no two faces, not even identical twins are exactly the same (Wilkinson, 2004). This means that every face is technically identifiable and traceable to a single person. It's this fact that makes the face so significant within forensic investigations, as if we have the face it should be recognised by someone such as a family member, as the face is so distinct and identifiable. However most of the time due to decomposition or trauma, we are left with either an unidentifiable face or most often no face at all. This is where we have the technique of facial reconstruction, where we can use multiple different methods, in order to take what we have i.e. the skull and reconstruct what the face would have looked like. As well as in forensic practice and for legal cases, facial reconstruction is also used and applied within an archaeological context. In an archaeological context we are increasingly using this practice on human remains found, in order to

see what these people would have looked like. It can also be used when human remains go on display in museums to the public. Facial reconstruction is used in order to help tell the story of human remains, making the remains seem more real to the public and making them realise that this is a human being. The public are then also able to relate more to the remains as they see them brought to life.

Therefore this dissertation is exploring this method of facial reconstruction. In order to do this it will explore it in three parts. The first part will be exploring and explaining a selection of some of the key methods and the processes of reconstructing the face. It will also briefly look at the history and development of these methods, and how they have changed and adapted throughout the years.

However as these methods are so vast and this dissertation is limited, this dissertation will focus in on the Manchester method, 2D flat artistic drawings and 3D computer graphics. This dissertation will focus on these methods as they can be seen to currently be the most popular methods and also the most relevant methods to the situations of forensics and archaeology. However when actually conducting research it was found that the bulk of the case studies researched and analysed, especially for archaeological reasons were mostly conducted using the Manchester method. This also seems to be the most popular method to use as it has constantly been used over the years, and has consistently been proven to result in a reliable facial reconstruction using scientific method. It is also the most hands on method, with also a lot of research done on how the process works, and therefore is also the method the author understood the most. Therefore the majority of the content for this analysis will be surrounding the Manchester method, but this dissertation will also attempt to explain how the other two methods also work to provide us with a facial reconstruction.

In the second part of this dissertation it will explore the uses of facial reconstruction and the contexts that we tend to use them in. This is where research will then start to separate out into the archaeological uses and forensic investigation uses. It will explore how facial reconstruction is used both similarly and differently in both of these situations, what the purposes are of using facial reconstruction and why it is required in these situations.

Finally the third part of this dissertation will analyse in more detail the methods of facial reconstruction and the general concept of it, really scrutinising the process. It will attempt to analyse if facial reconstruction is actually worth doing, and if it does actually give us an accurate representation and reconstruction of an individuals face. It will then investigate the implications this could have on both archaeology and forensic investigations, if the accuracy really matters, and if it matters if we do end up with just an approximation or even a completely wrong interpretation. It will also investigate how much artistic licence is accepted within these facial reconstructions and if that then hinders or affects the reliability or outcome of these facial reconstructions.

Part one – History and Methodology

Methodology of research

The author first came into contact with the concept of facial reconstruction when studying a forensic anthropology class, where the class looked at the process of reconstructing a face, for the purpose of a forensic investigation and for identification of an unknown individual. The class briefly looked at the methods of

the Manchester method, 2D drawings and 3D computer reconstruction. This formed the absolute basic of the author's knowledge of these processes. The rest of the information has come from further reading around the subject, both from the worlds of science, forensics and archaeology, but also from the worlds of art and computing. However no attempt has been made by the author using any method to reconstruct a face. This is due to the lack of resources, for example human remains and lack of precise knowledge of any of the techniques. An online anonymous public survey was also conducted, to see what the general feeling was around three things. This was how do the public feel about human remains being on display in museums to the public, how do the public personally think human remains should be displayed in order to make people more comfortable around remains, and also what part does facial reconstruction play within a museum or archaeological setting, and how the public think facial reconstruction plays a part within making human remains more accepted within museums and the public eye. For this 90 responses was received from a range of ages and genders. The survey was also shared on facebook, with responses coming from all over the world. However location was not asked in order to keep responses anonymous. However, this could be seen to a problem, especially when looking at a subject such as the displaying of human remains, as different countries have different approaches to this subject. For example, friends who filled out the survey in Canada might have very different opinions and attitudes due to issues they face in North America, such repatriation. The other thing that could be seen as an issue is that a large proportion of the responders were likely to be students, who also study subjects in the museum and heritage field. Therefore it could be argued that they were already aware of some of the issues, and gave the answers I was looking for rather than a general public answer.

The beginnings of facial reconstruction

As mentioned in the introduction, the face since early history has been of great significance. This is especially so when it comes to individual personality and recognition of individuals. Although not formally being recognised until 1895 as having a formal study to reconstructing a face, it could be argued that attempts to reconstruct faces, but not for identifiable reasons have also been significant since early history. An example of this can be found from Neolithic times where ‘*in Levant ... in 1953 the excavators at Jericho found two deposits under the floor of the house in the ‘pre-pottery Neolithic B’ levels (c.7500 – 5500 BC) totalling 9 skulls, on which the faces had been built up over the bone in plaster with shells set into the eye-sockets to simulate eyes.*’ (Prag and Neave, 1997).



Figure 2 - The ‘Jericho Skull’. A human cranium with facial features modelled in plaster and shell. Jericho, Palestinian Authority, 8200–7500 BC. (British Museum, 2017).

However, most of these did not include the mandible except in one. However this is fairly common burial practice for these times. These could arguably be described as

trying to replicate a face of a once living person that had died as *'each head has a most individual character, and one cannot escape the impression that one is looking at real portraits'* (Kenyon, 1979, pg 34). It is also suggested by Kenyon that these are not remains of enemies but highly regarded people as *'too much loving care had been spent for it to be likely that they were enemies ... It is therefore clear that the Jericho skulls are those of venerated ancestors and are not trophies'* (Kenyon, 1979, pg 36). Even though not documented as an attempt of facial reconstruction, it could be suggested that this was an attempt at reconstructing a face, but from memory and not in order to identify.

The same principles could also be applied to Ancient Egyptian mummies, as death masks whilst could be described as recreation of the face, is not exactly a reconstruction. However they can be used in order to assist and compare the accuracy of a modern scientific reconstruction (Wilkinson, 2008, 2010). This principle of using portraiture can be seen to make an appearance in the renaissance, which then developed through to the 18th century, where artists such as Giulio Gaetano Zumbo (1656-1700) and Abraham Chavet (1704-1790). Ercole Lelli (1702-1766) then discovered wax modelling the anatomy, for medical teaching which pioneered the way for scientific art. They were also the first set of sculptors to make the realisation that the skeleton is the ideal frame upon which to build the musculature and the body (Wilkinson, 2004). *'These artists can be credited with pioneering the theory behind facial reconstruction: that is, from the shape and proportions of the skull can be inferred how the muscles were attached and shaped, defining the parameters of the face; anatomical correctness was important, rather than an exact likeness.'* (Verze, 2009). This progressed into the 19th century where *'Anatomists were the first to become interested in facial reconstruction as an*

academic exercise. To authenticate the remains of famous people, comparison of portraits and sculptures became common practice ...The anatomist Welcker (1884) compared what was thought to be Raphael's skull with a self portrait, and compared the supposed skull of Kant with his death mask, and found that the respective correlations were too good for chance. Welker used two-dimensional techniques; he provided accurate orthogonal perspective drawings as an outline of the skull and the death mask, and then attempted to superimpose the outlines, while making allowance for the outer tissues. Welker also did the first documented research, in 1883, on facial tissue depth as an accompaniment to the facial reconstruction technique' (Verze, 2009). However the first official recorded attempt at a scientific reconstruction was not until 1895, where the anatomist Wilhelm His attempted to scientifically identify the supposed remains of the famous composer Johann Sebastian Bach, and create a bust on top of a cast of his skull (Verze, 2009; Prag, Neave, 1997).

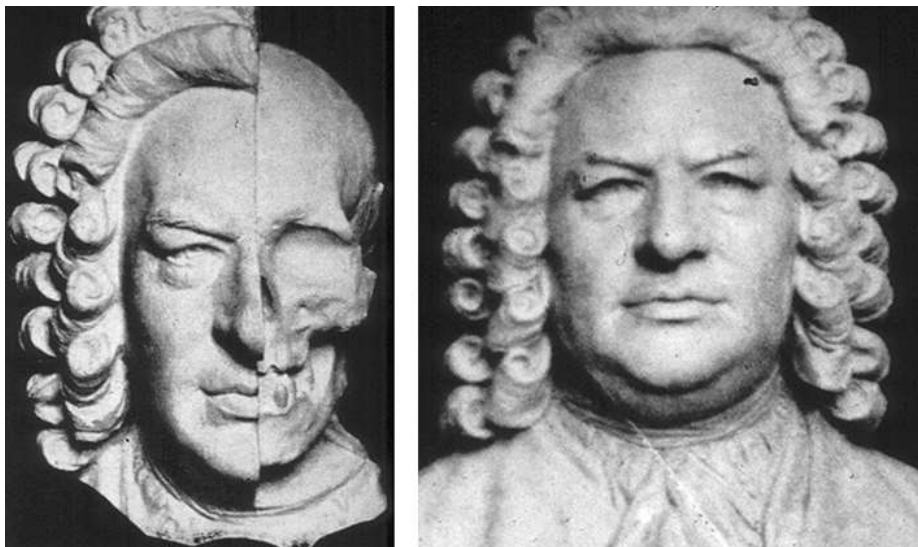


Figure 3 – 'Facial reconstruction of Johann Sebastian Bach by Willheim His. Bericht an den Rath der Stadt Leipzig (Leipzig, 1895)' (Wilkinson, 2004.)

However, there is often uncertainty over who should be credited with the first successful controlled reconstruction, as there were also other atomists such as Welker and Schaaffhausen who *'was also interested in the relationship between the soft tissues of the head and face to the underlying bone structure'* (Prag, Neave, 1997, pg 14). Tyrell and his colleagues (Tyrell, Evison, et al 1997) argue that Welcker should be credited as the first to be doing work for a forensic facial reconstruction and His and Kollman simply built on his work *'The earliest of these was performed in 1883 by Welcker'* (Tyrell, Evison, et al 1997). However Prag and Neave argue in their book that these attempts were *'a subjective exercise in which the thickness of simulated soft tissue was developed on an intuitive rather than a scientific basis'* (Prag, Neave, 1997, pg 15). However, Wilkinson argues that the first real facial reconstruction was in 1899 by Kollman and Buchly *'Kollman and Buchly (1899) also reconstructed the face of a stone age woman from Auvénier, France. This is considered to be the first real scientific reconstruction, in that Kollman used the thickness of soft tissues from hundreds of women from that area and produced with a technical plan, which was then enlivened by the artistic skill of Buchly'* (Wilkinson, 2004). She argues that Bachs reconstruction only succeeded but *'it was only by disregarding the proportions, size and shape of the skull; and the resulting face had areas with no tissue over the bone and other areas with grossly over-estimated tissue'* (Wilkinson, 2004, pg 46). Kollmans work also got commented on by anthropologist Gerasimov who commented that *'Kollmans work can rank as one of the most remarkable achievements in the history of science-based reconstructions of heads and faces from the skull'* (Gerasimov, 1971). As stated previously, Kollman along with Büchly a sculptor pulled together and developed the work of His and Welcker to create a larger pool of tissue measurements, and their work still

influences facial reconstruction artists today (Prag and Neave, 1997). These techniques have developed over the years, and continue to develop. In later years some of the more influential people have been John Prag and Richard Neave, who developed the Manchester method or British approach (Prag and Neave, 1997). Neave has also particularly been strongly involved with high cases of archaeological reconstructions, as he '*reconstructed the face of a skull from Vergina, reputed to be that of Philip II of Macedonia (Neave 1984), and of Lindow Man (Neave 1989)*' (Evison, 1996).

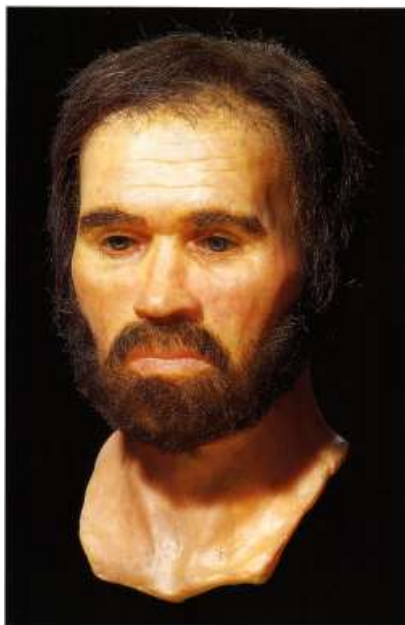


Figure 4 – a 'studio' photograph of the waxwork reconstruction of Lindow Man (Prag and Neave, 1997)



Figures 5 and 6 – The first (5) and final (6) waxwork versions of the reconstructed head of Phillip II (Prag and Neave, 1997)

Caroline Wilkinson is also doing a lot of the current research into facial reconstruction with the Face Lab, at Liverpool John Moores University. *‘The Face Lab carries out forensic/archaeological research and consultancy work and this includes craniofacial analysis, facial depiction and forensic art. Craniofacial analysis involves the depiction and identification of unknown bodies for forensic investigation or historical figures for archaeological interpretation. This may involve post-mortem depiction, facial reconstruction, craniofacial superimposition and skull reassembly. Forensic art also involves witness interviews to produce facial sketches/composites, age progression images and facial image comparison’* (Liverpool John Moores University, 2018).

Manchester/ British Method

The first technique that the author is the most familiar with is that of the Manchester method. This is because this technique is the main technique that has traditionally been given the most dominance within the field of archaeology. It has also had a

massive impact and has been dominant across the other fields that also use facial reconstruction such as forensics. It is also the method that has stayed pretty consistent throughout the years, and is continually proven to be one of the more effective methods in order to reconstruct a face. The Manchester method or what is also known as the British method was developed and introduced by Neave in 1977 (Prag and Neave, 1997). He has also been at the forefront of research into the facial depiction of ancient Egyptians and mummies, with the Manchester mummy team, with the Manchester Museum, since its beginnings of the project in 1973 (Wilkinson, 2008). However as said the Manchester method has consistently stayed the same and *'is the most accepted method for facial reconstruction today'* (Gupta, S., Gupta, V., et al, 2015). The Manchester method is seen to be one of the most accurate methods of reconstruction as it relies on what is seen as accurate measurements, depending on factors such as age, biological sex and ancestry. This is taken from measurements and visual observations taken from the skull, but also supported and backed up by other measurements and observations taken from other bones in the body that portray these characteristics that indicate age, biological sex, stature etc. These are mainly the pelvis, or the long bones such as the humerus or the femur (Scheuer, Black, 2007). However, this can also be told by factors shown on the skull such as the shape and size. Prior to other techniques the Manchester method also takes note of every single factor of the face where *'both soft tissue thickness and facial muscles are taken into consideration.'* (Gupta, S., Gupta, V., et al, 2015).



Figure 7 - 'A replica of Mr. X's skull showing the points at which osteometric markers are placed' (The University of Sheffield, 2018).

This method also works directly hands on and directly with the skull or with an accurate cast of a skull, where after placing the skull or cast on a stand '*facial tissue pegs or markers are then added on the skull, either by placing them directly on the skull or by inserting them on previously drilled holes on the cast at 90 degree using a 3mm drill bit. Each peg length represents the mean tissue depth at the anatomical point. The facial tissue depth is determined by the age, gender, etc. of the individual.*' (Gupta, S., Gupta, V., et al, 2015). As said previously, in this method unlike the methods used before it, the facial muscles that are responsible for processes such as mastication and expressing emotions are also factored into the reconstruction and form a major part of the base of the reconstruction. These are modelled and '*the shape and size of various muscles are determined on the basis of the underlying hard tissues*' (Gupta, S., Gupta, V., et al, 2015). After this prosthetic eyes are placed into the eye orbits on the face. '*The prosthetic eye balls are positioned in the orbit in such a way so that a tangent taken from the mid supraorbital margin to the mid infraorbital margins touches the iris. The inner canthus are placed 2mm lateral to the lacrimal crest and the outer canthus are*

placed 4mm medial to the malar tubercle. When the malar tubercles are absent, the outer canthus is placed 10mm below the line of frontozygomatic suture and 5-7mm from the orbital margin'(Gupta, S., Gupta, V., et al, 2015). Measurements are also taken to predict the size and shape of the nose, teeth, lips and ears 'The maximum width of the nose is determined by the bony nasal aperture at its widest point as three-fifths of the overall width of the soft nose. The profile of the nose and the shape and the size of the alae are determined by the nasal aperture. The maxillary canine and first premolar are placed near the corners of mouth and width of the mouth corresponds to six anterior teeth. The thickness of lips is determined by upper and lower anterior teeth. The length of the ear is predicted by the length of the nose and the ear canal is positioned by using external auditory meatus as the reference point' (Gupta, S., Gupta, V., et al, 2015).

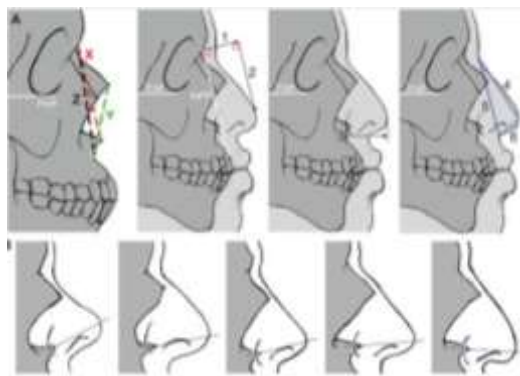


Figure 8 - Anatomical sculpture of the nose (Rynn, 2006). Row A indicates the skeletal measurements (x,y,z) that provide soft tissue measurements 1–6. Row B demonstrates how the shape of the aperture in profile reflects the profile of the nose, and how the anterior nasal spine points to the nasal tip (Wilkinson, 2010).

After all the sizes have been decided, muscles and pegs put in place with the measurements, a layer of clay is added over the top in order to create the skin, with individual rolls of clay added on top to layer up to reach the peg measurements,

which create the muscle and fat layers, which leaves us with our finished constructed face. However this does not take into account, and is without features such as hair or facial features. It is also up to the artist or interpreter to decide on hair, eye and skin colour as this cannot be answered or directly interpreted from measurements from the skull. This is often done either through DNA testing if there is any testable remains or materials, or more commonly on generalisations or assumptions from the area that person was from and the time that person lived in.



Figure 9 – An example of muscles built up (Schumacher, 2014).

To sum it up briefly this methods relies on someone working directly on top of an exact cast of the human remains, more specifically the skull. Therefore this technique can be seen as a destructive technique, therefore should only be used if necessary. However it could also be argued that this is the most accurate and scientific of all the facial reconstruction techniques, leaving us with the image that is most likely to be the face of the person we are reconstructing.

Two – Dimensional Artist method

The second technique that is commonly used when reconstructing a face, is a two dimensional artistic approximation sketch (Taylor, 2001). This is the technique that is probably better known within the public eye, as it is the method that is most commonly used within police or forensic investigations. It is also the form that is more often used to create images which are then shown to the public. It is also one of the cheapest ways of reconstructing a face, as it relies on an artist putting all the reports together and sketching out what they think the person is likely to look like based on the reports and visual inspection of the remains. *‘The Crime Scene Report, the Medical Examiner’s report, along with the Forensic Anthropologist’s report are necessary items needed to complete an approximation of the likeness of the victim. The Crime Scene Report may provide clues to lifestyle and physical appearances such as hair colour and style. The Medical Examiner’s Report will determine sex, approximate height, and other physical characteristics. The Forensic Anthropologist’s Report will narrow both the range of age and height, confirm gender, and provide important clues as to racial origin. The Forensic Anthropologist also determines racially specific characteristics and appearances, including those individuals who have multi-racial heredity.’* (Steinberg. S, 2013). The artist may also use the skull and sometimes tissue depths as a guideline, and use their general knowledge of anatomy to build up the face. *‘Some practitioners prefer to draw the facial musculature onto an initial overlay before attempting the finished facial morphology (Needham et al. 2003), whereas others draw the finished face directly over the skull images (George 1993, Taylor 2001)’* (Wilkinson, 2007).



Figure 10 – ‘Markers applied to a skull copy, contour fitting the markers and final result.’ (Abate and Nappi et al, 2004).

This is also a technique that directly requires the least amount of physical contact with the remains, as they work solely with the reports and a visual guide of the skull, and not directly with the skull. However it does indirectly require human remains that have been evaluated in order to get the medical examiners report and the forensic anthropologists report. However, these reports are pretty standard reports that take place regardless if a facial reconstruction is going to take place or not. However as the name suggests, this is only an approximation and unlike the other forms of facial reconstruction does not work directly with accurate measurements to portray things such as face shape etc.

Computerised method

The computerised method of reconstruction is the newest and most upcoming area of facial reconstruction, which was created as an attempt to overcome some of the issues associated with manual clay reconstructions. *‘Manual reconstruction methods have several fundamental shortcomings, such as being highly subjective, time – consuming and requiring artistic talent. Computer based methods were developed trying to provide an answer to the shortcomings of manual reconstruction’* (Berar,

and Desvignes. et al, 2006). This involves us using various computer programmes in order to reconstruct a face digitally. This can also either be done as a flat 2D reconstruction or also as a 3D reconstruction (Wilkinson, 2007). For all approaches the skull is scanned in via a CT scanner, laser scanning, or from multiples photos of multiple angles, in order to create a 3D virtual cast so we can work virtually on the skull. This also aims to capture and record every detail, such as exact shapes and textures. One of the more similar approaches to the manual clay approach is 3D statistical facial reconstruction (Berar, and Desvignes. et al, 2006, Wilkinson, 2003).

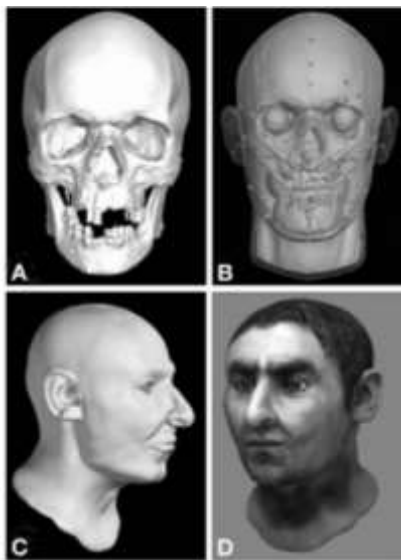


Figure 11 – ‘Facial reconstruction using computer modeling and hap tic feedback system (SensAble Technologie’s Phantom® Freeform®). (A) Skull model. (B) Muscle models. (C) Finished face. (D) Face with addition of skin, hair, and eye textures. (Facial reconstruction by Dr. Caroline Wilkinson and Image Foundry Studios, Manchester, UK.)’ (Wilkinson, 2005).

This like the Manchester method compiles tissue thickness data compiled from CT scans that is then virtually applied along with facial templates from a database, in order to create the reconstruction. This technique uses a lot of principles of manual

reconstruction; however it also eliminates a lot of the issues that comes with the manual process, as the programme completes much of the decision making. Another method that can be done digitally is the use of image overlay on top of the skull, in order to match a photo with the bone structure, by matching it to specific points on the skull (Vanezis and Vanezis et al., 2000, Tu, Hartley, et al, 2005).



Figure 12 – ‘Two-dimensional computer-generated facial reconstruction. (A) Skull with superimposed face. (B) Finished face. (Courtesy of Prof. Dr. Ursula Wittwer-Backofen Institut für Humangenetik und Anthropologie, Freiburg, Germany.)’ (Wilkinson, 2005).

This is a common quick and easy way but used more as a confirmation of identity, and when there are other factors which strongly suggest an identity, rather than when there are no other leads. It can also to an extent be used to build up an image of an unknown skull. This is done by the use of virtual databases of facial templates, and by fitting these templates to the skull to create a reconstruction. These face many issues as it could be argued in some cases the photo is made to fit, especially if someone is certain the remains belong to a specific person. It is also not as scientific as manual reconstruction as the face is not built up with measurements, as it is merely compared and matched to a general database. Many of the computer based facial reconstruction systems are also not tested for accuracy or reliability before

used, especially in forensic investigations (Wilkinson, 2007). However for archaeological research one of the big benefits of computerised facial reconstruction is that once you have a virtual cast of the skull, it is very easy to share amongst researchers, even all over the world. Therefore multiple reconstructions can be produced, even at the same time, whilst limiting the damage the remains can face in the process of reconstruction.

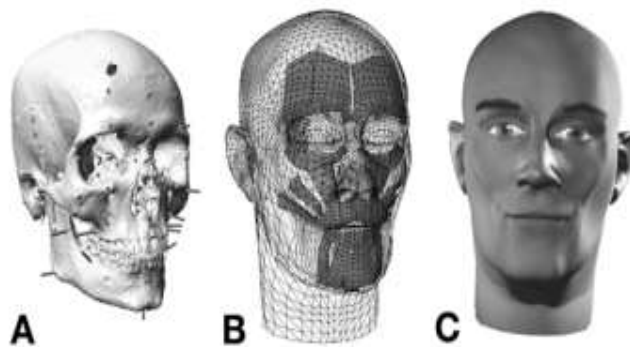


Figure 13 – ‘Facial reconstruction using computer modeling and animation. (A) Skull model with tissue depth markers. (B) Muscle models. (C) Finished face. (Images courtesy of Kolja Kaehler, MPI Informatik Saarbruecken, Germany.)’ (Wilkinson, 2005).

Part 2 – Applications of facial reconstruction

Archaeological and museum purposes

As explained in a previous section, facial reconstruction is a process that is not just limited to one discipline or one area of research, but is an area that is called on and investigated across many areas of research. Another big area of study within facial reconstruction is within the areas of archaeology and museum studies. Here the purpose of a facial reconstruction is usually a visual and illustrative one, where we

use facial reconstructions in order to explain to people who someone was. This is mainly when we have displays in museums that have an element of displaying human remains. This is mainly done again for people to gain an understanding of what that person looked like, but also who that person actually was. It also brings a more humanistic approach to displaying human remains, and brings that person back to life. It also helps with bringing more respect to displaying human remains, as it makes both you as the person displaying them, and also the visitors seeing them, realise that, that once was a real life living human being. Many people believe that when displaying human remains in any setting but in particular in museums, this should be our ultimate aim and that facial reconstruction is something that can be done within museums, to make us realise that the remains were once human beings and so should be treated like so. In a survey that was conducted when asking people about the display of human remains many people said that they thought facial reconstructions should be an essential part of displaying human remains, (see question 8 in Appendix). As well as to portray the faces in museums, there has always also been that natural curiosity from the public to see what our ancestors looked like, and to put a face to our past. This public interest is also especially so when looking at identifying the supposed human remains of significant historical figures, such as Tutankhamen and Richard III *'Faces are fascinating and faces from the past are particularly intriguing. Reconstructions help to solve problems but they also generate interest and answer questions in a much wider context'* (Verze, 2009).



Figure 14 - Facial reconstruction of mummy on display in National Museum of Scotland, Edinburgh (Howells, 2017).

Forensic and identification purposes

‘Forensic facial reconstruction cases tend to involve human remains that cannot be identified by the usual police investigative channels.... A written description of the individual may not elicit a response from the general public or the authorities, and a facial reconstruction may be suggested as a last option.’ (Wilkinson, 2004, pg 157).

This is probably the most familiar use of facial reconstruction and the use that the public would associate facial reconstruction with. It is also arguably the essential use of facial reconstruction, and the reason why so much effort is going into facial reconstruction in order to perfect it. It is often used by the police in order to portray images of victims to the public, in order to see if someone recognises the person, in order to identify them. This is especially so when the forensic profile does not result in a match and the victim is still unidentifiable.



Figure 15 – An example of a victim appeal using facial reconstruction (Wilkinson, 2004).

It can also be used in situations such as national disasters, where victims are so badly disfigured, they cannot be identified or need to be identified by relatives, but cannot be shown to them, due to the disfigurements and the emotional damage that would cause. The public will also probably be familiar with this practice from public police appeals on shows such as crime watch, and also from popular forensics television shows such as CSI and Bones. It is also argued that *‘over time, the interest of facial reconstruction has moved from the historical to the contemporary. Where once people flocked to see historical figures brought back to life, people are now asking forensic anthropologists and/or forensic artists to put faces back on those to whom we cannot identify and to aid the workings of criminal investigations’* (Omstead, 2002).

Security

The third use of facial reconstruction that is growing more and more popular as technology progresses is the use of facial reconstruction and recognition within the world of security (Ryan and Wilkinson, 2012). This is due to the fact that our faces are one of the, if not the most, unique things about us, with even twins having subtle differences within their facial features. This is continually being researched and is predicted that with further research in the near future our faces could be used from everything from paying at the supermarket to taking money out at an ATM machine (Zhao and Chellappa et al, 2003).

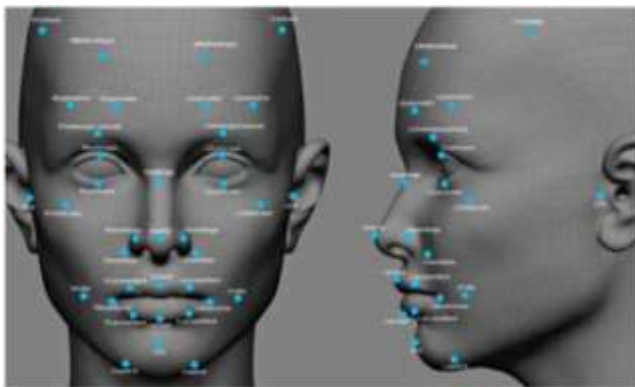


Figure 16 – ‘Facial recognition data points’ (Dormehl, The Guardian, 2014).

It is currently even being used by some technology giants such as apple with the new I phone X, that uses facial recognition in order to have access to your phone (Phelan, 2017). It can also to been seen within the world of airport security and the battle against terrorism. An example of this can be seen at Dubai airport, where biometric scanning is due to start late 2018 (Coffey, 2017). This is where multiple cameras that are disguised as virtual fish, are constantly monitoring and storing people’s faces,

identifying people rather than human security checks looking out for suspected terrorists.

Part 3 – Issues and evaluation of techniques

Facial Reconstruction or Facial Approximation

Even though facial reconstruction is a scientific process with accurate and precise measurements being recorded, as noted previously it is treated with great caution within a court of law. This is because while there being many positives to facial reconstruction, there are also many flaws to the process, with potential for outcomes to come out with something completely different to what we thought. There is also potential to have a lot of variation between reconstructions, even when using the same cast, with the same measurements. It has also long been argued by practitioners whether it is possible to get an individual's face, with a skull only producing one individual outcome, or whether this is impossible, *'Since its conception in the 19th century, two schools of thought have developed in the field. To answer the question will only one face be produced from each skull, facial approximators claim that many facial variations from the same skull may be produced, whereas practitioners of the other school of thought attempt to characterised the individual skull morphology to make the individual recognisable'* (Berar and Bucki et al, 2011). This argument also lies in the subjective accuracy studies where *'Facial reconstruction researchers have carried out accuracy studies that suggest good levels of accuracy for their methods, whereas facial approximators refer to results that suggest estimation alone is possible'* (Wilkinson, 2005). Approximators also suggest that *'reconstruction relies heavily on anecdotal standards and intuition and that success*

in forensic investigations may be related to publicity and media interest rather than to any resemblance to the target individual.' (Wilkinson, 2005). Therefore, the 'accuracy' of a reconstruction is based off of the public response, be that correctly or incorrectly. However '*Facial reconstructors respond that approximators are inexperienced, do not analyze all the available skeletal information missing vital clues to facial morphology, and rely too heavily on pre-existing facial references, such as ethnic stereotypes.'* (Wilkinson, 2005), meaning they purposely ignore the scientific data which to them makes the reconstruction is scientifically correct, and therefore accurate. This next chapter will explore some of the reasons why facial reconstruction could be considered an approximation rather than a reconstruction, and some of the areas we have to be cautious about where considering the accuracy of a reconstruction..

Authenticity of facial reconstruction

One of the questions that often gets asked about facial reconstruction is how authentic really is the process and the final outcome of facial reconstruction. There are also many arguments within literature over whether facial reconstruction should actually be called a facial reconstruction as it is more commonly known, or whether it should be given the more appropriate name of a facial approximation. This is because as already previously discussed, it is strongly suggested that only an approximation can ever be given, of what someone looked like, and it is never likely to be an exact match or replica of that persons face. In fact facial artists regularly state that more often or not we are just trying to create a symbol or a rough template that would trigger an association from a member of the public rather than a direct match. '*It must be noted that facial reconstruction/approximation is not a method of identification, but rather a tool for recognition; to produce a list of names from*

which the individual may be identified by DNA assessment, dental record analysis, or other accepted methods of identification.' (Wilkinson, 2005)' (Claes and Vandermeulen et al, 2006).

Artistic anatomy?

The second point that needs to be remembered when analysing the effectiveness of a facial reconstruction is that, even though as stated the process behind facial reconstruction is a scientific one with accurate measurements and careful positioned components, especially when using the Manchester method, there is still a great deal of the reconstruction we cannot tell from the remains alone. This means that often a large chunk is down to interpretation of the person conducting, with a lot of artistic licence being given to the person conducting the facial reconstruction. This is especially so when looking at the other methods other than the Manchester method, as these do not require direct work on top of a skull, therefore you could argue especially with the 2D sketches that these are entirely an artistic interpretation of the remains, rather than a definite reconstruction (Wilkinson, 2007). It is also said that the pegs are only used as guidelines and a skilled facial artist is able to interpret these and work around them. *'The skin layer follows the structure of the underlying muscles, so the main determinant of facial morphology is anatomical. Where the anatomical structures disagree with the tissue pegs, the tissue pegs will be removed, as the pegs only represent averages and will not be wholly appropriate for all skulls (Prag & Neave, 1997; Wilkinson, 2004)'* (Wilkinson, 2010). This point is further made when not all information is given to us, for example sometimes we do not know for definite what type of chin they had, or even something like fat layout is something that needs to be interpreted. More so with archaeological cases there are also other big things, that unless there is tangible evidence we do not know, and

therefore has to be interpreted. This includes some of the major points which could make or break a reconstruction, yet we cannot tell purely from observations of the remains, which are things such as eye colour, hair colour, facial hair, hair style, skin colour and ear shape and size. When it comes to forensic cases one way this could be resolved is by looking at the soft tissue, if still present. This can also be a possibility in archaeological cases, if the remains have been mummified or preserved, both intentionally in situations such as mummies, or naturally in cases such as bog bodies. Another solution to this issue is to do DNA testing in order to answer some of these questions such as eye, skin and hair colour. However in cases such as archaeological ones, where it's not necessarily a priority that these features are correct, as the aim is not for the audience to necessarily recognise or identify the reconstruction. In these cases we often look at generalisations of the time we believe the person to be from, and base our reconstruction on what was most common or likely within that time and place in history, *'in archaeological investigations recognition of the face is rarely the primary objective and producing the most likely depiction may be more important than individual identity. In these cases the archaeologist will suggest the most probable hairstyle, hair colour, skin colour and eye colour from historical textual and pictorial evidence'* (Wilkinson C. 2010). Therefore it could be argued that while a facial reconstruction can rely heavily on an artistic licence, a lot depends on the individual cases and the amount of known information that can be supplied either from places such as from the crime scene, within forensic anthropology, or from preserved evidence and soft tissues within an archaeological context. However at the same time the less the information we are given the more artistic licence and estimation is required. For example, if we are provided solely with human remains or just elements of the remains, we can only tell so much from observations and

therefore we are left with the decision of do we estimate and show our audience the likely outcome or do we just not include any features that we are not sure about. However studies have shown that by displaying incomplete faces, you are not as likely to get someone recognising the face, as if you were if you had a complete face, even if some of the features are incorrect. However on the other hand if you display a face with the wrong features such as eye colour or hair style, people are likely to dismiss the reconstruction, even if there is some element of recognition, they will say that can't be for example my uncle as he had blue not green eyes, even when stressed that there is a strong element it could be wrong. *'Even where some details are known, the exact appearance of the individual feature will still be uncertain. For example, it may be known that the individual has white skin, but the range of white skin is wide, from milky-white and freckled to olive-toned. Similarly, the person may have dark brown, shoulder-length, straight hair, but the exact style or way that this was worn will be uncertain. These variations may have a great effect upon resemblance and recognition.'* (Wilkinson C. 2010).

Another thing that is very difficult to predict is skin texture. This is because whilst we may know the age of someone from their remains, this does not always portray how old they actually look. *'Although age-related changes to the skin surface follow a predictable pattern, the timing of this pattern is not predictable ... Even if the accurate age of the individual is known, it is impossible to predict the surface texture of the face with any degree of reliability.'* (Wilkinson, 2010). For example, due to other lifestyle factors such as drinking, smoking, stress, sun damage, medication weight loss, or any other reason why skin would be distressed, people could look significantly older than what they actually are. It can also be down to simply good genes and genetic factors on how you age. This in itself is an issue, as again like

individual characteristics, it can result in misidentify as people struggle to recognise faces without the correct skin texture and features. (Bruce et al.1991). According to Ubelaker and O' Donnell aging also brings problems with other factors such as estimating the soft tissue thickness and the nasal depth, as these are affected by age (Ubelaker and O'Donnell, 1992).

Variation in reconstructions

This argument of a strong use of an artistic licence being required and used in facial reconstructions, and therefore decreasing the effectiveness and the value of a facial reconstruction, is also strongly backed up particularly from the earlier attempts of facial reconstruction. This is because blind tests have shown that interpretations of remains can vary widely between different people conducting facial reconstructions, with even some of the earlier attempts to analyse accuracy coming back with very different interpretations from the same remains. This is also further so as with the Manchester method even though the same measurements for skin thickness can be used across the board by different artists, the measurements are sometimes changed and adapted based on the artists interpretation of the marks on the skull and the remains (Wilkinson, 2010). Therefore if the measurements are only acting as guides, this means that the level of interpretation by the artist has dramatically gone up, meaning that the chances that interpretations could vary and be different between artists has dramatically increased, even when they are all technically working with the same measurements. This is explored in a study by Decker, Ford et al (2013) where four different artists used four different 3D reconstruction methods to reconstruct the same individual. *‘A total of four approximations were generated by the participants; two using traditional clay methods and two using virtual methods. All participants were provided with a copy (physical prototype or virtual) of the skull*

and a standard biological profile determined by a forensic anthropologist that corresponded with the information of the study participant. The virtual facial approximation participants were provided with the STL files; clay specialists were sent an accurate, full-size milled copy of the skull produced from the computed virtual skull model using a 3D ZPrinter 310 (ZCorp) rapid prototyping printer. No stipulations about tissue data sets were made to the participants in order to ensure that the approximations produced were typical for each practitioner in a real case setting’ (Decker, Ford et al, 2013). As you can see from the images each technique produced very different results, and also each practitioner used different measurements in their interpretations.



Figure 17 - Frontal, lateral and 3/4 views of Neville's clay reconstruction (Decker, Ford et al, 2013).



Figure 18 - Faraut's clay reconstruction (without facial hair and with) (Decker, Ford et al, 2013).



Figure 19 - Frontal, lateral, and 3/4 views of virtual reconstruction using the FaceIT technique (Decker, Ford et al, 2013).

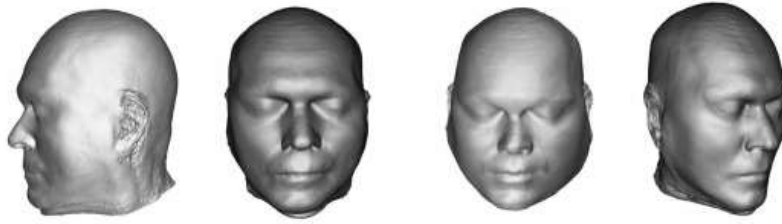


Figure 20 – ‘Lateral, frontal, overweight and 3/4 views of virtual reconstruction using the FBI’s virtual facial approximation software, ReFace, in development’ (Decker, Ford et al, 2013).



Figure 21 – ‘Frontal and lateral views of actual living individual’ (Decker, Ford et al, 2013).

On the other hand another criticism of facial reconstructions is that when looking at multiple different examples of different faces, if you remove the characteristics that could be described as the individual characteristics such as the hair, often multiple facial reconstructions look very similar, with some people going as far as to say they all look the same. Therefore it could be argued that when creating a facial reconstruction we are merely creating a template that actually has very little variation, especially when looking at it with the naked eye, and from a public viewpoint. *‘These computerized approximation systems create multiple variations for each skull, but they impose a very specific set of facial characteristics, and the*

end result will ultimately always resemble the facial template' (Wilkinson, 2005).

This could be argued that it is down to the sometimes minuscule differences between measurements that without measuring often have little impact on the final image.

Therefore we go back to the viewpoint and the argument that facial reconstruction relies very heavily even solely on an artistic impression, which has minimal reliability, especially when features have involved a lot of guess work or estimation, as facial reconstruction and recognition from the public relies so heavily on these individual characteristics that so often cannot be told from the human remains.

Therefore this shows that Facial reconstructions are also almost always portrayed with the same emotionless blank face that people also argues results in many facial reconstructions looking very similar to each other. This begs the question should we be portraying our facial reconstructions with emotion, and not leaving them with emotionless faces. However in terms of recognition this is also obviously something that cannot be told from human remains, as you have no idea what types of emotions were portrayed on a regular basis, for example someone might always be smiling but never sad. This is also said to be a big part of recognition with many people only able to recognise a person based on an emotion, for example if they were permanently portraying a grumpy expression or if they were always happy and smiling.

Artist or Scientist?

Like almost every area of study, the discipline of forensics and in particular the practice of facial reconstruction relies very heavily on the interlinking of different disciplines, as it involves the use of multiple skills. This is especially so with facial reconstruction, as no matter what technique you use there is always the heavy use of both the arts and the sciences. Whilst the person conducting the reconstruction will

obviously be trained in and use both aspects of science and art or sculpture, when creating their reconstruction, there is arguments that depending on their background and their original expertise there will obviously be a sway to their original background. This can be seen where if you have someone from a more scientific background there is a greater probability that the reconstruction will have a greater reliance and contribution to a more scientific approach, with a greater reliance on the measurements, with as little artistic input as physically possible. However as discussed earlier if we focus on a more scientific approach, we get a reconstruction that can be very unlikelike or realistic and therefore unrecognisable, which completely misses the point and goes against the purpose of doing a reconstruction. However on the other hand it can go in the other direction where if you have someone from a more artistic background, the likelihood is that you will end up with a higher emphasis on the artistic side, which you could argue results in more of a realistic and lifelike reconstruction. However this could be argued that by having a more artistic approach you are sacrificing some of the more scientific side, as there might not be as much as an emphasis on the careful measurements, that supposedly make facial reconstruction the scientific accurate process. Therefore this leaves us with the question of who should we trust in order to create the facial reconstruction and should it have more of an artistic approach from an artist or more of a stricter scientific approach focusing purely on the data and measurements. It is argued by Ghosh and Krishan that facial reconstructions should be conducted by artists, however that they should have an understanding of the science but this should not be the focus, *‘Many such artists are not very well conversant with the science of facial reconstruction, but they understand the underlying structure of human bodies quite well. They use this knowledge to create startlingly good replicas of present day*

cultures and reconstructions of the past. Sometimes their art becomes better than the work of the scientist, who attempts to fit in tissues, muscles and skin to create a gestalt that resembles the original' (Ghosh and Krishan, 2012). However this is in an archaeological context where you could argue accuracy is not essential, whereas in a forensic case, it should have that stronger focus on science, to make it as accurate as possible. You could also argue that in order to get both sides of the story it is essential to have both scientist and artist collaborating together in order to get both the scientific factor but also the artistic factors, that make it more lifelike and not wooden *'Despite varied attempts at the standardization of the traditional reconstruction techniques, facial reconstruction stands on the threshold between art and science, where the artist and scientist work together to produce an image which will ideally lead to the identification of an unknown person (Tyrrell et al 1997)'* (Omstead, 2002).

Problems with numbers

One of the issues in general that is regularly often criticised when even looking at forensic science as a whole is the heavily reliance on numbers as a whole within the discipline (Boddington. A, 1987). *'Other disadvantages include the overreliance on average tissue depth data. Additionally, very few of these systems have been analyzed for accuracy and reproducibility'* (Wilkinson, 2005). Measurements could be described as the absolute back bone of forensics especially within the area of identification. This is because absolute precise measurements are taken and then compared to averages in order to estimate things such as sex, age, stature etc (Christensen and Passalacqua, 2018). This is the same when it comes to reconstructing a face, as we apply average measurements taken from a variety of studies measuring the soft tissue thickness is different types of people, of different

ethnicities and ages, both from living samples via CT scans, and also the deceased (Gatliff and snow, 1979, Krogman and Iscan, 1986, Iscan and Helmer 1993). Across all methods of facial reconstruction these figures are then used along with information gathered from the remains and applied to the face in order to create a facial reconstruction. This way of gathering information whilst seen to be the most accurate and scientific way, has brought up many concerns, especially as we progress and globalisation results in more cross ethnicities and the mixing and merging of categories as people migrate all around the world. One of these concerns is that by doing it this way we are limiting people by categorising them and putting people into boxes. This also leads us onto other concern that we end up basing our measurements on an average reading of all the measurements taken from the samples. This could be seen as very troublesome as it could suggest we are very much just generalising our results as it only provides us with an average, which could be argued to be inaccurate, especially if there is a wide variation. It also suggests that people in a certain category all look the same. For example if sticking solely to the tissue depth figures, two individuals who were both identified as white European females aged around 20, would both have the same tissue depth figures, therefore suggesting they both have the same structured face, and look exactly the same. In terms of using the figures for identification, it is also very easy to get measurements wrong, mainly due to the precise nature that is required, and the very small differences between the different categories. Therefore even when it comes to identifying and completing a forensic profile, it is always important to remember this is just an estimation, and therefore our identification could be incorrect from the start. This is especially so if the human remains are not complete, leaving us with limited material to work with, and our judgement not certain, as we do not have other

components to back up our judgement. It is also important to point out that these measurements also change over the years, meaning that facial reconstructions, especially in a museum or research context can dramatically change, as these measurements alter.

Context

When looking at the issues surrounding facial reconstruction, it is also important to acknowledge the context, as this can dramatically alter the validity of the worth of the reconstruction. This is because the purpose of the reconstruction can alter how precise it has to be and if it actually matters if we do have some potential issues, therefore questioning if it actually matters if the reconstruction is actually accurate or authentic to begin with. As stated earlier facial reconstruction is called upon and used in a variety of situations. One of the key contexts being that of for forensic purposes, where it is being used by the police in order to assist forensic investigations, and possibly within a court of law. When used in this context it is essential, that practitioners are confident that the reconstruction is accurate, and the outcome does represent the correct individual. Therefore it is important that we acknowledge these issues and actually treat our reconstructions with concern and an element of caution. However when it comes to the use of forensic facial reconstruction in archaeological context, are these issues really issues at all. This is because when it comes to showing a reconstruction for the purposes of displaying to the public, it could be argued that we are purely showing a representation, of what that person could have looked like. Therefore unlike the use of reconstructions in a forensic setting, interpretations are surely open for mistakes and therefore do not have to be correct. However one of the main aims we have when displaying objects in museums is that we maintain authenticity and display everything correctly and as

precisely as possible. Therefore you could argue that even in an archaeological setting it is essential that we are confident that the reconstruction is an accurate representation in order to portray the remains correctly. When asking people in my questionnaire, 13% of people responded that when they see reconstructions in museums they expected a completely accurate reconstruction with using scientific methods to date. However the most people with 73% of responses said that they expected an accurate reconstruction, although they were also open to and accepting that it is an interpretation and that it may not be completely correct. Comments also seemed to very open to the fact that these reconstructions could be wrong and people were aware of the artistic input that is allowed within facial reconstructions (see appendix). However, some didn't think museums had an obligation to portray correct and up to date reconstructions, but it should be expected that they do. One person did comment that they 'would like to think that the reconstructions are completely accurate, but I understand that techniques change and this influences the way a reconstruction is built and therefore the final product. ... So while I expect them to be accurate with the techniques at the time, it also wouldn't surprise me if they turned out to be wrong.' Another person also said 'Nothing is perfect. As long as a decent attempt was made, what's the harm? Acknowledge that it's not perfect and you're fine.', with another person commenting that it should depend on the museum and their status 'I hold national museums to a higher standard than local ones'. (See appendix for all responses)



Figure 22 – A bar graph showing responses to the question ‘do you expect a reconstruction to be completely accurate?’ (Howells, survey monkey, 2018)

Another issue is how do practitioners or the public know in archaeology if a reconstruction is correct anyway. This is because there is no physical way of knowing for definite what these people looked like, especially when reconstructing early human remains. Unlike for forensic purposes we are not trying to identify someone, we are doing it the other way around and putting a face to an identity rather than putting an identity to a face. In fact already knowing what someone looked like and using things such as death masks or portraiture can hinder a reconstruction. This is because an artist can already have an image in their head of what that reconstruction is meant to look like. This therefore can mean that the image is almost made to fit the skull, even if the portrait does not belong to the individual’s skull. Even when we know what a person looked like, when testing the accuracy from an identity pool, it is still difficult to truly judge the success rate. This examination has been conducted many times with various results, showing that it is challenging in general to reliably test the accuracy and success rate of facial

reconstructions as the outcome varies every time (Lee, Mackenzie, Wilkinson, 2011). However portraiture can also help us confirm an identity if the reconstruction is done blindly, and we then use it as a comparison tool (Gualdi-Russo and Zaccagni, et al, 2015).

Ethics

While not wanting to get too far into the massive controversial debate, it is also important to acknowledge the ethical issues surrounding working with human remains, no matter the age, as facial reconstruction work does involve working directly with human remains. It is important that practitioners remember that they are working directly with someone who was a real life person, and *‘the study of humans and non-human primates from the past and in contemporary populations is a privilege and not a right, because these remains differ from all other archaeological and anthropological material and therefore, these biological remains should always be treated with dignity and respect’* (BABAO, 2010). This is especially so with facial reconstruction as it means creating a face that could make them recognisable. This is especially so in forensic and police investigations that this is done sensitively, and the living family members are supported throughout. It is also important to remember that throughout reconstruction work the remains are also destroyed and altered, be it even through factors such as transportation, scanning or handling of the remains. It is also important that every decision is scrutinised and that processes such as DNA testing is only done if completely necessary.

Conclusion

In conclusion, forensic facial reconstruction, whilst being based on scientific principles and practice, should be treated with great care and caution. While it is a

beneficial tool there are still issues and concerns about its use and the results it provides. This is because while there is scientific method behind it, there is still clearly a big element of an artistic licence. There are also many methods of reconstructing a face, with pros and cons of each method, but with also the potential for varying results. However this could be down to the practitioner rather than the method, therefore it could be argued there is no 'best method' of facial reconstruction. When looking at its reliance in courts or in forensic investigations caution should be taken, as there is a risk the face could be reconstructed incorrectly, as it is just an approximation. Therefore in these situations it should be questioned what degree of prominence it should be given. However it can still be seen to be valid as a last resort of identification as even if not completely correct it is likely to cause recognition, which many argue is the purpose of forensic facial reconstruction and not to get an exact reconstruction. However within the context of archaeology it could be argued that more prominence needs to be given, as facial reconstruction allows us to connect with the people of the past, making human remains come to life. It could also be an alternative to displaying human remains for people who wish not to see human remains on display, as well as an addition to human remain displays. Whilst there is not as much importance of accuracy as in forensic investigations, it is important that there is still effort put into these reconstructions and that the information portrayed to the public is authentic. However more artistic licence is granted in order to make the reconstructions as characteristic and engaging as possible, but while also using scientific principles and methods. For further research in this area the author would like to explore the controversial area of juvenile forensic reconstruction and look at how these issues change when applying them to juveniles and what are the added challenges of applying these methods to a child in

order to reconstruct their face. In summary whilst facial reconstruction has a variety of issues, it is still used as and seen to be a valid technique across a multitude of areas. As a discipline it will also continue to grow and develop, continuing its trends of growing in accuracy.

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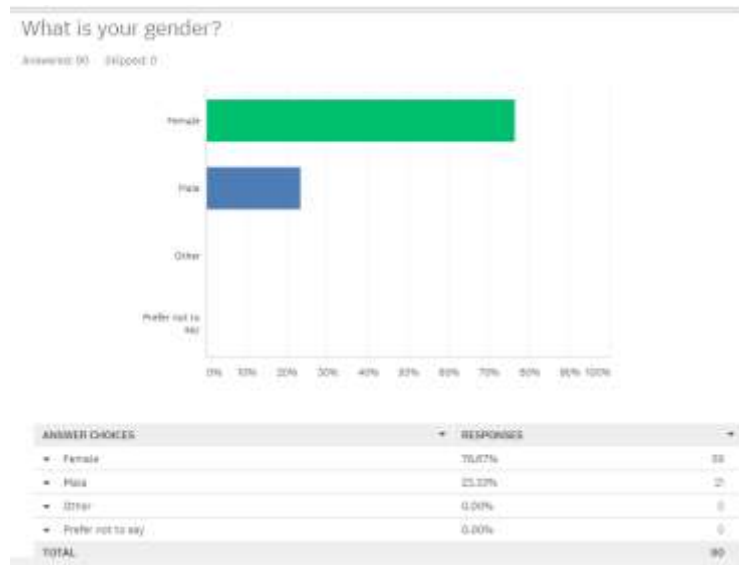
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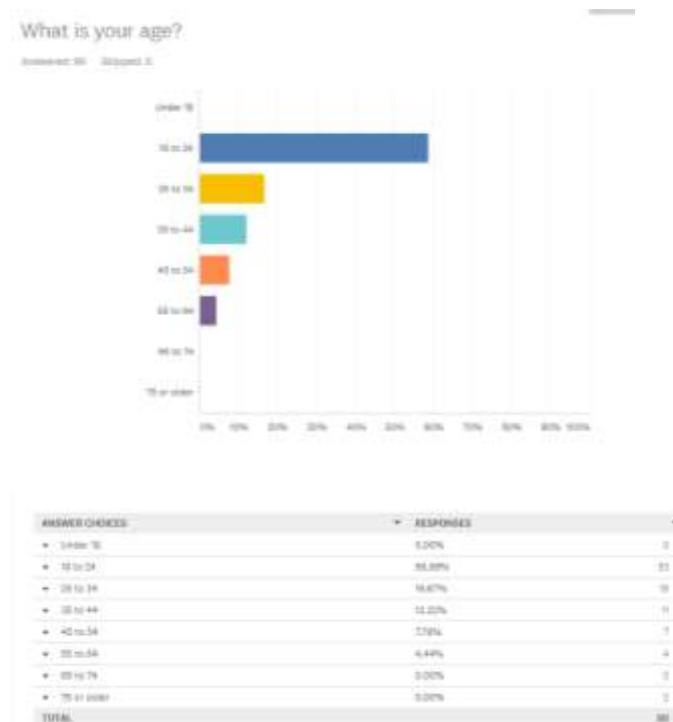
Appendix

Questionnaire responses - Representations of human remains and facial reconstructions

Q1



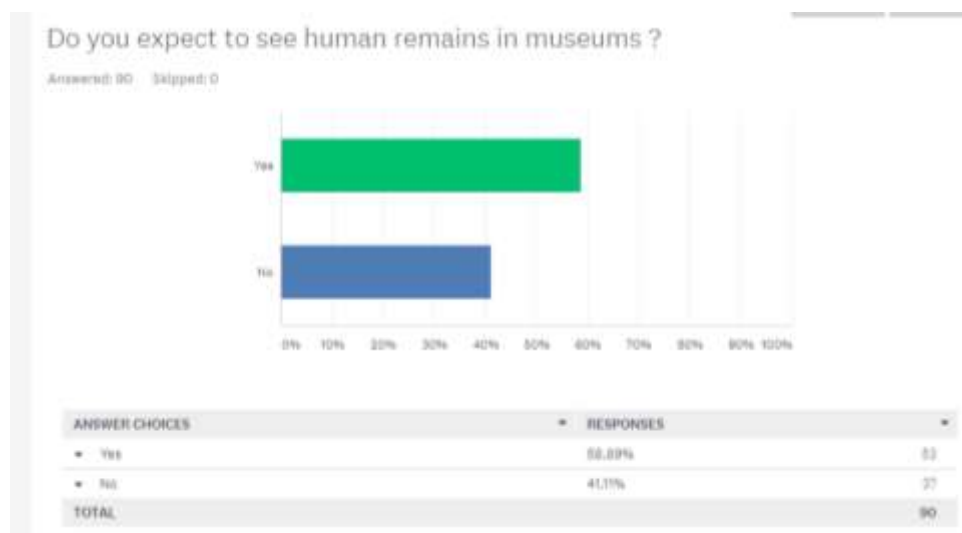
Q2



Q3



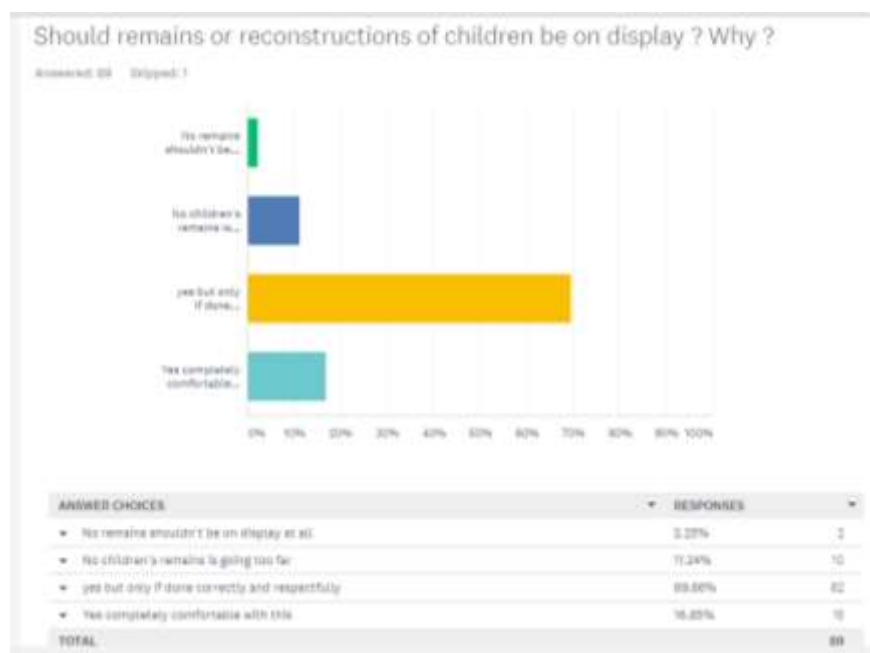
Q4



Q5



Q6



Comments –

1. People die. It's a part of living
2. All remains should be handled respectfully in any museum, however if used to drive a specific point to hand then can be very beneficial having a child's remains (I. E. From Auschwitz)

3. How were the remains obtained? Were they stolen? Were they taken from a minority culture that we have historically treated as less than? Are there people who want the remains of their ancestors back? If the answer to those questions is no then I might be more comfortable with it.
4. They're old dead people. It doesn't matter how young they were when they died. If their body has been preserved, put it up. If it disturbs people, put it off to the side with a content warning sign.
5. I think all remains should be treated respectfully?
6. I just don't have any issues with it. I believe that human displays have many benefits for the education of people who attend museums.
7. For education purposes
8. As long as it's educational and done in a respectful manner and the bones are older than 100 years, there should be no problem with displaying them.
9. Why is it any different to any other aged person? Life may have affected the child differently to an adult so it is just as interesting to see :)
10. Are they ancient remains? Is this historically significant? Academic and historic reasons must be part of the criteria.
11. The vast majority of remains in museums are hundreds, if not thousands of years old so it is unlikely to stir up ethical questions. However if they are removed from burial sites care should be taken and if possible the whole burial site should be recreated
12. It is very disrespectful.
13. I think it is disrespectful to the deceased individual to have their remains on display however, reconstructions are fine

14. I feel like this should be the way for all remains not just children, they're still people with communities who cared for them - you need to respect their body in the way they would want you to, and the way their community would want you to.
15. Everyone every living or no longer living thing leaves remains in many shapes and forms. These remains tell a story about that life and the ways of the area at that time.
16. Because it is important for us to be able to learn about past generations
17. If it is part of a display that is important showing evolution of skeletons then yes and maybe biological disorders that have give the reason of death then yes. If not then I don't see why you would need this.
18. Very rarely is it justified with any human remains to display them. However if it is a very unusual grave or shows something or importance then it should be displayed in a sensitive manner with the option not to view them.
19. I feel as a mother, you don't want to imagine children dying, therefore seeing remains would feel too real.
20. I believe human remains should be treated similarly to animal remains. If people don't have reservations about seeing the remains of a cub then, as long it's respectfully done, human remains should cause no issue.
21. History is important to the world. As long as the displays are accurate, do not represent any false information and do not intentionally offend any groups, why would it matter? Hell, put warnings just in case. I think it'd be awesome! (See recreations of Pompeii for point of proof)
22. Its factual history

23. As long as it's okay with the parents of the child I don't see anything wrong with it. It can be educational.
24. All remains can be used as a tool to teach the public however they need to be presented in an ethical way and take in to consideration the origins of the remains and how this might be significant. It would be beneficial to perhaps have warnings that there are human remains in a collection
25. They provide us with valid examples of how we used to live, and it is only recently we have tried to hide children from the history they lived in.
26. A museum is there show history and if those remains are relevant then I cannot see an issue
27. Death is just one aspect of humanity that affects everyone, so why shouldn't it be on display? It is an equalizer in society.
28. Because they existed just like everyone else and that is also a part of history. We shouldn't be erasing or blocking out aspects of history that hurt or cause offence, because that's the whole point for us to learn that we made mistakes or that bad things happened before. We can learn from this.
29. If their presence enhances the display, or allows viewers to better understand or interact with the concepts being explored. The remains of a soldier who died at Waterloo, personally, should not have been put in a museum because they did not add to the exhibit.
30. Because if done in a way that makes it look like they are just thrown in then it clearly shows little care to life that person once lived, also child or adult its part of history
31. Because children should be able to learn

32. It must be done ethically and respectfully. It is part of human history and knowledge.
33. I think it important to see for educational reasons, as long as the remains are treated with respect.
34. Children should be left at rest regardless of the historic era adults should be used instead but with respect
35. Education
36. It's too much
37. because it is equally important
38. Children are just as important as adults in archaeology, and should be displayed to help the public gain a greater understanding of the past.
39. Lack of respect for a fellow human being - find it distasteful that people can just stand and stare at the remain of another .
40. Children is more of a vulnerable subject for some people, so it should be placed in a more respectful manner
41. Yes if its educational say for showing how you can tell someone had a disease but it still should be displayed respectfully and not like an object, especially if say like Ancient Egyptians where their body shouldn't be seen after burial as that is disrespecting their beliefs and wishes
42. With respect to the answer given, if it can be done with ancient Egyptian rulers, then it can be done with any other remains.
43. It is fine to have the remains of children, however the ways in which they are displayed is important, for example I would not want to walk to a Minoan section and see the remains of a child in a cooking pot

44. Only for important scenarios to show awareness of what has happened to them
45. If it is for educational purposes then I personally have no problem with displaying human remains for any age. If they are being used inappropriately however then that is where we start to get into sticky territory concerning the use of human remains.
46. Because it's a part of history e.g. Pompeii
47. It helps us gain an understanding of how graves existed in the past
48. It's disrespectful to the individual whose remains they are using.

Q7

How do you think human remains should be displayed to the public? What can museums do in order to make the public comfortable around them?

Answered: 50 Skipped: 10

1. Depends on the type of museum. Maybe give warning that there are remains. Always be respectful.
2. Some people will never be comfortable for me as long as they don't look like they are rotting I'm good
3. A story line may help so that people aren't just looking at remains but rather the whole picture of what once was. Maybe place the remains towards the end of the exhibit preparing people along the way also giving them time to leave is wanted.
4. respectfully
5. Placing a warning that remains are part of the collection, time depends on if the find or voluntarily left their remains

6. Behind glass. Give people a heads up before they go to that particular exhibit so that they can decide if they want to see them or not. Have a detailed description of how and when the remains were obtained prominently displayed.
7. Yes. Warning signs if need be that you're going to a body area. That way people can avoid or enjoy as they please.
8. Separate rooms to make the public aware
9. As long as there's some kind of separation between the display and the public. Like a display case
10. Thoughtfully and with purpose.
11. Write info on how and when you came to have them
12. Done in such a manner that would be educational.
13. Perhaps in a separate area, where it could be at persons choice !
14. Put them behind glass clear explanation that these are human remains
15. They can provide an alternative route for people who want to avoid human remains and inform people where the remains are located
16. I'm not sure - I have never seen a problem with how they do it now, so I don't know how they can do this
17. There must be a solid , legitimate educational reason to exhibit.
18. They should be kept separate from the main displays so that people who do not want to see them don't have to. Warnings should be put in place so the public know that they will see remains in specific areas
19. Maybe have what could of been- not use the remains but maybe in wax for example.

20. Having it posted on the website as well as having warnings posted before the human remains would come up in an exhibit so people could skip it if they felt uncomfortable
21. Respectfully; it's just part of history!!
22. I think that if human remains have to be put on display it should be in the most respectful way possible. Signage along with paths around the remains so that people do not have to view them if they do not want to.
23. I don't there's a problem with the way they're displayed currently. I suppose there could be warnings or public information signs before an exhibit with remains in. Personally, I think context is important - if you were to separate the remains from a display then some of the information and meaning would be lost
24. Not have them
25. Allow a quiet area for the viewing but also make it possible to avoid the exhibit. Show how the person would have looked and lived
26. Have information boards about the museums values and ethics regarding display of human remains so that the public know the museum is doing everything possible to be respectful
27. In which way gives the best depiction for these remains
28. It needs to be done respectfully, they possibly need to explain why they are being displayed and give people a connection to the remains
29. The remains should be positioned/displayed in a respectful manner, and permissions must be had from the deceased's kin/community/culture if possible.

30. As prior question. You can't appease everyone, put a warning up somewhere and let people get on with it.
31. Warning signs near cases. Low lighting inside case, burial-like display.
32. Bog bodies in national museum of Ireland are well displayed with the option not to or to see the bodies.
33. With the permission of the family if possible, and shown with dignity
34. I think as long as they are displayed in a conservative manner, i.e. no props, just remains with the story behind the person. That would be both sad and fascinating
35. Glass casing should always be encouraged. I think artificially creating unnatural situations with the remains should be frowned upon.
36. They should be totally off limits and in a sealed environment. Make sure they represent no biological risk and are purely for spectating. Make use of them with a guided tour or technology analysis (See Cave men for details)
37. One way would be to place the remains in a darkened display case with a sign that states that they are human remains, and then a button for the light. The light then turns on for approximately 30 seconds so that people can view the body. That way it is hidden from view from visitors that may be offended, it protects the body and any wrappings from light damage, and it's fun for kids to press the button
38. Give as much detail about the person in the display and how it helps us today in a positive way
39. with a trigger warning
40. Not make it seem so sinister

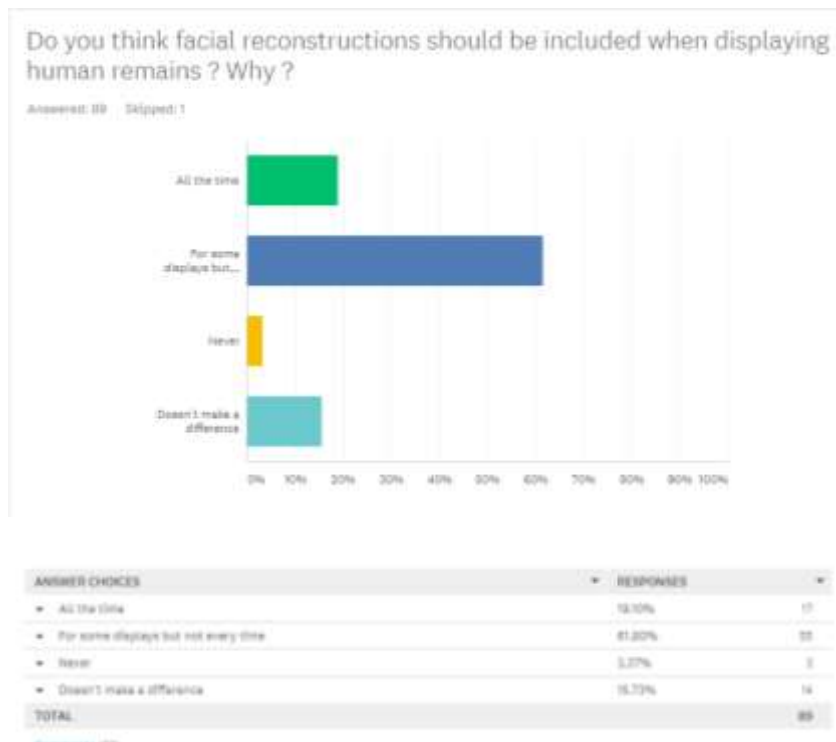
41. In a respectful and ethical manner, taking into consideration the origins of the remains and how this might be important to how they are presented. To make the public comfortable with them it could be worth having a warning that human remains are included in the collection and having a way for visitors to avoid them if they chose to
42. Be sensible about displaying the remains
43. I've never heard anyone complain about them and have spent a great deal of time in museums in various regions and even countries.
44. With appropriate explanations and forewarning about what will be seen
45. A clear explanation on why the remains are there and where they come from
46. Respectfully, in as close to their original context as possible. They shouldn't be glamorized in any way. Integrate them into exhibits in a way that feels organic, not forced.
47. It really depends on the circumstances but so long as it is in align with what the piece is trying to display, the era and the context then there should be no offence aside from people having to see a dead body.
48. Human remains should be displayed with as much visual access as possible. If the remains add to the exhibit, such as a demonstration of a particular practice or wound, then this should be visible. If the remains are being used to enhance a concept, then they should be included along with other non-remains examples . To make the public comfortable, the museum almost needs to dehumanise them. Whilst there is a place for facial reconstruction, it is not to accompany exhibits where remains are being used to demonstrate or display.
49. Be respectful

50. If they want to make the public more comfortable then put them in the same place with the same artefacts around them that were there when the remains was originally discovered, also maybe not reference them as remains but with names or he and she, having a picture of what they might have looked like as a person might be good too
51. Warning sign before viewing. Displayed alongside context of burial, information about who they were/why the museum has them
52. Perhaps allow them to be in a separate section rather than integrated, so visitors can choose to view remains if they feel comfortable.
53. Perhaps have warnings for those who do not wish to see it. Make sure the public understand the reasons behind presenting the remains. (It's not there purely for the "shock" factor)
54. With respect
55. They should include information about the remains and explain that it's natural.
56. Make sure they are presented in a respectful manner that honours the remains.
57. Glass casing to protect them from touch appropriate context how they were found and where and as much information relating to that person as possible however remains from tragedies such as ww2 victims should be laid to rest and no exhibits using remains should be used - items of clothing however would be interesting
58. Give people an option of seeing them instead of putting them on display in a general public area.
59. Display in appropriate scenes. Have easy to understand explanations.

60. Displayed alongside an explanation to why they are there
61. maybe keep them separate from other areas of the museum so that they do not have to be seen by those who do not want to see them
62. If there is going to be an exhibition with human remains in, there should be a warning before the public enter the area so that they can decide if they want to go in there.
63. Humanise then, make them relevant and explain why they are presented in the exhibition clearly.
64. No I don't think they should be displayed - with all the modern technology available I fail to see why life like models etc can't be displayed instead . Also CGI displays .
65. Designated area so people can chose to view or not to enter (not mixed in other exhibitions) also inform them display may not be suitable for all ages etc,
66. I never knew human remains were displayed in a museum. But I would expect a museum to display them in a respectful and reasonable way for the public not to feel uncomfortable.
67. Displayed classily maybe in glass containers
68. With given warning signs so if people don't want to see human remains they don't have to
69. Give an explanation or description. Shoe they've been treated with care
70. Should be displayed in a room behind a glass window. They could have more information on the human remains to make people more comfortable around them.
71. Lay out respectfully and with dignity

72. Treated them as people not objects. Not openly on display so restrict access/lighting/exposure in display
73. Ensure the remains are handled with care and ensure it is displayed with respect to minimise public discomfort.
74. Issue warnings before seeing them, e.g. around the corner; maybe so they have their own room? Also having them labelled and explanation of who they and how they died might help, but not having the remains split up either.
75. Make sure they are shown correctly and in a way that is respectful to the remains, and explain the reason as to why their shown
76. Not sure
77. As long as they are shown in respectful ways and signposted well enough, then I don't think there is that much of an issue. If there are clear signs noting that certain areas of a museum house human remains, then anyone with an aversion to it can steer clear of those sections
78. Respectfully and carefully;;; warn them so they can avoid if they wish
79. I think they should be depicted as accurately as possible to how they were originally found
80. Have a separate room that clearly outlines to the public what it consists of.

Q8



Comments –

1. Sometimes facial reconstruction is guess work like for noses and ears.
Always state that it's only reconstruction of what the person thinks.
2. Some need to show what a person looked like
3. It helps keep us connected
4. keeps it interesting
5. Beneficial with Neanderthals as determined anthropologically so can see what has been used. If there is no need then not necessarily
6. It's always interesting to see the face of someone who is no longer here.
especially if they died a long time ago so comparisons can be made.
7. I think for ancient remains, particularly those without written records, it's a way to make people connect with them and think about their lived experiences with an emotional connection

8. Don't guess. If you have enough of the body preserved, why do you need to guess what they look like? You don't. What value or benefit does it add to do so?
9. I think it's really cool to see facial reconstructions with remains
10. When it's relevant? Adds to the purpose of what they're there
11. If it's not necessary, it's a waste of resources.
12. Needs to be done well
13. If they do, cool , if they don't, cool. Both interest me, but if I'm told which is which it intrigues me more so.
14. It gives a better insight into the remains as they would be seen as people rather than things.
15. Still disrespectful
16. It's interesting to know and see!
17. I think that it makes the stories and history more real and relatable to have a face to put with it.
18. Personally, I find this really interesting because you get to be (pardon the cliché) face to face with the person. It makes them more human and allows you to understand/relate to them better than if it were just a skull. It puts a face to the person who would have used the objects and written the documents, making them more personable.
19. It helps to make the exhibit more real
20. You see the person
21. It helps people connect with the past

22. It would be more interesting to see what the people look like when they were alive, though I imagine it would be too expensive for every remain to have a reconstruction.
23. Reconstruction advances in technology as long as they are updated with breakthroughs then yes, but it does give the human element to the display and that makes you feel a connection
24. They can be helpful, but are a bit spooky too!
25. It doesn't look very realistic at the moment.
26. I'm amazed by how facial reconstructions are made and designed
27. I think facial reconstructions supplement remains well. Generally, the audience of people attending museums are knowledgeable enough to separate these two areas from each other in their minds.
28. I find it highly fascinating see how we have supposedly evolved over the thousands of years. It's freaking cool knowing how our ancient ancestors used to be.
29. It depends on the body and cost to the museum. If it is a mummified body or a bog body then there may be no need to do a facial reconstruction
30. To help us identify with the story being shown/ told
31. I think this should only be done when it is relevant to the specific display, specifically for remains of children members of the public could find it upsetting
32. It's nice to see what a person looked like while alive, but if they were unable to do so or could not afford to, I won't ignore the exhibit.
33. I can see how this could make some people uncomfortable as it puts a face to the remains in front of you, but if a full explanation is required then it is

needed. Myself personally would find this more interesting but I understand why it could make someone uncomfortable.

34. It depends on why you are displaying the remains in the first place - showcasing a grave? No necessary. A historical person? Yes.
35. Facial reconstructions take a lot of time and money and I believe for historical reference it should be there however to have them with every single one may cost too much and therefore it should remain limited to the pieces that hold the most contextual premise at the time.
36. Depending on the circumstance. Facial reconstruction is not appropriate, for example, when explaining battlefield wounds or trepanning.
37. As stated before it might make people more comfortable it also make them more human and real rather than just a faceless shape
38. If it adds to the display's goal.
39. Makes the remains come to life
40. It depends on the type of display. Sometimes it might be seen as disrespectful as it's not who that person was before death.
41. It's unnecessary sometimes but if it's an exhibit designed to build a narrative around the items on show it could be conducive to the visit.
42. Remains are one thing but seeing what the person would be good to see as people imagine them differently
43. I think it's nice to see a realistic image of something
44. It feels a bit more respectful if you have a facial reconstruction but I don't think it should be required
45. They help humanise the remains, which the public often view as just dry old dusty bones.

46. Makes the display / remains more easily understood and interesting to see how faces are different / have evolved ! Also less frightening for children to see a display of a human head/face as opposed to a skull .
47. When suitable and appropriate for the exhibition e.g. if painting/photo etc available the maybe not - ultimately only if needed for exhibition to be complete
48. I think it would interesting to see how the population has change over the decades.
49. It can be distressing and unnecessary
50. Sometimes it might be a bit too graphic for some
51. I think it becomes a more interesting experience if there is facial reconstruction when displaying the human remains
52. As ut is very interesting how they can tell what someone looked liked and makes the human remains more personal and would make people more respectful maybe
53. Some facial reconstruction is terrible and is more disturbing to look at than the remains. Also some people won't like the fact that they can now but a person to the remains, some will just see some bones or a mummy but the moment that the remains have a face it humanizes them and will upset them
54. It shows people that the remains were once alive making it more of a personal thing
55. I think that should come with what the display is trying to portray - if the aim is to make you aware of how people looked at the time then sure go for it, but if the importance is, for example, on the shrouds or sarcophagi then I don't think facial reconstruction is necessary

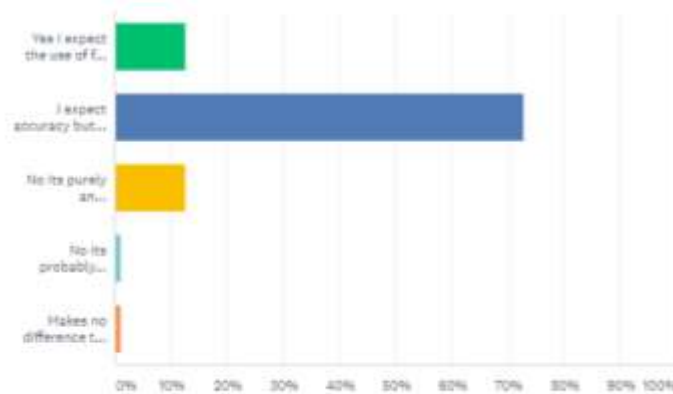
56. Because they aren't just faceless bodies they were people like you or I and they deserve respect

57. Brings a human element to the whole thing

Q9

Do you expect a reconstruction to be completely accurate ?

Answered: 88 Skipped: 2



ANSWER CHOICES	RESPONSES
• Yes I expect the use of full scientific techniques to have complete accuracy to date	12.50% 11
• I expect accuracy but accept it might not be right	72.73% 64
• No its purely an interpretation	12.50% 11
• No its probably completely wrong	1.14% 1
• Makes no difference to me	1.14% 1
TOTAL	88

[Comments \(10\)](#)

Comments –

1. It's disrespectful

2. I would like to think that the reconstructions are completely accurate, but I understand that techniques change and this influences the way a reconstruction is built and therefore the final product. For example the cheddar man, whose face changed dramatically when they used DNA analysis to determine his heritage. So while I expect them to be accurate with the techniques at the time, it also wouldn't surprise me if they turned out to be wrong.
3. Tech changes, understanding changes, but as said prior needs to be updated regularly
4. Interpretation based on evidence but has artistic licence.
5. Who are we to know what a person really looked like, who may have lived many years ago
6. It's often dependent on the museum. I hold national museums to a higher standard than local ones, but generally think that full scientific procedures help greatly when discussing the taste of the exhibits.
7. Nothing is perfect. As long as a decent attempt was made, what's the harm? Acknowledge that it's not perfect and you're fine.
8. I expect that a reconstruction should be made to the best ability of the people making it but understand that it cannot be 100% accurate and do not expect it to be so, I understand that there are too many variables to take in to account
9. We could never know for certain, unless we took a photograph of them.
Reconstruction is a mixture of science and artistic license.
10. I don't expect reconstruction

Q10

In your opinion should more effort and research be put into facial reconstructions for the usage in museums and displaying human remains and how much importance should be placed on these reconstructions ?

Answered: 78 Skipped: 12

1. Not sure. Maybe.
2. I'm not sure it's on the top of a list I have. Facial recognition needs to be more advanced for forensic identification
3. I find them extremely fascinating, but can see that they may not have a huge scientific importance. However because they're fascinating I think they could be useful in bringing people to museums and have importance in generating revenue for museums and research.
4. It seems irrelevant what the person looked like. I'd rather focus on their importance in history
5. not loads but a bit
6. No importance in the structure, as purely to make a display more 'alive'. So Jo more research either
7. Yes. I think it's important that the remains be given a face. It makes the connection deeper. It makes me feel like care and consideration were taken, that the remains are being treated like someone who was once alive and mattered, not just some bones to be exploited.
8. No. No importance. Like I said, no need to guess how bodies may have looked in life - what benefit do you gain from this?
9. Yes

10. I think it brings another level of interest and a way to connect with the exhibits. I would definitely be more interested in a display if their face was rendered
11. I think they're interesting, and when dealing with displays that deal with human tragedy, giving people back some of that dignity could be monumental in cultural healing. So, some effort
12. Not really
13. It depends on what you intend to display. I'd say one would have to judge it on a case-by-case basis. If it is deemed necessary for the display to have it for the sake of education, then by all means. If it's not, then it's a waste of resources.
14. Yes I agree
15. I don't know that much about it but I don't think it's that important. To me it's purely a visual object in a museum to make the exhibition look more relatable
16. Facial reconstruction is not essential for the exhibition of human remains although it does provide some visual assistance. What needs to be remembered is that facial reconstruction are based on modern human anatomy and therefore may not accurately represent the faces of the people in the past.
17. Education is always going to expand as we become more knowledgeable on a subject, however, I do not see an issue with the way they perform facial reconstructions now. I think it's incredible some of the work people can do to make someone look human again.

18. It's a case by case situation. Why are we doing it? Who to? Scientific importance? Any more questions to get an answer per case.
19. More effort and research should be put into facial reconstructions as it allows us to give the past a face.
20. Yes, but don't use an individual use a wax figure
21. I believe it's important but understand there could be only so much we are able to do and produce
22. Yes, it's important to know how people looked and the history of each of them.
23. Yes I think more effort and research should be put into facial reconstructions. I would put quite a bit of importance on these reconstructions but I wouldn't put it above other artefacts found.
24. Whilst I love the idea of facial reconstruction and "seeing" the person I'm reading about on the signs, I feel like a reconstruction should be used where it would be beneficial. If the public can learn something from it, for example if their ethnic origin is unexpected or if they have features that make them interesting archaeologically then yes. Otherwise, I think it should be at the discretion of whether the exhibition will be improved by the added context or where the person could be made more relatable to the public. I don't think it should be done all the time particularly if the time and money could be better spent on other areas of the exhibit.
25. Facial reconstruction is helpful but museums are under financial pressure so the research might divert funds from other work
26. Yes there should be more research but reconstructions in museums can afford to be more artistic as the audience is not 'academic'

27. Science and tech moves on progress will be made for more accurate reconstruction
28. I think there should be, within the means of the museum
29. Yes, it should be essential for reconstructions to look as accurate as possible, though I wouldn't say the reconstructions would be the most important as the history and data should be the priority in a display.
30. Depends on current trends in research and also what the 'customer' wants. As museums are a business so it all depends on what people want.
31. They should be based on research, but often time and money is better spent elsewhere!
32. Perhaps but it is not the most important or interesting thing about an exhibition.
33. I think that it is important to be able to reconstruct faces, as it makes a better connection with the body and shows that it was actually a real person just like us
34. I think it's really interesting to see how early Man and woman lived. It amazes me how we have developed over time. We are interested in seeing dinosaurs so why not people too
35. Facial reconstructions are a nice extra, but they shouldn't be excessively funded at the expense of other more fundamental areas.
36. It would be cool to see so. (See Egyptian Kings x ray photo analysis for point of view)
37. Again it comes down to the museum budget. I do personally believe that the facial reconstruction should be accurate and not just an interpretation but I imagine this is an expensive process

38. These reconstruction technique solve crimes and also give us an idea of trends in health and physic
39. Yes
40. I think that while they are useful in some areas, they should only be used when relevant to a specific display. I think the field has some way to go and has space for improvement but it is not a top priority. The use of this reconstructions can be useful in certain settings as a teaching too, but warning should be given to the public that they are not 100% accurate
41. Yes I find it interesting to see what a person may have looked like
42. It would be nice but again, not seeing one won't upset me. Museums have tight budgets and losing a display to have it reconstructed can be costly and time consuming.
43. I think it can help educate people as long as it's done respectfully and appropriately. I think it's important if relevant to the display
44. I think facial reconstruction is important as these remains were once a living human being and acknowledging this by showing what they would have looked like shows them respect
45. Yes, but not to the detriment of the message being conveyed. Don't focus all your time, energy and money on reconstruction if it isn't going to add a lot to the message being conveyed by the exhibit.

46. I believe there should be more emphasis because it would help us understand the differences and similarities between people from the past to us in the present
47. Facial reconstructions are useful for putting faces on remains, and allowing a human connection, but reminding the public that the bones in front of them were people can detract from the point the remains are trying to make. Effort should be made to improve the accuracy of such reconstructions, and it is important, particularly with some exhibitions, to aiding the public's engagement with the remains. However, it needs to be appropriate.
48. No
49. Maybe not put loads of importance on them but more effort should definitely be put into making them
50. I feel like it should be done correctly and respectfully and in a way it shouldn't frighten people
51. Not the most important thing museums could be doing? Money better spent elsewhere
52. Personally I would find it very fascinating and informative, and an amazing use of technologies and likewise, I think it's relevant and important to learn about our past and where we've come from and how we've evolved.
53. Facial reconstruction may be used in the future.
54. The better the reconstruction the better the display
55. It would be better if they could create more accurate results but they would never be exactly right which may result in looking disrespectful.

56. More effort should be made in creating an accurate display of history and we should use all the technology we have available to us, facial reconstruction is one of the areas that we have developed and should be used to increase footfall and satisfaction within museums.
57. Yes I don't expect every exhibit to have one but a few per museum would be nice
58. Completely depends upon the exhibition
59. I don't know enough to comment
60. As much effort as possible should be put into facial reconstructions, including the latest DNA research methods. However, I am aware that not every museum will have a large budget to cater for this.
61. Reconstructions perhaps should be done for a simple imagery exercise, other than that I feel that they do not have much importance due to their often inaccuracy.
62. Agreed - facial reconstructions provide an amazing insight into how our ancestors looked and bring the past to life and provide a greater connection with that person .
63. Reconstruction should be as accurate as possible and research should be undertaken to produce the best reconstruction possible, however not much importance should be put on them within a museum setting as they will never be 100% accurate
64. Yes I think so because I think it's important that our history is accurate as possible
65. If the facial reconstructions give more evidence to what the museum is suggesting, then maybe more effort should be put in

66. No
67. Yes they should try to get the facial reconstruction as close as possible to the actual person. A lot of importance should be placed on this.
68. In some cases but not all
69. Yes
70. Enough work goes into this and has always displayed amazing results.
71. Yes, they are an important aspect of history and thus must be scientifically depicted rather than just artistic or rough work to portray the correct historical information
72. I believe that there should be more and on a more diverse range of human remains but also higher quality too. However I do not think every human remain demands a facial reconstruction.
73. There should be effort into the reconstruction, but most of it should go to understanding who the individual was and why they were buried in that particular area
74. Not sure
75. Again I think this entirely depends on what the display's aims are - if facial reconstruction is the aim then yes, more effort and research should be applied to those displays.
76. Yes, if you are going to do reconstruction then it should be done properly and to the best it can be done
77. Yes, there should be more effort put in as these were people, not just some bones found dumped some where
78. I don't know.