Material Aspects of Authenticity: Curatorial and public engagement with reproductions at the Victoria and Albert Museum London

Bowsher, Phoebe

Universiteit Leiden

Declaration of originality

By submitting this test, I certify that:

✓ this work has been drafted by me without any assistance from others (not applicable to group work);

✓ I have not discussed, shared, or copied assessment work from/with other students;

✓ I have not used sources that are not explicitly allowed by the course instructors and I have clearly referenced all sources (either from a printed source, internet or any other source) used in the work in accordance with the course requirements and the indications of the course instructors;

✓ this work has not been previously used for other courses in the program, unless explicitly allowed by the instructors.

I understand that any false claim in respect of this work will result in disciplinary action in accordance with university regulations and the program regulations, and that any false claim will be reported to the Board of Examiners. Disciplinary measures can result in exclusion from the course and/or the program, and in a permanent endorsement on my diploma.

I understand that my work may be checked for plagiarism, by the use of plagiarism detection software as well as through other measures taken by the university to prevent and check on fraud and plagiarism.

I understand and endorse the significance of the prevention of fraud and I acknowledge that in case of (gross) fraud the program could declare the exam invalid, which may have consequences for all students.

Date: 13/06/2021

Name: Phoebe Ellen Bowsher

Signature: 

Material Aspects of Authenticity: Curatorial and public engagement with reproductions at the Victoria and Albert Museum London

Phoebe Ellen Bowsher

Student no. 2786826

s2786826@vuw.leidenuniv.nl

First reader/Supervisor: Arthur Crucq

Arts and Culture: Museums and Collections

2020-21

Abstract

This thesis concerns the curatorial practices and public engagement surrounding two reproductions from the Victoria and Albert Museum collection in London. The cast copy of Michelangelo's *David* (1856) and the various examples of the Temperance Basin held within the Cast Court galleries will underscore how material interacts with the concept of authenticity in the museum. Studying these reproductions involves examining their materials and associations alongside their display as individual artworks. Further assessment by modes of digital reproduction used to replicate the case studies in scans and 3D models question the basis of materiality in the 21st century museum. In an attempt to understand the Western European museums approach reproductions over time, this thesis examines certain material aspects of authenticity that aid display, conservation, and accessibility for cast collections.

Contents

Acknowledgements

I am indebted to my thesis supervisor Dr Arthur Crucq for his patience and valuable advice given throughout this project, both of which I could not have done without.

I would also like to thank Angus Patterson who granted access to his research articles and interviews on electrotyping at the V&A.

Finally, thank you to my family. Without the countless museum visits with my mother and the endless support from my father, I would not have been so inspired or able to write this thesis.

Introduction

i. The Victoria and Albert Museum: Past and Present

The Victoria and Albert Museum in London, formerly the South Kensington Museum, was established in 1857.[1] Its conception was a direct result of the Great Exhibition in 1851,[2] which took place in London's Hyde Park. The Great Exhibition was also the foundation for collecting reproductions,[3] most notably plaster casts, which were accumulated across the 19th century. The history of the Victoria and Albert Museum and the history of reproductions are closely aligned, particularly since it was established as a museum open to displaying reproductions instead of restricting the collection to original art objects.[4] The choice of the museum for this thesis was in many ways a simple one, given the Victoria and Albert Museum's emphasis on design and manufacturing as well as its vast collection of reproductions, and the division of departments largely by material. Today the latter is almost unique for a national institution where chronology is the dominant mode of display, utilising features such as period rooms to reconstruct a specific object context. Instead the Victoria and Albert Museum focuses more explicitly on art, design, and their respective materials. The effect of this on the visitor experience with objects in the museum collection will be examined in detail as this research seeks to examine the relationships between curatorial practice, public engagement and reproductions.

The founder of the Victoria and Albert Museum Sir Henry Cole viewed the museum as a site for social improvement,[5] and so by expanding the collection sought to expand the minds of the general public in the 19th century. Cole's focus on educating the working classes led to the Victoria and Albert Museum being the first public building to open galleries in the evening with gas lighting,[6] allowing people to visit after work hours. This focus extended itself to the cast collection, where reproductions were considered to be principally educational by the establishment. The Victoria and Albert Museum is the archetype of Victorian public museums that characterised 19th century England in a national pedagogical effort.[7] While these values were a cultural asset to the working classes the public museum

[1] The Victoria and Albert Museum, 'Building the Museum'.
[2] Ibid.
[3] Ibid.
[4] Henning, 'With and Without Walls', 580.
[5] Alexander, *Museum Masters*, 163.
[6] Ibid, 162.
[7] Hill, 'The Public Museum in the Nineteenth Century', 46.

acted as a voice of the elites to dictate culture for the masses.[8] This is encapsulated in the words of the John Charles Robinson, the Victoria and Albert Museum's curator of sculpture in the 19th century, who professed the belief "that you should only show objects in good taste to the working classes, and keep all that is bad carefully away from them".[9] Clearly the leaders of institutions, particularly of the Victoria and Albert with its national status, had specific ideals about the distribution of knowledge. As will be demonstrated in this thesis, the presence of reproductions in the museum is challenged by both scholars and the general public. In the 19th century the Victoria and Albert Museum housed its own cast workshop as well as a circulation department in charge of loaning works across the country,[10] and so from the time of the Victoria and Albert Museum's conception it is clear that reproductions in the museum had a public objective. While the popularity of plaster casts has seen steady rises and falls since the installation of the first Architectural Courts in 1873,[11] new modes of reproduction have since been introduced that complicate the perception of authentic curation and engagement with objects. In this context, referring to 'engagement' means both the participation of audiences interacting with museum objects as well as the curatorial commitment to display and visitor experience, including conservation practices. In the present day, the Victoria and Albert Museum's Cast Courts and vast collection of reproductions allow for a study of selected objects to deepen our understanding of engagement with reproductions in the museum.

This history of the Victoria and Albert Museum's cast collection is drawn upon today in an effort to explore the role of the museum within the history of copying.[12] The ongoing relationship between the Victoria and Albert Museum's cast collection and its display is the foundation for this thesis, which will examine public perceptions of reproductions from the collection in multiple instances. To a certain extent, the Victoria and Albert Museum has begun to explore these connections. For example, the museum founded the research project 'ReACH' (Reproductions of Art and Cultural Heritage) in 2017 on the anniversary of Cole's 1867 document entitled 'Convention for Promoting Universally Reproductions of Works of Art for the Benefit of Museums of all Countries'.[13] Drawing upon their own history to invoke the relevance of reproductions in the museum for the 21st century, the Victoria and Albert

[8] Hill, 'The Public Museum in the Nineteenth Century', 36-7.
[9] Patterson, 'The Perfect Marriage of Art and Industry', 63.
[10] The Victoria and Albert Museum, 'Plaster casts – research resources in the V&A archive', 5.
[11] The Victoria and Albert Museum, 'The History of the Cast Courts'.
[12] Knott, 'Adventures in 3D Scanning: A Cast Court for the Digital Age'.
[13] The Victoria and Albert Museum. 'ReACH (Reproduction of Art and Cultural Heritage)'.

Museum suggests the cultural value of sharing copies in a heritage landscape threatened by terrorism and climate change as well as the demanding expectations following new digital technologies.[14] Evoking the past acknowledges that these issues are not particularly new as well as recognising the pressing need to address them in the space of the present day museum.

Attempts to reconcile the collection today with its history inside the museum led to the initial interest in this research. The Cast Courts at the Victoria and Albert Museum represent a negotiation of the authentic with the material in a historic environment. The interaction with the monumental reproductions that are housed in the gallery ranges from the physical, such as being able to sit inside a cast to scale of Trajan's Column, to the aesthetic, such as the study of relief figures and statues at eye level in detail. Senior curator at the Victoria and Albert Museum Angus Patterson revealed that when visiting the Cast Courts "people were amazed but always a bit disappointed to learn they were looking at a copy".[15] Such remarks call into question the extent to which assumptions about the role of authenticity in the museum affect the public's engagement with reproductions. This is exemplified further with a study referred to by Brendan Cormier at the Victoria and Albert Museum, which showed that given the choice between the ashes of the burned Mona Lisa or a perfect copy of the painting that 80% of people would rather view the ashes.[16] Public bias towards the original reveals the systemic value of authenticity regarding artworks, which has been perpetuated by the museum. Furthermore, it signifies how materials considered to be authentic contribute to the visual appreciation of an artwork, even when the piece is no longer in its original state. Perceiving these objects by assessing their material properties seems to change how an audience responds to a reproduction, leading us to a consider the material aspects of authenticity in the Victoria and Albert Museum collection.

[14] Cormier, *Copy Culture*, 23.
[15] Valentine, 'V&A Reveals Renovated Cast Courts'.
[16] Cormier, 'The new power of copies'.

ii. Western Frameworks of the Museum

To successfully seek an answer to this research question, the study is limited to the Victoria and Albert Museum collection and therefore to a Western perspective. This allows for an understanding of the role authenticity plays in the Western European museum as well as confronting the concept of authenticity in regard to the reproduction.

The conflation of reproduction, copy, imitation, facsimile, and replication amongst many others in art historic literature leads to a struggle for a singular meaning concerning objects in the museum. Reproduction is the term selected to encompass the objects discussed throughout this thesis, which by one definition is "the action or process of recreating or bringing forth an idea, memory, or other mental phenomenon in the mind again".[17] This reflects the Platonian theory of art where only thought is original and objects in existence are all reproductions of the mind.[18] The framework of this definition is rooted in Western philosophical thought and therefore useful to research surrounding a Western museum. A reproduction is also defined as "production in the form of a copy".[19] This is suggestive of the more industrial links between Western art and the museum in the 19th century that will be explored in chapter two as well as echoing Walter Benjamin's essay 'The Work of Art in the Age of Mechanical Reproduction',[20] which will be referenced throughout the final chapter of this thesis. By linking the term "copy" to its original definition of "copious",[21] Latour and Lowe suggest that an abundance of copies reflects the success of an artwork and that copying can contribute to the concept of originality.[22] Objects in the Cast Courts at the Victoria and Albert Museum can therefore be considered copies in this study as few were made to enhance the mastery of an original elsewhere, as will be examined in chapter one.

The dichotomy of 'copy' and 'original' is perpetuated by the Western museum, conceived as sites of authenticity. While the canon of Western art took shape long before the European invention of the public museum, national institutions such as the Victoria and Albert Museum collect and display original artworks that are an extension of Western history and value. The prominence of the Cast Courts alongside galleries of original objects exemplifies museum practice as authentication,[23] where the Victoria and Albert Museum is

[17] Oxford English Dictionary, 'Reproduction'.
[18] Close, 'Commonplace Theories of Art and Nature in Classical Antiquity and in the Renaissance', 483.
[19] Oxford English Dictionary, 'Reproduction'.
[20] Benjamin, 'The Work of Art in the Age of Mechanical Reproduction'.
[21] Oxford English Dictionary, 'Copy'.
[22] Latour and Lowe, 'The Migration of the Aura', 278-9.
[23] Varutti, ''Authentic reproductions', 43.

privileged to communicate a variety of values about art to a visiting public. Reisinger and Steiner suggest a general public as one without standards to judge authenticity and therefore are not only prepared to accept the museums perspective but are reliant upon it.[24] The validation provided by the Victoria and Albert Museum reinforces the position of reproductions in the art historical canon and welcomes visitors to engage with its display of casts and copies.

With the development of material cultural studies in the last decade or so, the links between the nature of authenticity and the value of materials have been informed by their relationship with people and places in history.[25] Engagement with art in European museums has been made more accessible by opening up this social history of objects, including reproductions. This approach references the notion and practice of authenticity outside of a Western cultural perspective, for example in Japanese cultural heritage where authenticity has a different value system than in the West. The Ise Jingu Shrine in Japan is rebuilt every twenty years as a symbol of the nation's continuity by preserving the knowledge and skills used to construct the temple.[26] Each time the harvest of new materials is rededicated to become sacred for the community.[27] The emphasis on materiality is aligned with the authentic design and manufacture of the object. While records suggest the structure is around 2000 years old,[28] for Western audiences it may only be considered twenty years old in terms of the physical material. The destruction of an 'original' building or piece of architecture as an act of preservation would be unthinkable in London. Instead, Western museums such as the Victoria and Albert use constant conservation and controlled conditions to preserve the material of an art object exactly. Within today's scholarship concerning material culture, Brendan Cormier uses the term "cultural perpetuation" to refer to the preservation of heritage including copies at the Victoria and Albert Museum.[29] In both instances of the Western museum and the Ise Jingu Shrine, a practice of cultural perpetuation is enacted under differing cultural priorities.

A further Western framework to be acknowledged is the notion of the individual artist or genius, relevant to the development of chapter one. This has a longstanding history in

[24] Reisinger and Steiner, 'Reconceptualizing object authenticity', 71-72.
[25] Foster and Curtis, 'The thing about replicas', 137.
[26] Bock, 'The Rites of Renewal at Ise', 55.
[27] Ibid, 68.
[28] Ibid, 56.
[29] Cormier, 'The new power of copies'.

Western art that to a certain extent has been shaped throughout recent history by the art market as a tool to classify value.[30] Although the notion of genius precedes the museum, in the same period that the Victoria and Albert Museum was being developed as an institution the romanticisation of the genius was being built upon by modernist art circles across Europe. Cottell writes how artists integral to the Western canon such as Picasso represent the peak of a pyramid and not an island,[31] although art history often seems to suggest the latter. Studying reproductions of artworks draws attention to how objects are often a product of collaboration and to continue Cottell's metaphor, part of the pyramid that constructs movements in art history. In the context of the museum, objects are often positioned on an island so that visitors can make sense of a display within a simplified history. The ways in which reproductions at the Victoria and Albert Museum are challenging this framework in both the physical and digital construction of the Cast Courts means that traditional notions of authenticity are being reconfigured for the 21st century museum.

[30] Cottell, 'The cult of the individual', 87.
[31] Ibid.

iii. Authenticity and Materiality: Outlining the Research Content

For this research, the term authenticity will be a continual negotiation of meaning linked to the capacity of materials in the museum. To evaluate how the public engages with reproductions, the concept of authenticity acts to underline the multiple lives of a copy and an original. It is by no means a stable or fixed concept,[32] but one that must be employed for context in one of the largest European collections of reproductions at the Victoria and Albert Museum. It is important to understand these theories as well as being aware of the limited influence they may exert over a visiting public and their engagement with museum collections. As outlined by Reisinger and Steiner, there are three main frameworks that have emerged in the field of cultural tourism to discuss authenticity and these are named modernist, constructivist and post-modernist.[33] Those employing the modernist theory suggest authenticity is underpinned by a cultural reality represented by material objects such as food or dress.[34] On the other hand, the constructivist theory suggests that authenticity relies on social factors and therefore is alternatively subjective.[35] Lastly, the post-modern theory deems authenticity to be irrelevant or simply a marketing device to tourists in the modern museum.[36] Together these three theories represent the complexity of approaching authenticity in any single way, and Reisinger and Steiner argue that the conflict between these theories is what makes the term authenticity too unstable to be considered a useful concept in academic study.[37] Furthermore, in practice the goals of authenticity have been described as both unattainable and conflicting by Lowenthal as "faithfulness to original objects and materials, to original contexts, or to original aims" do not translate into the working space of a museum.[38] For example in the case of object materiality, allowing a cultural artefact to decay for the sake of authenticity opposes curatorial practices undertaken in the museum as well as being entangled in the debates surrounding conservation. Reisinger and Steiner define the museum as a host and validator of objects including reproductions where visitors are willing to embrace the authentic standards of art set by the cultural institution.[39] Overall, this outlines the authority of the museum which has shaped the history of the reproduction as well as with regard to how reproductions are then put on public display. This research is most aligned with

[32] Reisinger and Steiner, 'Reconceptualizing object authenticity', 81.
[33] Ibid, 68.
[34] Ibid, 66.
[35] Ibid.
[36] Ibid.
[37] Ibid.
[38] Lowenthal, 'Authenticity?', 186.
[39] Reisinger and Steiner, 'Reconceptualizing object authenticity', 71-72.

the constructivist theory regarding authenticity, where aspects of an object or artefact are considered an ongoing negotiation into cultural heritage.[40] When looking at the material of a reproduction, certain properties are fixed yet still able to be manipulated, for example with objects that imitate an original or recreate and adapt from an existing piece. As will be seen in chapter one, associations that people have with materials such as marble and plaster are likewise unfixed in history, or arguably fixed to certain period in time. Therefore, the material properties of objects provide physical evidence to access the fluidity of authenticity in the fixed art objects themselves. Essentially, the use of the term authenticity throughout this research will be a negotiation. As described by Foster: "in practice, replicas often 'test' our tolerance of the application of theoretically aware approaches to material culture".[41] This will be kept in mind throughout this thesis, where curatorial practice and public engagement do not follow a single approach to museum objects.

Outlining the concept of authenticity brings us to the research focus on materiality. According to Foster and Harris, the relationship between authenticity and materiality is challenging as reproductions can be imagined as "something that is inauthentic because authenticity is defined as a property that is bound up with the intrinsic fabric of the thing".[42] This leads us to reconsider how reproduction materials were authentic to a certain time period or method of reproduction in museum history, as will be explored further in the first chapter with regard to plaster. In chapter one Michelangelo's *David* (1501-4) and its plaster cast reproduction in the Victoria and Albert Museum by Clemente Papi (1856) will be examined by the visual similarities of their materials in collision with knowledge making in the museum. The statue of *David* was selected because of its central display at the museum in London alongside the international renown of the original sculpture. As an archetypal Renaissance artwork, its value is intertwined with both its material and method of creation by Michelangelo. Examining this alongside the perception of its copy is an opportunity to see how the Western cultural policy of making art accessible through the democratisation and distribution of culture is challenged by its own museum objects.[43]

In chapter two the Temperance Basin will be investigated as a second case study, which exists in multiple incarnations in the Victoria and Albert collection. A contrast to the previous case study, these objects have been selected because of their variety of materials and

[40] Reisinger and Steiner, 'Reconceptualizing object authenticity', 66.
[41] Foster and Curtis, 'The Thing about Replicas', 122.
[42] Ibid, 127.
[43] Hylland, 'Even better than the real thing?', 75.

historic modes of production that are visually striking on public display. From the earlier definitions of terms in this introduction, they can be considered reproductions of one design linked to respective periods of history and industrialisation. The basins provide evidence of copies made out of admiration, experimentation, and even for economic advancement, suggesting broader reasons for the creation of reproductions within art and museum history. Overall this chapter will be an exploration of how new technologies and museum history interact with art objects that were created to be reproduced. In comparison with each other, the choice of case studies represent two different kinds of reproductions at the Victoria and Albert Museum. Those for imitation such as Michelangelo's *David* refer to a cast functioning as one copy of an artwork, whereas the Temperance Basins are examples of the material variety amongst both industrial and crafted reproductions.

Finally, chapter three will explore how modern technologies such as digital scanning and 3D printing have been employed as new modes of investigation and recreation for both the cast of *David* and the Temperance Basin. This chapter will highlight the complexities regarding curatorial practice in the form of conservation and display as well as public engagement, for example the digital handling of object reproductions. Accessibility, agency and digital authenticity will be assessed alongside the online biographies of the objects, made possible by the newly renovated online archives for the Victoria and Albert collection. The supposed immateriality of the digital realm will be called in to question when examining modern issues such as digital preservation in the Victoria and Albert Museum.

For this research materials are evident in the Victoria and Albert Museum collection as plaster, marble, pewter, copper, earthenware, and the representations formed by digital technology. The latter example is embedded in the mysticism surrounding new media as it arguably exists outside of material constraints or is even "immaterial".[44] Whilst this complicates prevailing notions of materiality, it does so to broaden the scope of this thesis toward the present day workings of the Victoria and Albert collection. These materials form the foundation for the case studies and allow for further examination of perceiving aspects of authenticity in reproductions. By studying the position of reproductions on display in the gallery as well as their digital manifestations, this research will use visual analysis to determine the impact of material on public engagement with the objects. In combination with this, secondary literature will be employed to discover explicit associations with materials

[44] Van den Boomen, Lammes, Lehmann, Raessens and Schäfer, *Digital Material*, 8.

alongside blog posts and articles from the Victoria and Albert Museum team outlining curatorial practices. Overall the aim is to assess the impact reproduction materials have had on public display and museum practice throughout their history at the Victoria and Albert Museum.

Materials of Imitation: Michelangelo's *David* and its cast copy in London

This chapter seeks to explore how materials and knowledge making impact the public perception of Michelangelo's *David* (1501-1504) and the plaster cast reproduction by Clemente Papi (1856) in the Victoria and Albert Museum.[45] Created just over 350 years apart from each other, the original and its copy are similar in form but differ in material, context, and conservation.

From the first *Wunderkammer* to the present-day museum, the development of cultural institutions has been crucial in the creation of knowledge surrounding art, nature, and science.[46] As a national museum of art and design, the Victoria and Albert Museum has a role in communicating knowledge about its collections to the public as well as engaging visitors through its displays. This has an impact on the public perception of the cast copy of *David* in relation to its original. Investigating the ways in which the Victoria and Albert Museum shape knowledge around reproductions is crucial to examining this first case study, where to a certain extent the plaster imitation of marble is visually misleading. The context of the Cast Court galleries in London provide a different insight to objecthood than the position of the original sculpture of *David* in Florence, where it was designed to be outside and therefore not regarded as a museum object. Furthermore, by assessing attributions to marble and plaster first and foremost as materials, physical evidence will support the public perceptions and associations with sculpture in the museum. The relationship between marble and plaster in combination with the concept of authenticity will assist the exploration of this renowned sculptural form. Studying the manufacture of both *David*'s for their occupation of different public contexts will result in conclusions about the significant roles of material and knowledge for engagement with the artwork.

[45] Papi, "David".
[46] Kahn, 'Locked down not locked out'.

i. Knowledge Production and Material Agency

To this day Michelangelo's *David* remains one of the most famous statues in Western art, sculpted between 1501 and 1504 in Florence.[47] One of its only official reproductions exists in plaster at the Victoria and Albert Museum collection in London, today presiding over the Weston Cast Court (*fig. 1*). Considering the sculpture as an official reproduction of what is regarded as a Western masterpiece has intriguing connotations of an original copy, and there are many ways in which originality and officiality can be aligned to authenticate the reproduction of *David* in the museum. The cast of *David* in the Victoria and Albert Museum was commissioned by the Granduke of Tuscany as a diplomatic gift for Queen Victoria and therefore had an 'official' conception.[48] The mould for the statue was made by Clemente Papi (1803-1875) in 1847 and produced a first full plaster cast now housed in the Gipsoteca Istituto Statale d'Arte in Florence,[49] a second destined for the Victoria and Albert Museum and a third in bronze for Piazzale Michelangelo.[50] Often it is historically significant if a reproduction is the first and only copy to be made from an original sculpture,[51] and even more so if it outlasts the original piece. However, the Victoria and Albert Museum's *David* is one of the three full casts from the mould of the original sculpture and all subsequent casts have been taken from these three 'original' copies.[52] To compound its uniqueness as a museum copy, many 'firsts' are ascribed to the copy of *David* in London. An example of this includes noting the sculptures move to the Victoria and Albert Museum in 1857 as the first reproduction of *David* to cross Florentine borders.[53] If, as Eileen Hooper-Greenhill suggests, the identity and meaning of material things is subject to a framework of a place then the meaning of *David* changed when it became a reproduction in London as opposed to Florence.[54] In the Victoria and Albert Museum it adopted the significance of 19th century cultural tourism and the notion of taking The Grand Tour in a single city,[55] surrounded by other European reproductions in the museum. The copy's initial integration into the Cast Courts is utilised in the present day, where the space is curated to recall the identity of this object in its 'original' history. In the most recent renovation of the gallery the walls were

[47] Papi, "David".
[48] The Victoria and Albert Museum, 'The Story of Michelangelo's David'.
[49] Rizzo, 'Guest Post: Part 1 – Clemente Papi'.
[50] Ibid.
[51] Ibid.
[52] Falletti, 'Guest Post: The restoration of Michelangelo's David and the interventions by Clemente Papi'.
[53] Rizzo, 'Guest Post: Part 2 – David's journey from Florence to V&A'.
[54] Hooper-Greenhill, 'A useful past for the present', 194.
[55] Wainwright, 'V&A's cast courts of beautiful fakes reopen after three years'.

restored to their original colours of maroon and olive green,[56] re-establishing the period aspects of the room to configure the authenticity of the reproductions on display. This kind of knowledge manufacturing in the museum is essential to understanding the presentation of plaster casts. With *David*, the visual subtleties between marble and plaster mean that an audience rely on previous knowledge of the famous sculpture as well as information offered by the museum. This is presented in sources that have been drawn upon for this study such as the 'History of the Cast Courts' literature produced as part of the 'Designing the V&A' series in 2017-2018.[57] However, the physical evidence of knowledge production in the space of the gallery is significant to contextualise the plaster copy of *David*. Hooper-Greenhill writes how over time the curator has become increasingly decentred in the execution of exhibitions and gallery displays.[58] As the divisions established at the birth of the public museum between visitor and curator slowly collapse,[59] knowledge is produced for the collection in different ways. For example, the Cast Courts encourage movement around the sculptures placed throughout the gallery as well as allowing proximity to the reproductions that would not be possible with their original counterparts. The gallery's distribution of sculptures resembles an art store, perhaps to position the visitor more informally amongst the reproductions. The familiar form of the objects is an addition to this experience, and viewing the copy of *David* from multiple angles allows for personalised visual examinations of the object.

In the discussion of knowledge production, this agency of the visitor is reflected in the materials of reproductions. As will be discussed further throughout this chapter, the marble and plaster that are associated with the original and copy of *David* are influential to engagement with the object. The agency of materials is defined for these purposes as a powerful force in combination with knowledge, where concepts of value are stabilised by the external factors of curation and predetermined associations. Alike to authenticity, these concepts are not fixed but to a certain extent allow the visual dissection and understanding of a reproduction such as that of *David* in the museum. From this, we can begin to evaluate how the history of an object affects its supposed agency. Understanding the movement of the plaster cast sculpture through various contexts is crucial for focus on the reproduction in public spaces, as well as its impact on an audience and its current position in the Victoria and Albert Museum.

---

[56] The Victoria and Albert Museum, 'History of the Cast Courts'.
[57] Ibid.
[58] Hooper-Greenhill, 210.
[59] Ibid, 200.

Positioning *David* for public display has been debated since the conception of the original sculpture. It was originally commissioned to sit 80 meters high on the Florence cathedral but its impressive scale demanded a more stable and prominent location in the city.[60] As will become clear, the weight of the marble was to be an ongoing issue with both mobility and conservation. In regards to the former, it took four days and forty men to move the original sculpture just half a mile to the Piazza della Signoria.[61] Throughout the years its position on the Piazza was monitored by levels of deterioration; from rain corrosion to the ground sinking under the weight of the sculpture.[62] The making of the cast by Clemente Papi is recorded as a contributing reason for the latter as it temporarily increased the statues weight by around 5000-6000 kg.[63] At this point of *David*'s double creation, the material impact of the mould and the subsequent copies is made clear. That fact that the casting process was utilised as part of its preservation had an almost ironic impact on the condition of the original.

The context of the original sculpture was initially incredibly important to the exhibition of the copy in the Victoria and Albert Museum. The cast was displayed alongside a photograph of its original setting in Florence (*fig. 2*).[64] Establishing an 'original' Italian context for the copy was essential, even during the many years when the sculpture had been removed from the Piazza completely (*fig. 3*).[65] Using photography, another reproductive medium, to assist display and educational context demonstrates how the Victoria and Albert Museum authenticated these objects in their collection for the public. As a representational medium, photography was accessible for the masses and championed by the museum who steadily incorporated the evolving practice into its collections.[66] Using an image of the Piazza suggests how representations complement copies such as *David* on display, reinforcing its context alongside other modes of reproduction.

The adaptation of the sculpture for display in the Victoria and Albert Museum further suggests its material aspects as an authentic reproduction or official copy. While Papi's cast was not necessarily intended for museum display having been a diplomatic gift,[67] it was

[60] 'Michelangelo's David', *Accademia.*
[61] Ibid.
[62] Borri and Grazini, 'Diagnostic analysis of the lesions and stability of Michelangelo's David', 274-5.
[63] Ibid, 274.
[64] Baker, 'The Reproductive Continuum', 494.
[65] Rizzo, 'Guest Post: Part 2 – David's journey from Florence to V&A'.
[66] Baker, 'The Reproductive Continuum', 493-4.
[67] The Victoria and Albert Museum, 'The Story of Michelangelo's David'.

likely assumed that the cast would be part of either the Royal or Victoria and Albert collection and subsequently on public display like the original and other existing casts in Florence. The cast of *David* was sent to London without the fig leaf that had been imposed on the original public statue by the Italian authorities and Catholic church after its completion in 1504.[68] Therefore the plaster cast copy was accurate to Michelangelo's original design yet still required visual adaptation in the 19th century. The legend perpetuated by the Victoria and Albert Museum is that Queen Victoria was so shocked by the nudity of the monumental sculpture that a plaster fig leaf was commissioned in London for royal visits to the gallery.[69] The leaf has not been in use since the early 20th century yet remains a part of the objects display and overarching narrative in the present day,[70] hung on the back of the plaster *David's* pedestal (*fig. 4*). The fig leaf acts as both a testament to the original sculptures censorship during the Renaissance as well as the changing cultural attitudes to the display of nudity in the European museum. The creation of a fig leaf in plaster also demonstrates how a copy can created separately to an original piece. The makers D. Brucciani & Company would have likely worked from an image of the Florentine fig leaf for accuracy,[71] yet it was produced in London as independent artefact for the display of *David.*

Alongside the manufacturing of knowledge in display, museum conservation practices are significant to the history and material agency of the cast copy of *David.* Papi's mould preserved the significant damage that was done by rain and pollution on the eroded surface of *David*'s shoulders and arms at the time of its casting.[72] However, once moved to the Galleria dell'Accademia the original sculpture underwent multiple conservations to reduce this visible damage.[73] Therefore, the cast at the Victoria and Albert Museum alludes to an earlier history of the sculpture's visual condition than the one at present by displaying the natural affect that its original context had on its original material. Plaster's ability to record the damage to the marble suggests how cast copies capture an original object in a state of transformation. On one hand, Panofsky notes how people take pleasure in the weathered appearance of sculpture by "seeing it as part of the 'authentic experience'" of publicly viewing an art object enduring time.[74] On the other hand, these collaborations with nature do not translate to the sculpture

[68] Olszewski, 'Michelangelo's *David*', 118.
[69] D. Brucciani & co. "Fig leaf for David"
[70] Ibid.
[71] Ibid.
[72] Puisto, 'Uncovering Michelangelo's David'.
[73] Ibid.
[74] Grundy and Panofsky, 'Original and Facsimile Production', 337.

housed within museums and ultimately the cast of *David* has undergone extensive conservation work since its acquisition.[75] Our collective capacity to not only appreciate but engage with the natural deterioration of materials creates a complex challenge for conservation practices with both originals and reproductions. Plaster casting works to capture moments but artworks cannot be considered "frozen in time" as they undergo slow transformations by museums themselves.[76] Interventions through restoration, conservation and climate control eventually affect how the public encounter a reproduction of an original,[77] whether it be a monumental plaster cast or the photograph illustrating it. These debates around context and conservation perpetuate Critic Edward Feldman's statement that "every time we see a work, we see it under different circumstances".[78] For example, this chapter goes on to examine certain fixed properties of materials yet highlights their unfixed concepts alongside how public perceptions are consistently changing over time. Feldman argued that there was not "only one authentic, eternally valid way to look at Michelangelo's *David*",[79] and its reproduction in the Victoria and Albert Museum speaks to how materials can traverse time and context to reveal multiple aspects of a work of art.

[75] Grundy and Panofsky, 'Original and Facsimile Production', 337.
[76] Henning, 'Without and Without Walls', 583.
[77] Ibid.
[78] Feldman, 'Teacher as Model Critic', 54.
[79] Ibid.

ii. Marble

As a material, marble has somewhat defined the Wests relationship to art history. Its use in sculpture is often to evoke the classical language of the past,[80] referencing the Greek and Roman works of antiquity that have become essential frameworks of the Western canon. For this reason, marble is significant in the sense that its permanence and splendour lend both a kind of tradition and immortality to sculpture.[81] Pieces from the Renaissance such as Michelangelo's *David* are able to evoke almost mythological aspects of ancient art whilst reinforcing their place in art history, being an example of material mastery.

David was sculpted from Carrara marble, which was particularly popular during the Renaissance from the large quarries of the same name in Italy.[82] It is also known that Michelangelo himself would often visit to select specific blocks for carving.[83] However, *David* was created by the opportunity of damaged, not perfect, material. The artists Agostino di Duccio and Antonio Rossellino had abandoned their work on a block of marble respectively in 1464 and 1475 after noticing flaws in the grain,[84] and it was handed down to the younger Michelangelo many years later.[85] This mythology surrounding the material and its origins lends even greater achievement to Michelangelo's *David,* almost as if the technical triumph over the imperfect marble complemented the Biblical story itself. It has been suggested by former Victoria and Albert Museum Director Eric Maclagan that the previous work on the stone may have influenced the form of the sculpture.[86] Michelangelo had also created a *David* in bronze that is today lost and Maclagan claims that this subsequent artwork had the potential to reveal Michelangelo's intent "had the marble left him a freer hand". [87] In 2004 an example of this was revealed through both research and conservation work on the statue that suggested a muscle in *David*'s back had been left out of the marble detail due to the flaws of the material.[88] For an artist who was renowned for anatomical accuracy in his sculptures,[89] this demonstrates how the condition of the material affected the realisation of the sculpture. Qualities of the material that appear fixed have an impact on the appearance of

[80] Napoli and Tronzo, *Radical Marble*, 4.
[81] Ibid, 8.
[82] Rich, *The Materials and Methods of Sculpture*, 223.
[83] Ibid.
[84] The Victoria and Albert Museum, 'The Story of Michelangelo's David'.
[85] Maclagan, *Italian Sculpture of the Renaissance,* 194.
[86] Ibid, 196.
[87] Ibid.
[88] Lorenzi, 'Michelangelo's David is missing a muscle'.
[89] Della Monica, Paternostro, Andreucci and Provenzano et al. 'Michelangelo's David', 202.

an artwork and therefore possess agency in the process of creation and moreover, recreation of *David.*

Michelangelo famously said, "every block of stone has a statue inside it and it is the task of the sculptor to discover it".[90] This quote can be read in two ways that demonstrate the relationship between artist and material. It could first be reasoned that Michelangelo willed his abstract ideas into existence using the stone as simply a medium to make his art visible. This aligns with the similar quote ascribed to him: "I saw the angel in the marble and carved until I set him free".[91] On the other hand, there is a sense of mystery relating to what will be discovered when the artist removes the stone.[92] The single block of marble Michelangelo worked with may have caused him to alter his figure at the demand of the material itself,[93] suggesting some kind of governance over the sculptor. This is mirrored in contemporary art, where a present day sculptor working with Carrara marble alludes to this creative response by asking "what will it give me?" each time they begin work on a piece.[94] In Michelangelo's lifetime this material agency would have been linked to the divine and its role in artistic creation,[95] given that marble is a natural material. This reflects the influence of Western philosophical thought on the period where the Platonian idea that art makes use of nature's material were significant to Renaissance creation.[96] In the present day, marble is a material continually anthropomorphised in terms of association and display. In its raw form at the Carrara quarries, Leitch relays the workers perception of the stone in constant flux as it "'sleeps' and 'wakes'".[97] A rich vocabulary has been developed to express the working relationship to marble which barely differs from that of an artist.[98] These terms conjure a sort of empathy with the material which translates to its inviting capacity for touch. The artists ability to carve its surface into soft, flesh-like textures allow for impressions uncharacteristic to its natural form. Using a combination of Schmidt's association and estimation routes for visual perception,[99] it can be suggested how the eye sees an accurate form of the body and expects it to feel warm like one, or sees the veins in *David'*s arms and expects the material to

[90] Parker, 'The Angel in the Marble'.
[91] Ibid.
[92] Leitch, 'Materiality of Marble', 72.
[93] The Victoria and Albert Museum, 'The Story of Michelangelo's David'.
[94] Leitch, 'Materiality of Marble', 72-3.
[95] Close, 'Commonplace Theories of Art and Nature in Classical Antiquity and in the Renaissance', 478-9.
[96] Ibid, 477.
[97] Leitch, 'Materiality of Marble', 70.
[98] Ibid.
[99] Schmidt, 'The Art of Shaping Materials', 409-411.

be soft like skin (*fig. 5*).[100] These expectations and categorisations of material help us to navigate our environment daily with ease,[101] yet with marble sculpture material deception denotes the skill of the artist as well as the value of the art.

[100] Schmidt, 'The Art of Shaping Materials', 411-412.
[101] Ibid, 408.

iii. Plaster

While marble sculpture mimics the materials that real objects are made of,[102] plaster mimics the form of these materials again to recreate the same impressions with the process of casting. Gypsum plaster or plaster of Paris was popularly used for casting across the 19th century,[103] and is the material used for Papi's copy of *David* in the Victoria and Albert Museum.[104] Plaster's historical versatility for reproductions has led to the limitations of the material also being considered the virtues of the medium.[105] An example of this paradox is while being easily scratched and highly porous,[106] its vulnerability is what allows for the replication of the finest details of the human form.[107] Likewise, plaster dries quickly so retains the capacity to capture details of the skin including scars and pores.[108] These aspects of its material are crucial to circulating the fine art details of a piece for admiration or didactic purposes. Once dried the plaster becomes brittle and inflexible,[109] characterising its use for casting large forms such as *David* and imitating the sculptures much harder material. While it is not an organic material like marble, plasters affinity with water has led to descriptions of the material breathing and respiring.[110] These human qualities reposition the material as more than manufactured or purely imitative. Likewise, the historic use of plaster is akin to alchemy in the way that it transforms states, often denoting its liminality in artistic processes.[111] Although these conclusions may be drawn about the properties of the material itself, its purpose in the 19th century was firmly rooted in the creation of prototypes or as is the focus of this thesis, reproductive sculpture.

In 1905 the Art Gallery Committee of the City of Manchester debated the position of casts in museums at a time when their popularity was significantly declining.[112] Their report described: "the plaster being cold and dead in effect, quite different from the tone, colour, surface texture, and play of light which give the delight in the original marble or bronze".[113] This account attempts to draw comparisons of authenticity from the original artworks that may have never been seen in real life. It suggests that copies such as that of Michelangelo's

---

[102] Ibid, 414.
[103] Payne, 'The Conservation of Plaster Casts in the Nineteenth Century', 40.
[104] Papi, "David".
[105] Rich, *The Materials and Methods of Sculpture*, 107.
[106] Payne, 'The Conservation of Plaster Casts in the Nineteenth Century', 40.
[107] Presa, 'White Work', 257.
[108] Payne, 'The Conservation of Plaster Casts in the Nineteenth Century', 40.
[109] Ibid, 38.
[110] Presa, 'White Work', 257.
[111] Ibid, 258.
[112] Bilbey and Trusted, '"A Question of Casts"', 469.
[113] Ibid.

David in the Victoria and Albert Museum are misleading or even detrimental representations to its original in Florence. The emphasis placed upon material properties such as colour and surface texture is at contrast with the intangible 'play of light' across a bronze or marble sculpture. While the former can be easily imitated by plaster casting in combination with polishing and painting to evoke marble, the intangible aspects of materiality are more complex to address. They likely rely on the knowledge production surrounding the copy that suggests it is inferior, as well as the comparisons made between marble originals and plaster copies that does not assess the latter as a separate object entity. Overall, the report reveals that early 20th century perspectives were reconsidering authenticity as a valuable aspect of materiality itself.

Reassessing the display of plaster meant that the Victoria and Albert Museum was departing from technical training and its synonymy with the School of Design as it aimed to educate by means of visually presenting a Western canon of objects in its collections.[114] As a consequence, the Victoria and Albert Museum "was soon to separate the authentic 'original' objects from the reproductions and so largely side-line the cast collection".[115] Whether this was done with an educational objective to clarify its display or if it was a response to the kinds of committee reports that are seen above is ultimately unclear, yet it demonstrates a shift toward reconsidering the material agency or its supposed consequences for objects in the museum. The controversy following the position of plaster casts in the space of the Victoria and Albert Museum as a public resource demonstrates the reinterpretation of materials throughout history as an assistance to public engagement. The copy of *David* exemplifies how in many ways it is different to the original but cannot escape the material comparisons of marble and plaster.

[114] Baker, 'The Reproductive Continuum', 489.
[115] Ibid.

iv. Authenticity and Imitation

This relationship between the two materials is rooted in art historical associations with both marble and plaster. By considering certain properties as authentic to Western art and the museum, plaster sculpture is easily thought of as an imitation or consequence of marble works from antiquity. The Victoria and Albert Museum Cast Court galleries reflect the effort to negotiate plaster cast reproductions into the authentic display habits of a national museum. In the case of Papi's *David*, it is important to examine the implications of the term imitation when discussing the authenticity of a sculpture copy. The construction of both sculptures is one way in which we can access their material aspects of value for the public.

The cast of *David* in the Victoria and Albert Museum was completed by Clemente Papi from a 1500 piece-mould.[116] In comparison to Michelangelo's creation of *David* from a single block of marble, these technical achievements are equally staggering in their respective mastery of materials. However, throughout history there has been a continuing impression that a reproduction is much easier to make and therefore is of little comparison to an original artwork.[117] This is demonstrated by the perceptions of material value in regard to authenticity and imitation. Hyper realistic sculptures such as Michelangelo's *David* work by fooling human material perception to let us interpret the depicted materials as real.[118] This effect is usually praised as creating masterpieces, whereas the power of plaster cast sculpture in convincing an audience it is looking at marble provokes debate around its position in the museum, such as those aforementioned by Bilbey and Trusted taking place in the early 20th century.[119] While debates of material value persevere, it is crucial to acknowledge that in the museum and for the public "the reproduction has a very real currency",[120] an aspect that will be explored further in the following chapters.

Alongside these perceptions of value, the demands of assembling, displaying, mobilising, and conserving the plaster copy of *David* have been undertaken with acute attention to its material as well as its audience in the museum. In Florence between 1854 and 1930 the first plaster cast made of *David* was moved six times around the city in an effort to establish the best new location for the sculpture.[121] Much lighter than marble, the materials

[116] Videtta, 'Guest Post: Part 1 – The Florentine Copies of Michelangelo's David by Clemente Papi'.
[117] Latour and Lowe, 'The Migration of the Aura', 282.
[118] Schmidt, 'The Art of Shaping Materials', 414.
[119] Bilbey and Trusted, '"A Question of Casts"', 469.
[120] Aguerre and Cormier, 'Introduction', 20.
[121] Videtta, 'Guest Post: Part 1 – The Florentine Copies of Michelangelo's David by Clemente Papi'.

properties afforded it better mobility. When making the second cast for the Victoria and Albert Museum, Papi designed it to be dismantled and reassembled easily.[122] This example of adaption demonstrates how a material may have specific properties of agency such as its lightness yet the craftsman furthers these material aspects to create qualities unique to the reproduction. As an example, this design of *David* for London was advantageous to its travel purposes whilst also affecting the cast visually, as the joint seams are more visible across the plaster surface of the sculpture.[123] Assembling *David* in London meant rebuilding a sculpture almost five and a half meters high from the ground up (*fig. 6*). From x-rays we know that the statue's legs are supported by an inner skeleton resembling human bones surrounded by solid plaster (*fig. 7).*[124] The hollow torso improves on the weight complications of the original marble, allowing it to be strengthened from its base. These material advantages of plaster sculpture are a contributing reason to its enduring life at the Victoria and Albert Museum, where it has remained a central display focus for the Cast Courts to the present day. The sculptures conservation practices have been recorded in detail and even published on the Victoria and Albert blog during the 2014 renovation of the Cast Courts,[125] suggesting the popularity of the cast copy and interest from both academic and public circles. In this last conservation of the plaster *David*, it was found by the conservator that "the cast had been coated on three separate occasions, each time with a lead-based white paint. This was probably applied both to protect the surface, but also to try and imitate the colour of original marble".[126] In earlier accounts, experimentations with plaster finishes instructs to "repeatedly saturate the cast with milk" and "polish with French chalk with pad of cotton wool to give appearance of marble".[127] These recipes aimed to emulate the surface texture of marble for a more accurate, better quality of cast. Material similarities were important for education by studying reproductions as well as generally improving an object for display. Plaster and marble demanded polishing to refine their surface for presentation and importantly, admiration. The "whiteness" regarded as a prized quality in marble aims to be emulated by its plaster counterpart to convey an accurate representation of sculpture to an audience.[128] These

[122] The Victoria and Albert Museum, 'The story of Michelangelo's David'.
[123] Ibid.
[124] Puisto, 'David Revealed!'.
[125] Puisto, 'Uncovering Michelangelo's David'.
[126] Ibid.
[127] Payne, 'The Conservation of Plaster Casts in the Nineteenth Century', 41.
[128] Leitch, 'Materiality of Marble', 69.

finishes are essential to both display and successful imitation in both cases, where the inherent qualities of the materials are more visually nuanced.

The shaping of knowledge by the Victoria and Albert Museum in regard to their copy of *David* demonstrates how the didactic function of plaster has remained integral for its public display since the 19th century.[129] Overall the material relationship between marble and plaster demonstrates the efficacy of material perception in art and its crossover with deception, more often aligned with the public engagement with and opinion of plaster reproductions. By referencing the original sculpture of *David*, it is clear how the two separate works are linked by their visually similar materials that encourage comparison between marble and plaster. In the next chapter it will become clear how these comparisons are complicated by the introduction of more materials, challenging the notion of an original object.

[129] Baker, 'The Reproductive Continuum', 485.

Materials of Variation: Reproductions of Temperance Basins in the Cast Courts

In the previous chapter it has been established that plaster has been often used to copy the qualities of marble in reproductions of sculpture. This chapter outlines a different approach, moving away from materiality in the context of imitation and toward its role in the historic reproduction. By exploring what has been called the performative nature of copies,[130] this chapter seeks how varied aspects of materiality communicate with an audience when on display.

The Temperance Basin is one of the most copied and adapted artworks from the Renaissance period and by 1875 there were fifteen examples of the object in the Victoria and Albert collection.[131] This chapter will examine four incarnations of the Temperance Basin that are currently on display at the museum, with allusions to other examples within the collection to support the case studies biographically and comparatively. These Temperance Basins, consisting of pewter, copper, earthenware, and resin, challenge the existing dichotomy of copy and original. As reproductions of one design, variations in material and certain adaptations lead to the creation of multiple objects and each with their own specific history. This chapter will also explore how technology and the history of the Victoria and Albert Museum are integral to the display and more recent creation of the Temperance Basin for the newly developed gallery between the Cast Courts.

[130] Brenna, Christensen, Hamran eds. *Museums as Cultures of Copies*, 10.
[131] The Victoria and Albert Museum, 'The Temperance Basin and the Art of the Copy'.

i. The Temperance Basin: Pewter

The original design of the Temperance Basin was created by Francis Briot (1545-1616) around 1585 (*fig. 8*).[132] The cast designs in relief depict the central figure of 'Temperantia' surrounded by four plaques representing the four elements while the rim of the basin depicts the Seven Liberal Arts and their patron Minerva.[133] Temperance is one of the four Cardinal Virtues that originated in Ancient Greece and were often personified as distinctive Goddesses in Renaissance artworks.[134] Overall the design capitalised on the rich classical imagery that was typical throughout the period as well as intellectual references that contributed to the fashionable Mannerist pieces in the late 16th century.[135] Further examples of these decorative objects can be identified throughout the Victoria and Albert collection, such as this pewter tankard (1560) made by Paulus Weise (1535-1591) (*fig. 9*).[136] Depictions in the same material as Briot's basin show the planets alongside the seven muses and virtues in contrast with deadly sins.[137] In the context of a guild ceremony or as display centrepieces,[138] these visual references suggest how knowledge and learning were not only highly valued but manifest specifically in pewterware.

Briot's Temperance Basin was acquired by the Victoria and Albert Museum in 1855 and is presented in the collection as the first produced example of the design.[139] However, the notion of an original is complicated by Briot's intention for the object to be reproduced.[140] Senior Curator Angus Patterson elaborates that the mould made by Briot was designed to last a long period of time and so produce many more examples of his work.[141] The basin bears Briot's initials and so was conclusively taken from his mould as well as being the only known design of his to be 'signed' in this way.[142] This kind of authorship suggests a sense of pride in the design as well as being a signifier for an original artwork following the tradition of Western visual arts. On the other hand, it does not account for the abundance of copies that will follow it, and as will become clear Briot's design was not only incredibly influential but incredibly modified from the Renaissance to the present day. The practice of casting may

[132] The Victoria and Albert Museum, 'The Temperance Basin and the Art of the Copy'.
[133] Briot, "Dish", *The Victoria and Albert Museum*.
[134] Weisberg, 'The Art of Memory', 263.
[135] Briot, "Dish", *The Victoria and Albert Museum.*
[136] Weise, "Tankard", *The Victoria and Albert Museum.*
[137] Ibid.
[138] Ibid.
[139] The Victoria and Albert Museum, 'The Temperance Basin and the Art of the Copy'.
[140] Ibid.
[141] Ibid.
[142] Briot, "Dish", *The Victoria and Albert Museum.*

seem to challenge the notion of authentic objects. The aspects of which Francis Briot's Temperance Basin is considered authentic are set apart from the mould, which was likely lost or destroyed as it was valued simply as a mode of production. The mould would have been created after something else, whether it be a sketch or clay model prototype. Therefore there is no tangible example of an original in the collection, only the idea and its incarnation in reproductions. In terms of collecting and display by the Victoria and Albert Museum, value is placed upon the copies that became incredibly influential objects for centuries after their creation. Therefore, this example in pewter exists as a representation of an original design that was widely disseminated across Europe.

Pewter was typically a material used for the imitation of objects in silver or gold,[143] so it is notable that Francis Briot's basin was enduringly influential in its original material. In general, pewter is not classed as a precious metal yet it was increasingly expensive in the period and therefore valuable.[144] This resulted in the *Edelzinn* or 'precious pewter' examples across France and Germany,[145] including the aforementioned pewter tankard by German craftsman Peter Weise. These objects usually take the form of decorative plates, flagons and candlesticks involved in royal or guild ceremonies.[146] A new mould for these works was extremely expensive especially when richly ornamented,[147] given the effort that went in to crafting the detail of figures and elaborate motifs. If moulds were made to last as Briot's was, they were usually made from good quality hard bronze or gun-metal.[148] Often lead was mixed with pewter to make the object softer and easier to cast, [149] however high quantities of tin in the alloy increased the value of the object as it was considered a purer metal.[150] Determining the mixture of metals could therefore affect the significance of a piece that may not be discernible by eye. Collector and expert on pewter, Henri Jean Louis Joseph Massé describes how essential the handling of the objects is in an assessment of their value.[151] As object handling is not offered to a general public, there is a certain reliance on its informative display for a museum audience of pewter. Briot's Temperance Basin exists as a showcase of three important attributes of the period: complex design, craftmanship and intellectual

[143] Massé, The Pewterer Collector, 2.
[144] Ibid, 3.
[145] Briot, "Dish", *The Victoria and Albert Museum.*
[146] The Victoria and Albert Museum, 'Brass, Pewter & Cutlery in the Collections'.
[147] Massé, The Pewterer Collector, 6-7.
[148] Ibid, 3.
[149] Ibid.
[150] Ibid.
[151] Massé, The Pewterer Collector, 6.

references.[152] These three aspects of the basin rely on the expressive visual language of pewter to engage a viewer without touching the object itself.

In this period and in the Victoria and Albert Museum collection there existed another Temperance Basin alongside Briot's, produced by metalworker Caspar Enderlein (1560-1633). Enderlein adapted Briot's design in countless moulds for the reproduction of various Temperance Basins and popularised these variations throughout Europe, with important examples of the Temperance Basin ending up in significant institutions such as the Louvre.[153] Here we encounter the issues of authenticity regarding moulds and casting. This second basin in the collection looks almost identical to the first by Briot (*fig. 10*). However, in the Victoria and Albert Museum collection entry this basin is triply-attributed to Briot, Enderlein and the German pewterer Hans Sigmund Geisser.[154] While the basin is a close copy of Briot's design, it was dated by Enderlein in 1611 and not cast until around 1650 by Geisser.[155] This means that the present object in the collection was created after Enderlein's own death by another craftsman. The close affiliation of the Briot and Enderlein basin in the Victoria and Albert Museum is an important contextualisation of its position in the museum throughout history.

This becomes apparent as early as 1903 when Massé published his notes on the display of pewter at the Victoria and Albert Museum. His interpretations of the exhibited metalwork allow for a valuable insight on the early engagements with objects in the museum. Massé comments on the disorganised array of exhibits on the ground floor galleries whilst also detailing the objects with great interest.[156] He makes a point of comparing the Temperance Basins by Briot and Enderlein although it is not clarified whether they are displayed together, [157] overall concluding that the objects are similar with the exception of small differences in size and design.[158] The direct comparisons drawn between the basins prompt the debated accusations of copying even though Massé notes these claims to be unfounded given that Enderlein died many years after Briot.[159] The co-existence of the basins by Briot and Enderlein at the Victoria and Albert Museum in the early 20th century meant there were obvious comparisons and judgements of authenticity by the viewer between the

[152] Briot, "Dish", *The Victoria and Albert Museum.*
[153] The Victoria and Albert Museum, 'The Temperance Basin and the Art of the Copy'.
[154] Briot, "Dish", *The Victoria and Albert Museum.*
[155] Ibid.
[156] Massé, 'Some notes on the Pewter in the Victoria and Albert Museum at South Kensington', 71.
[157] Ibid, 71-2.
[158] Ibid, 72.
[159] Massé, 'Some notes on the Pewter in the Victoria and Albert Museum at South Kensington', 72.

two objects. As previously discussed with marble and plaster in chapter one, visual similarities allow for freely made comparisons between objects. Given that both Temperance Basins were cast in pewter, these early distinctions were linked by their material. However, subsequent incarnations of the basin have allowed for broader perspectives on the object, demonstrating the impact of its materiality and essentially, its reproducibility.

Overall, Briot's Temperance Basin is a starting point for our consideration of links between aspects of material and public display in the museum. Already the complicated notions of comparing similar pieces are becoming apparent alongside the concept of authenticity regarding originals, prototypes and adaptations of design.

ii. The Temperance Basin: Electrotype

The Birmingham silver manufacturers Elkington & Co. purchased a plaster cast of the Temperance Basin from Dr. Emil Braun in 1849.[160] The cast had been taken from one of Enderlein's Temperance Basins held in the Louvre collection in Paris.[161] From this cast the electrotype copy in the Victoria and Albert collection was made after the design of Enderlein (*fig. 11*).[162] Before the actual reproduction by the electroforming process, the cast was modified with additional details to the borders as well as the removal of titles such as 'Temperantia' that existed in the original design (*figs. 12 & 13*).[163] These kinds of adaptions were typical with electroformed reproductions,[164] where a logistical example of this is the removal of makers stamp from the original basins and addition of the official stamp of the then South Kensington Museum (*fig. 14*).[165] This was done in an attempt to regulate the increasingly threatening practice of industry reproduction to those in the possession of original objects,[166] including the collection of the Victoria and Albert Museum.

Today, the process of electroforming begins with creating a mould out of an object from liquid silicon.[167] Silicon's flexibility even when hardened captures great detail without the risk of breaking when removed from the object. It is then sprayed with silver paint which allows the mould to conduct electricity before attaching copper wires and being suspended in a solution of copper and sulphuric acid.[168] As a current of electricity passes through the solution, the copper ions are gradually deposited on the surface of the mould and continue to thicken for around 24 hours.[169] When removed from the mould, refinements are done by hand and silver plating can be achieved instantly by submerging the electrotype in silver cyanide.[170] The electrotype example of the Temperance Basin from the Victoria and Albert Museum consists of electroformed copper that has been electroplated and electrogilded.[171] This means that even gilding, which was often a hand-crafted aspect of a piece, was achieved by an electric current.

---

[160] Elkington & co. "Basin", *The Victoria and Albert Museum.*
[161] Ibid.
[162] Patterson, 'A Unique Replica'.
[163] Elkington & co. "Basin", *The Victoria and Albert Museum.*
[164] Patterson, 'The Perfect Marriage of Art and Industry', 66-7.
[165] Ibid.
[166] Ibid, 66.
[167] Victoria and Albert Museum, 'How was it made? Electrotype', 0.36.
[168] Ibid, 1.04-1.16.
[169] Ibid, 1.47-1.55.
[170] Ibid, 2.40.
[171] Elkington & co. "Basin", *The Victoria and Albert Museum.*

In the 19th century, the moulds were made from ‘gutta percha’ which was a rubber-like import from Malaysia,[172] and to conduct electricity the moulds were lined with powdered graphite.[173] These past examples demonstrate how the technology of reproduction has gone unchanged with the exception of advancing materials,[174] as more suitable substitutes were developed over time. However, the adaptations to the process were directed toward the ease of the person remaking the object. It would be challenging to discern differences between the electrotypes formed today and in the 19th century, as the process has always been highly accurate. Therefore, the Temperance Basin must be visually examined on the basis of the material it is reproduced in. The technicalities of removing the lettering on the basin have affected the object visually, yet to a visiting public these changes may not be noticeable. On the other hand, the change in material from pewter to copper and silver affects the overall impression of the design, as the surface qualities of the materials highlight different design elements. The two-tone aspect of the electroformed basin as well as its shine seems to give the object greater depth as well as clarity to the figures. As materials, electroformed copper and silver do not require any polishing whereas pewter demanded it to achieve a similar effect,[175] demonstrating the aspects of finish required for a substantial effect on an audience.

Overall, the transformation of materials by electrotyping was considered akin to alchemy by the 19th century British press,[176] already suggesting the comparisons between historic practices and revolutionary technology that would go on to inform the future display of the Temperance Basins. The process transformed aspects of materiality such as colour and shine that affected the depth and clarity of detail on the object. An audience may be more drawn to this object on display rather than its original in pewter, as its reproduction looks polished and even of a higher quality.

[172] Patterson, ‘The Perfect Marriage of Art and Industry’, 59.
[173] Ibid.
[174] Victoria and Albert Museum, ‘How was it made? Electrotype’, 0.16.
[175] Victoria and Albert Museum, ‘How was it made? Electrotype’, 2.55.
[176] Patterson, ‘The Perfect Marriage of Art and Industry’, 65.

iii. The Temperance Basin: Earthenware

The 19th century saw countless electrotypes produced for the Victoria and Albert Museum in Sir Henry Coles effort to democratise design.[177] Although the partnership was never official Elkington's were the main suppliers to the museum as the patentees of electroplating.[178] However, industry was not the only source of mass reproduction in this period. Aspects of craftmanship involved with the process of copying can be more demonstrably seen with different materials.

The wide dispersion of the Briot and Enderlein designs of the Temperance Basin meant that it attracted notable artists from specialisations other than precious metals. Patterson points to famous ceramicist Bernard Palissy who moulded a copy from Briot's pewter dish in the 1580's,[179] which would then inspire later ceramic Temperance Basins such as this example in the Victoria and Albert collection made by George Pull in 1869 (*fig. 15*).[180] The reproduction is not directly influenced by Briot's work but by the figure of Palissy, calling into question the extent to which the adaptation in earthenware can be considered a copy. Pull specialised in reproductions of Palissy's work in the period of the 19th century that was celebrating photography and electrotyping in the museum.[181] The Victoria and Albert Museums early welcoming of these reproductive methods encompassed a variety of materials. Pull's earthenware reproduction is both a close imitation of Briot's design and a replication of Palissy's style yet it is in no way meant to resemble what today might be considered a fake or forgery, having been stamped and signed with his own name.[182] The appropriation of these features is completed with pride in a new object, where an example like Pull's basin demonstrates the close relationship between metalwork and ceramic design in the 16th century in combination with the resurgence of Palissyware later in the 19th century.[183] The very existence of the basin conveys the interdisciplinary influence across these periods that led to the term "creative copy" where various aspects of design were reinvented for different materials.[184] Examples of this are seen in painting, for instance Van Gogh's famed copies of Old Master works using his personal style to express a unique visual language.[185] The use of

[177] Patterson, 'The Perfect Marriage of Art and Industry', 70.
[178] Ibid, 64.
[179] Patterson, 'A Unique Replica'.
[180] Pull, "Dish", *The Victoria and Albert Museum.*
[181] Ibid.
[182] Ibid.
[183] Unknown, "Dish", *The Victoria and Albert Museum*.
[184] Codell, *Replication in the Long Nineteenth Century,* 11.
[185] Ibid.

earthenware rather than metal signifies a reversion to craft in a period of industry, drawing attention to alternate areas of the design in a similar way to Van Gogh's copies. Named "secondhand" objects by Codell,[186] these exist completely apart from an original. While the glaze of the earthenware Temperance Basin by Pull is as highly reflective as the polished metals of the previous examples, the vibrancy of the colour scheme directly sets it apart from the previous case studies. The visual effect of the basin is immediately striking as the rich colours illustrate the details of Briot's design, as can be seen more closely in this image of the Temperantia figure (*fig. 16*). Attention is drawn to certain textures that lend depth to our visual perception of the basin such as the delicate folds in the figures clothes.[187] The taste for the experimental and artificial colours that were characteristic of the Renaissance are recaptured in Pull's reproduction of Briot's design.[188] A 19th century object such as Pull's basin can be interpreted as a homage to the period that the design originated from in combination with the experimental work with science and ceramic glazing that characterised his own discipline in 16th century by figures such as Palissy. Similar to the process of electrotyping, this union of art and industry speaks to the desire to create in combination with the rapid technological developments in the 19th century.[189] This led to reproductions such as Pull's that conceive the elements of the basin as materially interchangeable. The pattern on the back of the basin exemplifies how experimental Pull was with colour and design even where it might not be seen (*fig. 17*). Another earthenware example from the same period as Pull depicts the basin in more rustic browns and greens by an unknown maker also aiming to imitate Palissy's basin (*fig. 18*).[190] According to Codell, Victorian artists often conceived reproductions as an act of appreciation but also a measure of taste that involved improving the skill and value of an original object.[191] The variations in colour would have likely utilised modern science and glazes that Palissy would not have had access to centuries before.

Overall, Pull draws from multiple influences to create a reproduction of the Temperance Basin that combines craftmanship with the industrialisation of the 19th century. Material aspects such as colour transform the audience perception of the design whilst the glaze of the ceramic echo the polished metals of the previous basins. Moving toward a more

[186] Codell, *Replication in the Long Nineteenth Century*, 12.
[187] Schmidt, 'The Art of Shaping Materials', 410.
[188] Coutts, *The Art of Ceramics*, 40.
[189] Patterson, 'The Perfect Marriage of Art and Industry', 56.
[190] Unknown, "Dish", *The Victoria and Albert Museum*.
[191] Codell, *Replication in the Long Nineteenth Century*, 6-7.

recent example of the Temperance Basin, it will be seen how modern materials and manufacture further highlight aspects of the object.

iv. The Temperance Basin: Resin

The final case study for this chapter is an example of the Temperance Basin in resin created by The Royal College of Art of 2018 (*fig. 19*).[192] As part of the Victoria and Albert Museums ReACH initiative and Cast Courts FuturePlan project,[193] twenty-five suitable objects were selected across all departments of the museum collection for digital scanning.[194] The project aimed to use light scanning in combination with 3D imaging and printing to manufacture better reproductions for the collection as well as discover more about existing objects by means of making exact copies.[195]

The Temperance Basin was the first 3D model to be reproduced by the RapidForm department and lists the electrotype copy of the basin by Elkington's as the original.[196] This subverts the dichotomy of original and copy in the museum, as it has been previously established that Briot's basin depicts the original Temperantia design in the Victoria and Albert collection. Furthermore it shows how reproductions can create or emphasise originality, echoing Latour and Lowe's assertion of "no copy, no original".[197] The production of a new Temperance Basin in resin repositions the basin by Elkington's as the original object of the new copy. It is interesting that the department chose to replicate the Elkington's copy in their collection rather than what is considered to be the original basin designed by Briot. Pewter may have scanned more accurately than the more reflective electrotype, however it is made clear by the department that they chose objects to specifically challenge the equipment and test its capabilities.[198] The criteria for selecting suitable objects for scanning largely depended on the material. Alistair Hamer from the RapidForm department describes how scanning reflective surfaces with light means that the metal of the Temperance Basin has the potential to distort the image before the camera is able to capture a clear scan.[199] As a result, it was a surprise that the object scanned so accurately despite its material disadvantage to the modern technology.[200] This suggests the developing engagement of object materials with evolving technologies in the museum space. The longstanding associations with materials as well as their historic perceptions are similarly challenged by

[192] Royal College of Art, "3D Print", *The Victoria and Albert Museum*.
[193] Knott, 'Adventures in 3D Scanning: A Cast Court for the Digital Age'.
[194] Ibid.
[195] Ibid.
[196] Ibid.
[197] Latour and Lowe, 'The Migration of the Aura', 278.
[198] Knott, 'Adventures in 3D scanning: New models launched on Sketchfab'.
[199] Hamer, 'Adventures in 3D Scanning: A Cast Court For The Digital Age Part 2'.
[200] Ibid.

reproductive methods like 3D printing, where the public can view an object in a material that didn't even exist when it was designed.

For the production of the resin copy, light scanning the object takes approximately fifteen minutes while processing the data is the time-consuming aspect of the practice.[201] In areas where the object was not fully captured by the equipment digital artists are required to reconstruct parts of the object manually (*fig. 20*). Here someone may draw in details by eye or match colours and textures with digital software, arguably comparable to the craftsman making moulds in the previous case studies. This exemplifies how all copies exist in varying degrees of accuracy,[202] especially when cast both digitally and physically into new materials. In chapter one, it was outlined how classical depictions are associated with materials such as marble and its material language that speaks to a past of antiquity. If the same theory is applied in this case then the synthetic resin used for 3D printing may seem at odds with the classical figure of Temperantia. However, the visual impression of the white resin is similar to marble and can be read as either a classical or neutral blank copy of the Temperance Basin. An example by Factum Arte in collaboration with the Victoria and Albert Museum for the 'A World of Fragile Parts' exhibition at the 2016 Venice Biennale shows three scaled reproductions of Canova's Pauline Bonaparte as Venus Victrix in glass, wax and 3D printed resin (*fig. 21*).[203] Shown together these reproductions suggest the various expressive aspects of material, particularly the red wax which effectively alters the visual perception of the sculpture. Changes in the colour and texture subsequently affect the public reception of the object and its identity,[204] where it is unexpected to view Neoclassical sculpture in vibrant colour. As seen throughout this chapter in the instances of Elkington's two-tone electrotype and Pull's glazed basin, colour is additive and works to emphasise particular aspects of design. Alternatively the example of the Temperance Basin in white resin echoes the first metalwork pieces by Briot and Enderlein, where one form is reproduced in a single colour.

Similarly to how Briot's basin acted as a prototype for adaptations by artists like Enderlein, digitally printing a Temperance Basin allowed for experimentations with not only material but also with scale. Where before it was possible to slightly change the size of the basin by creating a new mould, the print in resin demonstrates the ease with which digitally

[201] Knott, 'Adventures in 3D scanning: New models launched on Sketchfab'.
[202] Patterson, 'Copy That!'.
[203] Cormier, 'Against a Pile of Ashes'.
[204] Schmidt, 'The Art of Shaping Materials', 411.

scanned objects can be made smaller while still preserving the detail in the design.[205] This technology also presents possibilities for future reproductions of the collection, where scaling up objects could reveal more about the original. This kind of reasoning led Walter Benjamin to first argue that a technological production is closer to an original than one crafted by hand.[206] Furthermore, he wrote that "it is able to bring out aspects of the original that can be accessed only by the lens…and not by the human eye, or it is able to employ such techniques as enlargement or slow motion to capture images that are quite simply beyond natural optics".[207] These techniques for digital reproductions draw greater awareness to the detail of an object, and result in a greater consciousness of its significance or meaning. While the objects in the Cast Courts are to the scale of the original artworks, the monumentality of the architectural pieces in particular have a larger impact because they are housed within a gallery. This aspect of their presentation has long been noted as a visitor attraction, [208] yet for further public engagement the scale of reproductions could allow for viewing enhanced material aspects of an object, or even experimenting with space in the gallery.

This incentive to capture the public's attention with new reproductions has also introduced the possibility of closer visitor engagement with objects. Two copies were printed from the digital scan of the Elkington's Temperance Basin to provide the display with a "touch object" for the public.[209] This not only provides greater access for visually impaired visitors but bypasses the typicality of 'no touching' in the museum space. Copies assist with public interactions from the masses by allowing a personal experience of an object's materiality, expanding the standards of display such as wall labelling. The manufacturing of knowledge discussed in chapter one is applicable to this instance, as the material properties of an object often allude to value as well as assist exploratory forms of learning.[210] With one copy reserved for the display and the other offered up to public handling, it is also evident how modern reproductions evade traditional distinctions of value. The possibility of mass productions means that identical copies can be chosen for different biographies in the museum collection, for example one basin preserved and the other more vulnerable to decay by handling.

[205] Royal College of Art, "3D Print", *The Victoria and Albert Museum*.
[206] Benjamin, 'The Work of Art in the Age of Mechanical Reproduction', 6.
[207] Benjamin, 'The Work of Art in the Age of Mechanical Reproduction', 6.
[208] Patterson, 'Copy That!'.
[209] Knott, 'Adventures in 3D Scanning: A Cast Court for the Digital Age' .
[210] Ibid.

Patterson compares the present influence of 3D printing to electrotyping and photography around the time of the Great Exhibition and describes how the team at the Victoria and Albert Museum have worked to communicate that same excitement felt around new technology for reproduction.[211] In the next section, this emphasis on reinterpreting the Victorian past for the present will be explored in relation to its influence on the current gallery display of the multiple Temperance Basins.

[211] Patterson, ‘Copy That!’.

v. The Chitra Nirmal Sethia Gallery

Since 2018 the Victoria and Albert Museum has housed these four Temperance Basins in one gallery running between the two galleries of the historic Cast Courts (*fig. 22*). Opened as part of the last renovations The Chitra Nirmal Sethia Gallery is intended as an interpretation space for the relevance of reproductions today in combination with their significant past.[212] Displaying these basins alongside each other allows for the kind of direct visual comparisons that were taking place in 1903 by Massé, with a crucial difference. The materiality of the objects that have developed over time with new technologies and historical significance frames the collection's importance to art history. The space aims to reposition the reproduction toward an appreciative audience, instead of one disappointed by copies.[213] By highlighting links to industry, revolutionary technology, and clarifying the influence of a single design, aspects of the objects materiality are drawn upon to authenticate their place in the gallery. The curatorial intention of the space is to bring together objects that exemplify the significant practice of reproduction and in particular, its association with the institution and the Cast Courts overall.

To a certain extent this central gallery has been a reflection of evolving public engagement with reproductions. From 1983 to the renovations in 2009 the space was known as the Fakes and Forgeries Gallery,[214] demonstrating a drastic change in the perception of the collection. The presence of fakes in a museum remains a curatorial taboo yet has been reclaimed by institutions who serve to capitalise on its public appeal. This includes the Victoria and Albert Museum, who in 2010 held an exhibition of 'The Metropolitan Police Service's Investigation of Fakes and Forgeries' in collaboration with Scotland Yards 'Art Squad'.[215] In more recent years, the reinterpretation of the museum's collection of reproductions serves to highlight the increasingly nuanced debate surrounding copies. Official research carried out by the Victoria and Albert Museum inspired the most recent refurbishment of the gallery as it sought to disassociate reproductions from fakes and promote engagement with exhibits such as the Temperance Basins as individual historic objects.[216] Furthermore, the rise of digital technology and its utilisation within the museum has had a noticeable impact on the scholarship and curatorial practice surrounding

[212] Knott, 'Cast Courts – One Day to Go!'
[213] Patterson, 'Copy That!'.
[214] Bailey, 'Farewell to Forgeries'.
[215] Hardwick, 'The Sophisticated Answer', 406.
[216] Patterson, 'Copy That!'.

reproductions. As will be examined in chapter three, the digitalisation of the case studies in this thesis further complicates the notion of an authentic reproduction.

Overall, the contribution of new technologies that allow the making of multiple copies has resulted in instances where copies allow visitors to get closer to an object, to the extent of physically touching the design of the Temperance Basin that was conceived five centuries ago. It has been discovered how in each material the prototype of the basin has been linked to its period and respective audiences over time, resulting in the objects longevity and influence as a reproduction. The purpose of the objects examined as case studies throughout this chapter were to be decorative, despite the form of a basin or dish. Whether replicating the impression of the design in an electrotype or highlighting aspects of the ornament with earthenware, the decorative art object continues to be visually enhanced by its material form in a variety of ways. Furthermore, it has been shown how in different contexts the makers of reproductions do not seek to imitate an original or masterpiece of art, but to engage with an audience or reinterpret an object by specifically employing an alternative material. The subsequent display of these objects in the Chitra Nirmal Sethia Gallery seeks to communicate this to visitors as well as aligning their significant history with that of the Victoria and Albert Museum.

Immaterial Illusions: Case Studies in the Digital Realm

In the previous two chapters, two physical studies have been examined by their materiality in combination with the status as reproductions in the Victoria and Albert Museum. This chapter seeks to further analyse their digital incarnations in the collection as scans and online models alongside the physical reproductions as a result on this technology. The manifestation of the digital copy in a museum leads to a consideration of how modern technology is assisting virtual reproduction for the benefit of public engagement. Thomas P. Campbell, the former Director of the Metropolitan Museum of Art, reasons that "most importantly, [museums] are a place of authenticity. We live in a world of reproductions – the objects in museums are real".[217] This notion that the genuineness of an object is what affords its substance has never been completely true for collections. Not only are reproductions 'real', but they were also integral to the inception of the museum itself.[218] Campbell goes on to say that the museum is "a way to get away from the overload of digital technology",[219] yet the extensive digital practices undertaken by the Victoria and Albert Museum are integral to supporting its collection.

Amongst a discussion of the material aspects of authenticity, it is important to explore the definitions of a digital material. Popular discourse in the 1990's framed new media and its effects as existing outside of the material constraints and determinants of reality.[220] Van den Boomen, Lammes, Lehmann, Raessens and Schäfer describe this as "digital mysticism" that prevails today as complex codes are presented in the form of user-friendly interfaces.[221] Ultimately technology has been integrated so well into everyday living that is it easy to consider it as something intangible. When viewing art objects online or in digital forms, technology is also able to communicate material aspects accurately to the extent that its own form goes unquestioned. My own suggestions for the material form of the digital could be the pixels that make up an image, the code that creates online content, or the software that runs a programme. Perhaps like the unfixed properties of materials such as with plaster recognised in chapter one, the digital faces fluctuating meanings depending on contextual factors. For the purposes of this chapter it will be studied for its material capability to depict other materials in practices of reproduction. This highlights it both as a material for imitation, akin to the

[217] Brenna, Christensen, Hamran eds. *Museums as Cultures of Copies*, 1.
[218] Varutti, ''Authentic reproductions'', 43.
[219] Brenna, Christensen, Hamran eds. *Museums as Cultures of Copies*, 1.
[220] Van den Boomen, Lammes, Lehmann, Raessens and Schäfer, *Digital Material*, 8.
[221] Ibid, 8-9.

relationship between plaster and marble, as well as a material for variation, able to adapt and manifest models in its own material such has been seen with the Temperance Basins.

i. The Victoria and Albert Museum: Curating engagement

As recently as January 2021 the Victoria and Albert Museum renovated their online collection presence, aiming to unite separate search engines under a single digital platform of 'Explore the Collections'.[222] This site is currently available in its beta stage which means the software is open to the public and will improve after collecting responses.[223] Unlike public museums in the 19th century, modern institutions are allowing for greater transparency online that risks museum authority in the digital democratisation of its collections.[224] Instituional responsibilities for the Victoria and Albert Museum include the distribution of authentic objects and data alongside the newly redeveloped Cast Court galleries in the physical museum space. With its images and reproduction of knowledge in the form of an online entry, digital archives are copies of objects for the purpose of both instituional documentation and public engagement. Just as Conn notes how art objects in storage act as a parallel museum to one open to the public,[225] the digital archive exists alongside a physical collection as a counterpart or mirror of the Victoria and Albert Museum. The presentation of copies online alongside those such as in the Cast Courts exemplifies how digital culture is perpetuating reproduction practices in the 21st century museum.

The visual assessment of an object is essential to engaging with online archives, which are otherwise just object data. The aim of making these not only publicly accessible but appealing has been under development since 2009 when the Victoria and Albert Museum launched its first collections search.[226] A decade later, the Victoria and Albert Museum was digitising over 800,000 images for over 1,200,000 objects in the collection in a single year.[227] For objects from the Cast Collection such as *David,* gathering digital material for its entry must also incorporate the original statue by Michelangelo as a counterpart for its story at the Victoria and Albert Museum. Likewise, the 29 images of *David* include other casts of the original object such as the plaster head of *David* from a Florentine collection.[228] This visual information aims to contextualise the cast alongside its written history as a museum reproduction.

[222] Price, 'Announcing Explore the Collections'.
[223] Purssell, 'Explore the Collections Beta – give us your feedback!'.
[224] Hylland, 'Even better than the real thing?', 63.
[225] Conn, *Do museums still need objects?,* 23.
[226] Price, 'Redesigning the V&A's collections online'.
[227] Craig, 'How are the V&A's online collections used?'.
[228] Papi, "David", *The Victoria and Albert Museum.*

A new feature of the 'Explore the Collections' database is its tool to offer similar object entries under the heading 'You may also like' (*fig. 23*).[229] It acts as a visual prompt for discovering more objects online in what had previously been called a "digital culs-de-sac" of online collections by the Victoria and Albert digital department.[230] For objects such as the Temperance Basin, this feature has the ability to strengthen the material links between the examples held in the collection as well as their comparable contexts. On the page for Briot's Temperance Basin, the tool suggests other works that mention Briot including the basin by George Pull that was examined in the previous chapter (*fig. 24*).[231] It also provides visual links to other basins in the Victoria and Albert collection as well as directing you toward further objects of interest from its Metalwork department.[232] The top reason for visiting any online site of the Victoria and Albert Museum is to look at art and design,[233] and so these classifications and visual connections allow for a more exploratory approach to online viewing of the collection. Overall, the online curation of digital images and information is not only essential to increasing public engagement but highlights how copies of the collection in the online archives are new forms of reproduction and a mirror to the physical Cast Collection. Online collections further contextualise an object outside of the gallery space as well as allowing the visitor to understand the complexity of the dynamics of copying alongside the relationship between originals and copies under the concept of authenticity.

In the next section, this will be further developed by looking specifically at the scanning and reproduction technology which has shaped digital practice at the Victoria and Albert Museum. The three most common and effective uses of light scanning are laser, structured light and photogrammetry.[234] The first will be studied in its process of digitally scanning the Victoria and Albert Museum's cast of *David,* and the second in its use for the scan of the Elkington's Temperance Basin. The third, photogrammetry, will be referenced in the sense that it highlights the ease with which the public can undertake these reproduction practices themselves. When asking if museums still need objects Conn asserts that "an analogue original is valuable because it is authentic, while a digital copy is valuable because

[229] Price, 'Announcing Explore the Collections'.
[230] Price, 'Redesigning the V&A's collections online'.
[231] Briot, "Dish", *The Victoria and Albert Museum.*
[232] Ibid.
[233] Craig, 'How are the V&A's online collections used?'.
[234] Hamer, 'Adventures in 3D Scanning: A Cast Court For The Digital Age Part 2'.

it is accessible".[235] The accessibility of technology has become a driving force for engagement with collections and this continues long after leaving the museum.

[235] Hylland, 'Even better than the real thing?', 80.

ii. Digital Scanning: *David*

The development of digital scanning in the museum is something of a bridge between a virtual and physical object. It has been utilised as much in conservation as it has been to produce additional reproductions for the museum collection. When stating that "all originals have to be reproduced…simply to survive" Latour and Lowe allude to the conservation practices undertaken by museums that are mirrored in the documentation practice by digital copies.[236] This can be exemplified by the cast of Michelangelo's *David* and its position as both a popular artwork and reproduction piece in the Victoria and Albert collection. Conservator of the sculpture department Johanna Puisto compares the possibilities of scanning with 3D technology to her previous modes of investigation surrounding *David* which included "archival research, visual examination, X-ray, [and] paint analysis".[237] The revelatory aspects of scanning assist these more traditional conservation practices in constructing the knowledge around the object, making it a modern investigatory tool for the history of art. Furthermore, scanning allows for the continuation of copies as it assists in preparing models for 3D printing. In the instance of scanning *David* in 2016, the aim of the project was to construct a 1:1 replica of the sculpture for an upcoming film by way of digitally mapping the existing cast.[238]

The team used an LiDAR laser scanner in the Cast Courts to digitally capture the form of *David.*[239] This technology works by targeting the object with a laser at more than a million points per second and then using that information to form what is a called a "point cloud" of the object (*fig. 25*).[240] From this data a 3D model can be made online where a technical artist fills in any gaps missed by the scan with high-resolution digital photography.[241] This process is similar to the scan and production of the resin Temperance Basin in the previous chapter, but on a larger scale. For example, the scanner could not be handheld nor mobile as with the Temperance Basin and instead was mounted on a telescopic tripod on both the floor and gallery above *David* to capture the full range of angles required (*fig. 26*).[242]

---

[236] Latour and Lowe, 'The Migration of the Aura', 288.
[237] Puisto, 'Michelangelo's David – Part 1: Creating virtual copies of casts'.
[238] Ibid.
[239] Fletcher, 'Guest post: Michelangelo's David – Part 2'.
[240] Ibid.
[241] Ibid.
[242] Seagers, 'Guest Post: Michelangelo's David – Part 3'.

To construct a physical reproduction from the digital scan of *David*, the data from the LiDAR file had to first be given a scale.[243] Like the recreation of object moulds, scale is a flexible aspect of reproductions that can be exaggerated with the use of digital technology. Although the team were working to the dimensions of the original sculpture of *David*,[244] it would have been just as easy to use the data for the recreation of an accurate sculpture as small or large as materially possible. The file was then sent to a 3D sculpting company who printed and cut the statue into approximately 1200mm thick horizontal polystyrene slices.[245] This was advantageous to the travel and construction of David around metal armature,[246] like the purpose of Papi's adaptation of the Victoria and Albert cast for its move to London. Once glued together in larger sections the object was worked on by sculptors (*fig. 27*).[247] The Art Director and Production Designer Chris Seagers notes "as perfect as the digital scan is, they always require a human sculptor".[248] This highlights how technological accuracy is not independent from the visual perception of material, where the human eye perceives differently to a machine. Boulton and Hall identify that "pixels, by design, are agnostic to image content. People are very different…they tend to draw what they know rather than what they see".[249] Their research shows the way we are able to recognise and classify materials and images is a nature that may never be able to be replicated by an algorithm.[250]

On the other hand, scanning is able to detect unseen material qualities of sculpture, and the scan of *David* not only created a new copy of Michelangelo's work but had the ability to identify and reverse the physical alterations from when Clemente Papi produced the existing cast in the Victoria and Albert Museum. The joint seams of the plaster that were smoothed down for visual consistency when the cast was taken in Florence can be visually detected by the scanning equipment.[251] For the scan and digital model to exactly replicate the cast, a team had to then smooth out these seams once more using bespoke modelling software.[252] The parallels between working in plaster and digital material calls into question the properties of new media technologies. In previous chapters where it is possible to examine the associations and implications of a physical material, the digital evokes illusions

[243] Seagers, 'Guest Post: Michelangelo's David – Part 3'.
[244] Ibid.
[245] Ibid.
[246] Ibid.
[247] Ibid.
[248] Ibid.
[249] Boulton and Hall, 'Under Material Skin Lie the Bones of Identity', 395.
[250] Ibid, 392.
[251] Fletcher, 'Guest post: Michelangelo's David – Part 2'.
[252] Ibid.

of immateriality.[253] To interact with the digital model produced by the Plowman Craven team please refer to the link in appendix 1. Once assembled, the painting of the physical sculpture was a process as important to the finishes of cast reproductions mentioned in the first chapter, where artists not only add marble veins and texture but polish and age the sculpture with washes to give it a convincing appearance of marble.[254] However unlike the finishes of Papi's cast where direct material imitation was key, the painting accounted for how the reproduction prop would look under the lighting of the film set and respond tonally to the camera.[255] This exemplifies how the adaptation of material finishes are therefore more complex when using technology to convey a copy of *David* outside of the physical gallery space.

The sculpture was needed for only two days of filming before it was broken up and discarded,[256] demonstrating the values held for new reproductions of artworks in the present day. For current museum practice, the digital file is potentially more integral to the museum collection than a new copy of an object. Unlike the material comparisons between marble and plaster in the first chapter, the value of materials does not work in the same way when considering the material composition of digital technology. The ability to endlessly reproduce objects has seemed to change their physical value by knowing that the possibility is there to create an exact reproduction. Overall, it is possible to liken the abandoning of the polystyrene copy of *David* in 2016 to the countless plaster casts and moulds that were destroyed across the 20th century,[257] corresponding to the changes in how people engage with artworks as well as the perception of a reproductions value. Scanning the cast of *David* for reproduction allowed the museum to learn more about the object in addition to keeping the data for future use rather than the physical reproduction.[258] Throughout this section the process of scanning and production have been likened to the casting process involved with recreating *David* 165 years ago. Overall the practice is useful in curation, where new information about the joint seams aid further research around conserving the sculpture and new modes of display can be considered for its position in the gallery.[259] Likewise, it is useful to public engagement where the digital replications offer an amazing accuracy of detail as well as the opportunity to see the object outside of the museum context.

---

[253] Van den Boomen, Lammes, Lehmann, Raessens and Schäfer eds. *Digital Material*, 8.
[254] Seagers, 'Guest Post: Michelangelo's David – Part 3'.
[255] Ibid.
[256] Ibid.
[257] Bilbey and Trusted, '"The Question of Casts"', 480.
[258] Seagers, 'Guest Post: Michelangelo's David – Part 3'.
[259] Fletcher, 'Guest post: Michelangelo's David – Part 2'.

The use of digital scanning and reproductions in the museum is fundamental to an institutions 21st century practice. While in the past there have been debates surrounding physical objects such as plaster casts in the museum and their effect on authentic practice, there seems to be less contention surrounding the digital and its ability to make an original object redundant. Overall, there is no evidence suggesting that the presence of digital collections reduces the interest in their physical counterparts.[260] Accessing objects online can therefore open up dialogue around the developing position of the 3D reproductive model in relation to the Victoria and Albert collection. As will be examined in the next section, digitally crafting objects can be considered a practice in public engagement with the collections and their ubiquity in the digital realm.

[260] Hylland, 'Even better than the real thing?', 81.

iii. Sketchfab: The Temperance Basin

One of the first models to be uploaded by the Victoria and Albert Museum on Sketchfab was the light scan of the Elkington's Temperance Basin (1852) (*fig. 28*).[261] This was the same model created by the Royal College of Art and used to create the resin reproduction of the Temperance Basin for both display and touch that was discussed in chapter two. It was created using a handheld structured light scanner which is different to the laser technology used to scan the cast of *David* yet uses light in a similar way to map spatial points along the surface of an object.[262] As aforementioned, the process is also faster as the equipment is more mobile being handheld. By studying the upload of the model Temperance Basin on Sketchfab, we may further comprehend the liminality of a digital reproduction and the aims for its interaction with the public. Please refer to the link provided in appendix 2 to engage with the digital model.

Unlike its display in the physical gallery, the Temperance Basin exists on Sketchfab in isolation from other objects. This partly removes some of the historical context that is given by the surrounding basins and instead there is an inward focus toward the details of the object. The presentation of this technology invokes Benjamin's words about the intervention of the camera in standard perception: "its plunging and soaring, its interrupting and isolating, its stretching and condensing of the process, its close-ups and its distance shots".[263] This could just as easily describe an interaction with the model on Sketchfab, where the cursor permits all of the above to capture what Benjamin describes as the "optical unconscious".[264] Labelled at four separate information points, clicks guide you closer to the captured surface of the basin. An exception to the high-resolution scan is the back of the object, which interestingly is not part of the model and appears vague upon its rotation (*fig. 29*). While this reflects the standardised display of museum objects from one angle to an audience, there are further potential uses for this technology. Benjamin writes how film technology is able to "bring out" and "reveal" aspects of the material formation invisible to natural perception.[265] This is evident with the 3D model of the Temperance Basin as digital engagement not only includes seeing the object from multiple angles but also digitally handling the basin. The object can be moved and inspected using a computer cursor while also allowing the viewer to

[261] vamuseum, 'Copy of the Temperance Basin', *Sketchfab*.
[262] Hamer, 'Adventures in 3D Scanning: A Cast Court For The Digital Age Part 2'.
[263] Benjamin, The Work of Art in the Age of Mechanical Reproduction, 30.
[264] Ibid.
[265] Ibid, 29.

explore the object in more detail than would be possible in its museum display. The high resolution of the model permits zoom features to closely study the object and from different angles it is possible to realise the depth of the basin as well as the relief of the decorative figures (*fig. 30*). Overall, being able to digitally rotate the object has the potential to evoke the sensation of holding it. Certain material aspects of the Temperance Basin such as the highly reflective metal are presented realistically to the audience. However, not all aspects can be captured and as the object turns easily with a flick of the cursor, one finds it hard to imagine the weight of the original when viewing it online.

During the Victoria and Albert's audience research for the website, one visitor wrote: "I want to see the characteristics of authentic pieces [in order to] to distinguish them from copies. High resolution photos from all sides…is extremely helpful".[266] This suggests the visual value of digital technology and its ability to bring a visitor closer to an object that may be displayed behind glass, or even held in museum storage. The high resolution of the Temperance Basin digital model allows for both close-ups of object detail and the control of speed at which you move it on the screen. Benjamin suggested that the use of both the close up and slow motion in film was intended to bring out the "unfamiliar" in objects and sequences for the audience.[267] When viewed close up, it is true of the Temperance Basin model that it is no longer familiar as the museum object but unrecognisable only as an extreme rendering of materials (*fig. 31*). Examples of this are also evident in the flat visual arts, where museums have approached original paintings with digital tools including high resolution photography to showcase its material aspects, in order to draw attention to details that go unnoticed by the viewer. Ongoing projects such as 'Operation Night Watch' at the Rijksmuseum demonstrate the ability to completely change how a visitor views Rembrandt's *The Night Watch* (1642) by way of the extreme the close ups and detail alluded to by Benjamin.[268] The imaging team at the Rijksmuseum have created a photograph of the painting that is made up of 44.8 gigapixels or 44,804,687,500 pixels,[269] allowing for close ups that show the cracked paint surface as well as the visible fingerprints of the main figure (*fig. 32*). While at present no comparable projects exists for works of sculpture let alone reproductions, this example shows how the links between material and technology are being

[266] Craig, 'How are the V&A's online collections used?'.
[267] Benjamin, *The Work of Art in the Age of Mechanical Reproduction*, 29.
[268] Rijksmuseum, 'Operation Night Watch'.
[269] Rijksmuseum, 'Most detailed photograph ever of The Night Watch'.

capitalised upon for both engagement with the virtual public as well as for modern conservation practices in national museums.

As well as digitally handling an object, the Victoria and Albert Museum use Sketchfab as a platform to promote the user creation or even recreation of the 3D model Temperance Basin. Sketchfab is primarily used by creators showcasing their work, and this target audience appeals to the recent aim of the Victoria and Albert Museum's digital department seeking to encourage both digital and physical "making".[270] Around 40% of visitors to the online collections work within the creative industries and so ideally the 3D models will appeal to creative engagement by way of remixing or making new objects from digital prototypes.[271] The variety of scans released on Sketchfab is targeted to attract attention to the diverse collections at the Victoria and Albert Museum. With the material aspects and detail at the forefront of the collection models, the technology is being used to inspire engagement by way of visual impact and easy access online.

Corresponding to its use in museums, public access to the digital scanning technology is becoming more ubiquitous. Before undertaking a collaboration with the museum, the organisation Scan the World were able to scan and upload almost 300 sculptures from the Victoria and Albert Museum without their permission.[272] All that is needed to digitally reconstruct an object is multiple photographs from different angles, which in combination with software readily downloadable on any smartphone produces an accurate scan called photogrammetry.[273] The public display of the Cast Courts at the Victoria and Albert Museum allows proximity and tourist photography in their galleries and therefore visitors are able to engage with sculpture without many digital limitations. The aim of this open access seems to be the desire for reciprocity between the museum and the public. The Chief Digital Officer at the Metropolitan Museum of Art suggests that "if we can put The Met's collections into their [the publics] hands, and they create the next power app using Met content, it'll get ingrained in people's psyche, reminding them of the importance of the collection".[274] Eliminating the digital barriers to quality and production is redeveloping the ways in which people can utilise the collection and even extend its influence through individual works and copies.

[270] Price, 'Redesigning the V&A's collections online'.
[271] Ibid.
[272] Cormier, 'The new power of copies'.
[273] Ibid.
[274] Ibid.

iv. Preserving Digital Material

Both processes of the reproduction of *David* and the Temperance Basin demonstrate how digital copies evoke the illusion of immateriality yet capture significant material qualities of the objects. The preservation of these digital copies face challenges similar to the conservation of the existing casts in the Victoria and Albert Museum collection, requiring experts to ensure their accessibility for future audiences.

The digital information produced by 3D scanning and digitising a physical object exists only within a specific type of computer software.[275] As technology rapidly evolves, types of digital media become inevitably obsolescent meaning that for a museum to collect digital objects they must also collect the software with which it was created.[276] Similar problems arise with "born digital" objects that need to be properly stored and maintained online for the future.[277] If the software is longer compatible with modern technology, the museum must work to ensure its long-term accessibility. Crick outlines the proposal of "emulation" or the recreation of outdated software on a modern device.[278] Emulation is a term that is frequently mentioned in art history alongside those such as reproduction, imitation, or facsimile, particularly in the traditional sense that a student may emulate his masters style of artwork.[279] However, there are issues with using emulation to produce a faithful reproduction for digital objects.[280] As aforementioned the digital can often be perceived as immaterial, yet preservation by emulation requires capturing the "non-enumerable properties" of digital data.[281] When this data is collected as a digital object there must be effort made to reconcile the modern technology with its outdated counterpart, even though the latter is of lesser quality. Therefore graphics and images may appear visually different on modern high resolution computer monitors using the properties of older software.[282] For an accurate reproduction of the image, it is necessary to emulate how it originally looked to an audience. If this practice of emulation is applied to the 3D models of *David* and the Temperance Basin, it is clear that the present technology of Sketchfab itself must be preserved in the collection alongside the objects to ensure they are of use to a future

[275] Hamer, 'Adventures in 3D Scanning: A Cast Court For The Digital Age Part 2'.
[276] Crick, 'Preserving the Digital House of Cards', 104.
[277] Ibid, 101.
[278] Ibid, 104.
[279] Mayernik, *The Challenge of Emulation in Art and Architecture',* 5.
[280] Lurk, Espenschied and Enge, 'Emulation in the context of digital art and cultural heritage preservation', 248-9.
[281] Ibid, 248.
[282] Ibid, 249.

audience. Overall, this evocation of software is a modern form of reproduction that assists with the preservation and display of digital copies. With such a large online database, the Head of Collections at the Victoria and Albert Museum is openly concerned about the future sustainability of digitisation.[283] It is an aspect of management that requires reproduction for consistent accessibility and accuracy for both the public and the ongoing preservation of digital objects.

In the 21st century museum visitor experience is most likely to be a blend of the physical and digital,[284] reflecting the institutional collections inhabiting both spaces. By using physical and digital content as supports for each other and increasing the access to information and images, the Victoria and Albert Museum is actively encouraging engagement with their collections. Furthermore, by embracing technology and creation in comparable ways to the 19th century public museum, it can be seen how the educational aspects of recreation and industry have become manifest in the use of new digital media technologies. While the digital is linked to the immaterial, its role is not lost amongst the discussion of authenticity in the museum. In fact, emphasis on this reveal how its materiality challenges traditional perceptions of the object and its copy. Alongside this its position amongst conservation practices sheds light on the reconstruction of sculpture for both preservation and engagement. It is almost inevitable that scanning and 3D printing will one day become obsolete technologies as the digital sphere continues to evolve.[285] Curatorial practice and public engagement share similar technology amongst the Victoria and Albert Museum, where digital practices are at the forefront of further developing their collections by way of virtual reproduction.

[283] Crick, 'Preserving the Digital House of Cards', 101.
[284] Price, 'Designing a new welcome experience at the V&A'.
[285] Crick, 'Preserving the Digital House of Cards', 104.

Conclusion

The Victoria and Albert Museum has provided a successful collection in examining the material aspects of authenticity in the case of museum reproductions and their display. The museums relationship to historic copies and industry reproductions as well as its initiatives with producing recent examples using modern technology have drawn interesting links between curatorial practice and public engagement from the 19th century to the present day. In an examination of its cast collection, it has been demonstrated how the Victoria and Albert Museum instituional history can be utilised for its own future. Aims regarding accessible collections and innovative displays of reproductions are intended to alter the visitor perception of the cast collections. By aligning them with a significant past, they suggest that they have a significant future. Negotiating space for these so-called copies amidst a cultural institution affiliated with authenticity is an issue that has concerned the Victoria and Albert Museum since its conception and continues to broaden under the pressures of modern public engagement.

In evaluation of the two case studies central to this research, both the cast of Michelangelo's *David* and the multiple forms of the Temperance Basin in the Victoria and Albert Museum collection have revealed different aspects of the reproduction's material status in the museum. It has been seen how certain material elements of the reproductions are highlighted and others are diminished. The adaption of designs often takes into account the properties of material when it is remade. Moving into the digital realm this is particularly evident, as interaction with these objects enables a perception aided by technology that exceeds traditional museum display. With qualities such as form and colour, their material effects have been underlined by emerging work in the field of visual perception alongside that of established cultural theorists such as Walter Benjamin, suggesting the synthesis between reproductions of objects in the past and recent present.

The copy of *David* and the Temperance Basins together highlight how a reproduction is a means to shape public engagement by way of education and multiplicity in the Cast Court galleries. Through a discussion of the materiality of both case studies I have demonstrated how significant materials are in relation to periods in an object's history, and how often these can be communicated by means of display. If plaster and electrotypes characterised the 19th century museum, then the Victoria and Albert Museum today is presented by way of resin and 3D prints. This can arguably shape the viewers response to the collection as its continues to be at the forefront of industry and technology, reinterpreting its own objects and their

materials for public engagement. Whilst you cannot always touch, material continues to be significant to engagement in combination with the production of knowledge and the authority of the museum. Furthermore, in a digital age for a digital audience, I have shown how the reproduction is being adapted and preserved for the future of public engagement. Support between the digital and physical collections is leading to a future of museum practice that is more attentive to problem solving surrounding visitor experience and conservation in the context of the Victoria and Albert Museum.

The main problems encountered with this research into materiality and authenticity were the conflation of academic terms across previous studies. For a concept that remains prevalent in museum space and discourse the definitions of authenticity were sporadic, making it more of a challenge to conceive its links to the material aspects of reproductions. Similarly, the specificities of material properties are more common in scientific journals than art history publications, making it necessary to broaden my scope of research. In particular, an assessment of what constitutes digital material meant increasingly engaging with unfamiliar concepts by new media research institutes. Further research on the topic would be useful to investigate the extent to which other cultural institutions represent reproductions in their own collections, even making comparisons between how an ethnographic or science museum interprets a copy in contrast to a museum of art and design. With ongoing debates pressing the sector such as cultural heritage preservation and repatriation, perhaps further studies for museums could look toward how reinterpreting collections of reproductions aids modern issues alongside curatorial practice and public engagement.

The main conclusion to be drawn from this thesis is that although authenticity remains a dominant narrative within the museum and its display, modes of reproduction are more prolific and crucial to engagement with objects than previously thought. The Victoria and Albert Museum validates its own cast collection by telling the story of objects and then reproducing them again by way of digital images or 3D models to engage modern technology with historic design. Over time, the reproduction has become an essential tool for investigation and appreciation of the material aspects of an original object, as well as demonstrating its own properties as an authentic object in its own right.

Appendices

Appendix 1

Plowmancraven_ ‘Michelangelo's David - for Alien Covenant’

<https://sketchfab.com/3d-models/michelangelos-david-for-alien-covenant-510a44f91a414a66acdb733a22bc348f?utm_medium=embed&utm_source=website&utm_campain=share-popup>

Appendix 2

vamuseum ‘Copy of the Temperance Basin’

<https://sketchfab.com/3d-models/copy-of-the-temperance-basin-a506e2a0307e4d589c9c6f8e74846d58>

Illustrations

Figure 1

View of the Weston Cast Court since reopened in 2014, showing on the far right: Clemente Papi, “David”, 1856, plaster cast and painted plaster, height 541.5cm, width 213.5cm (Victoria and Albert Museum London, REPRO.1857-161)

Figure 2

View of the Victoria and Albert Museum (then South Kensington Museum) featuring *David.* Unknown photographer, about 1860. Accompanying photograph of Florence visible on the statue base.

Figure 3

Piazza della Signoria without the statue of *David*, Florence, around 1900.

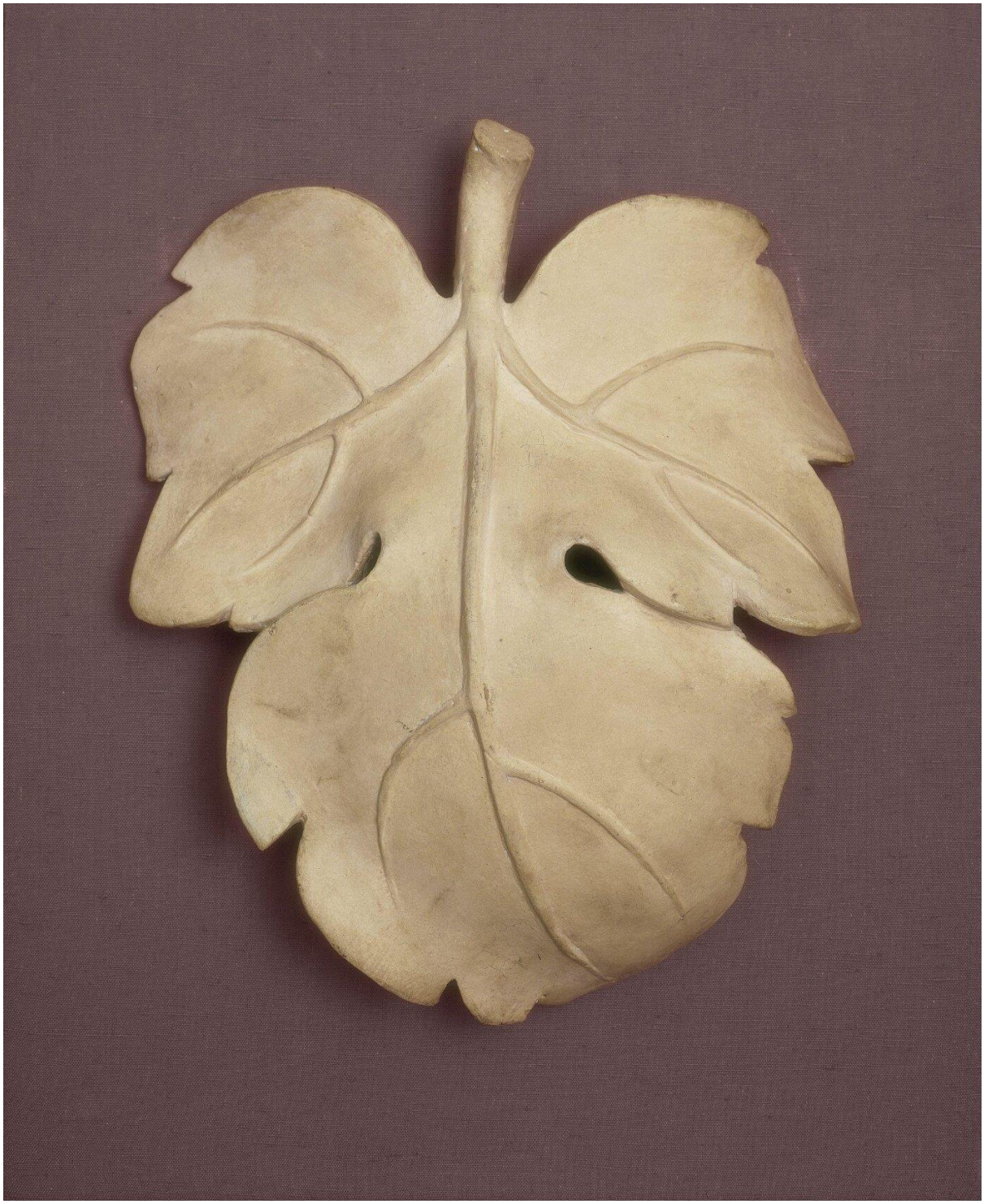

Figure 4

D.Brucciani & Co., “Fig lead for *David*”, 1857, plaster cast, height 40cm, width 30cm, depth 17cm, weight 3kg (Victoria and Albert Museum London, REPRO.1857A-161)

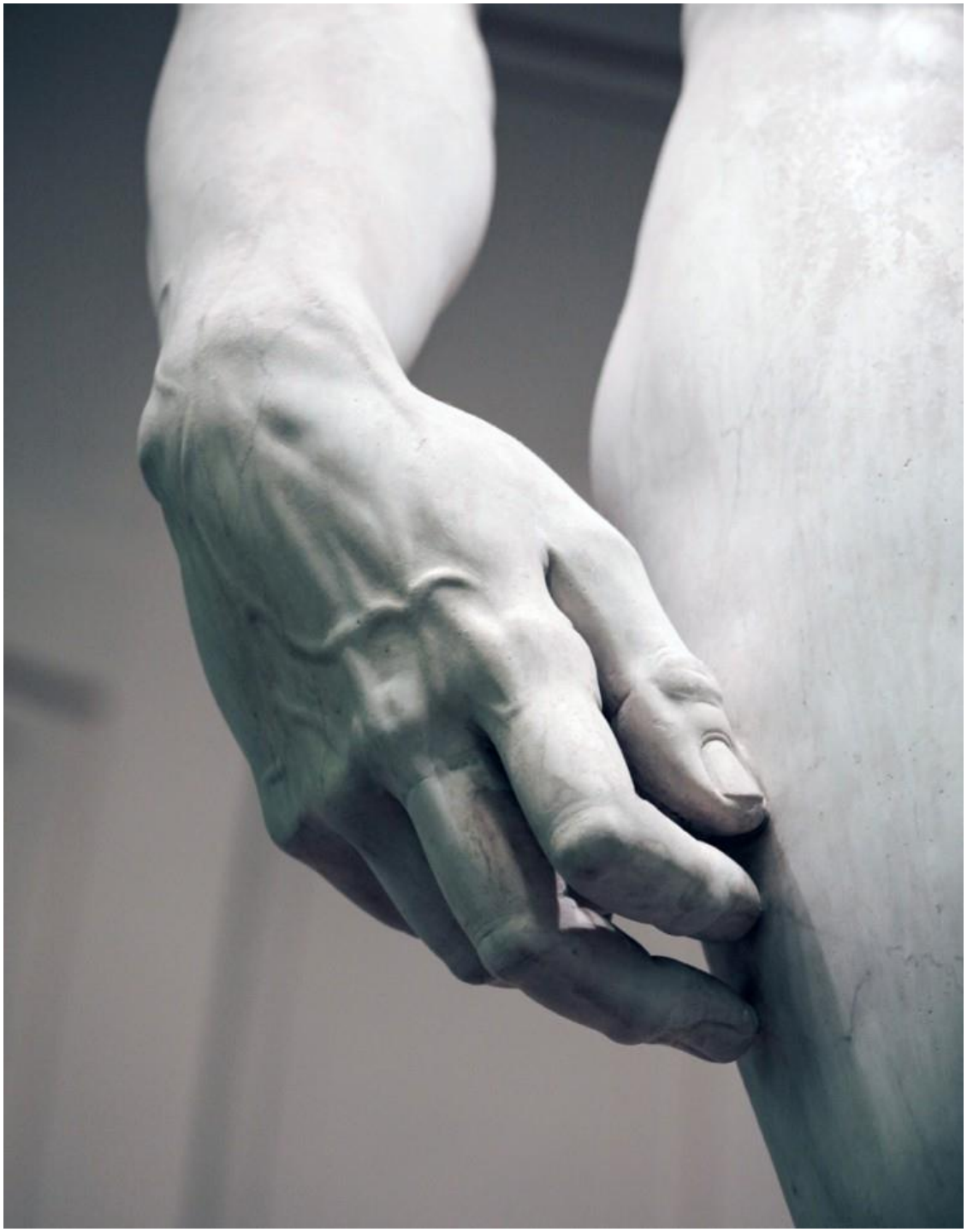

Figure 5

Detail of the right hand of *David*, Michelangelo Buonarroti, 1501-1504, marble, height 517cm, width 199cm, weight 5660kg (Galleria dell'Accademia, Florence)

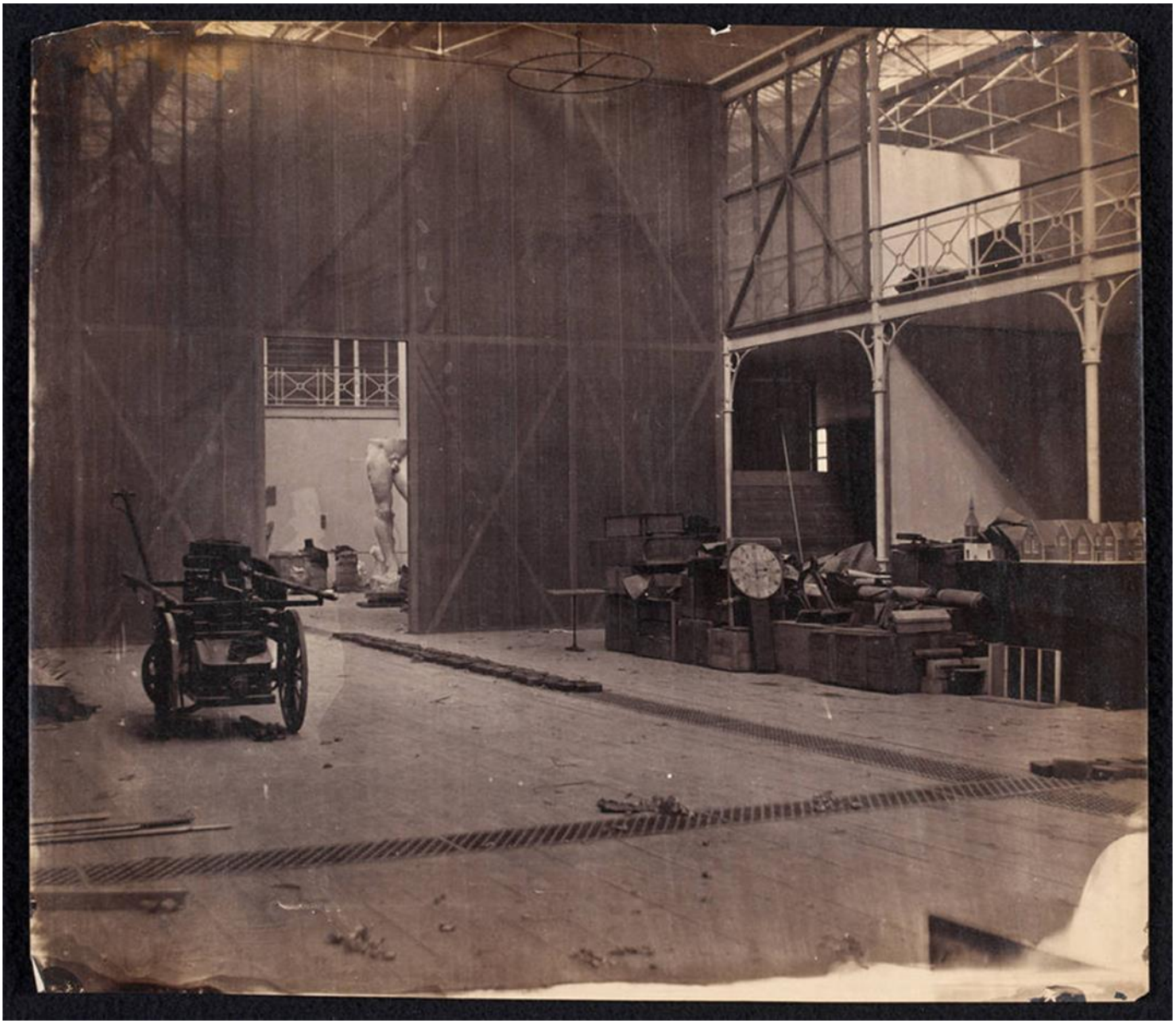

Figure 6

Assembling *David* at the Victoria and Albert Museum London (then South Kensington Museum), photograph by Charles Thurston-Thompson, 1856 (Victoria and Albert Museum London, E.1074-1989)

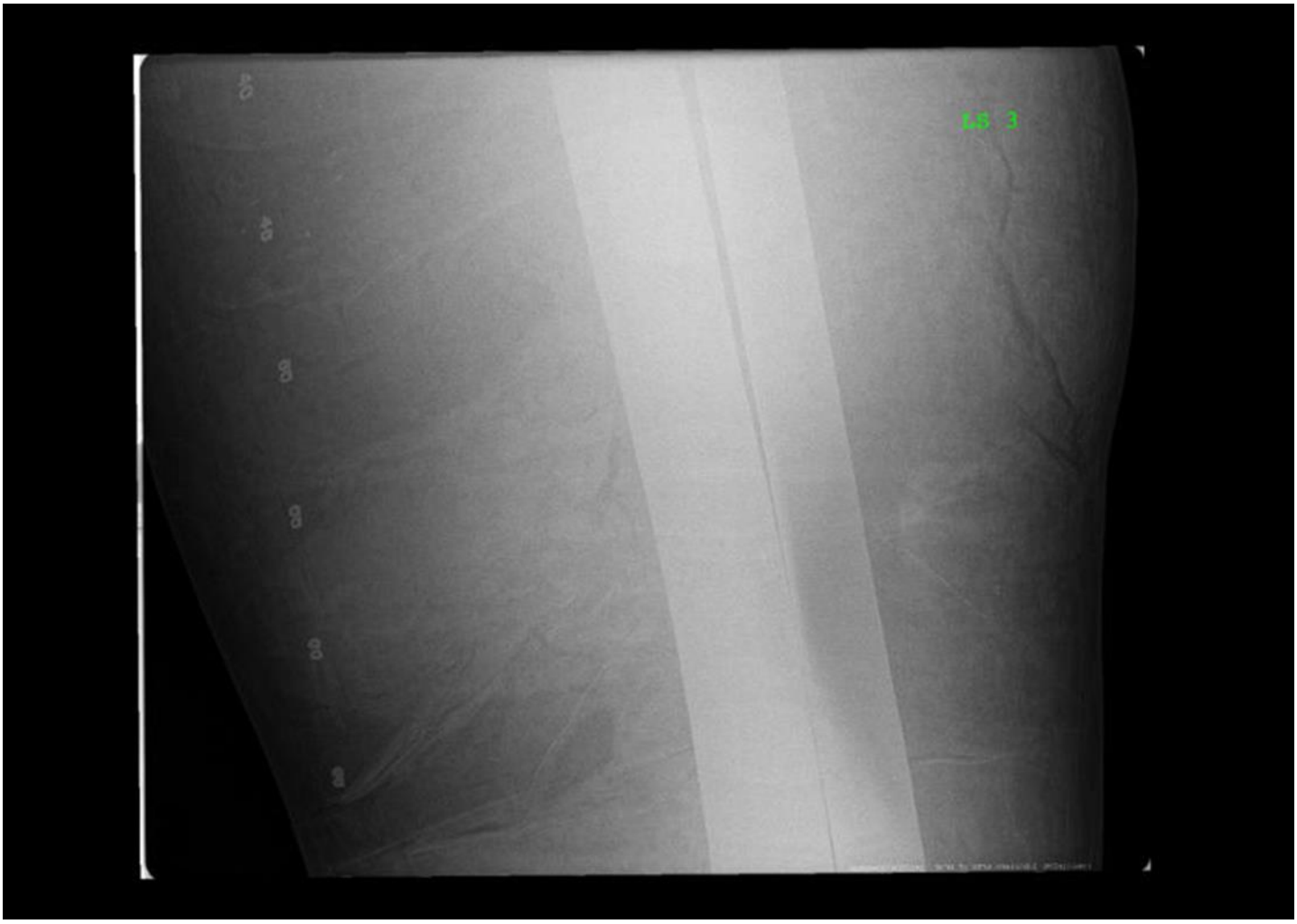

Figure 7

X-ray showing two metal bars inside *David*'s left leg, taken in 2014 during the last large scale conservation of the sculpture in the Victoria and Albert Museum.

Figure 8

Francis Briot, “Dish” or so-called Temperance Basin, ca. 1585, pewter with cast reliefs, diameter 45cm, depth 4.5cm, of rim width 6.5cm (Victoria and Albert Museum London, 2063-1855)

Figure 9

Paul Weise, “Tankard”, ca. 1560, cast pewter with applied castings in relief, silvered, punched and engraved, height 51.4cm, diameter 24.2cm, depth: 29.7cm, weight: 12.76kg (Victoria and Albert Museum London, 927-1853)

Figure 10

Caspar Enderlein, Hans Siegmund Giesser, “Dish” or so-called Temperance Basin, ca. 1650, pewter with cast reliefs, diameter 46.2cm, depth 3.6cm (Victoria and Albert Museum, London, 5477-1859)

Figure 11

Elkington & co., “Basin” or co-called Temperance Basin, 1852, electrotype, diameter 47cm, depth 4.5cm (Victoria and Albert Museum London, REPRO.1852B-6)

Figures 12 & 13

Details of figures 10 & 11 that show the removal of the ‘Temperantia’ lettering above the goddess before being recast as an electrotype.

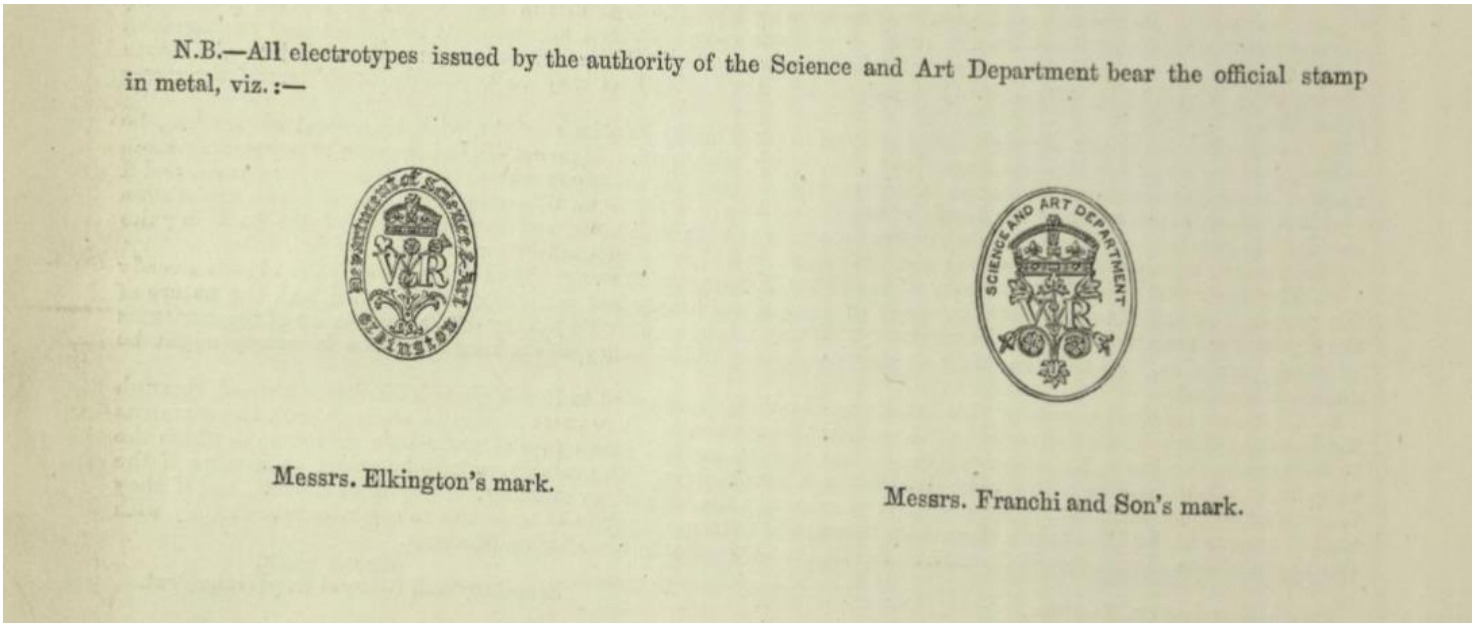

Figure 14

Official electrotype marks of the Victoria and Albert Museum for reproductions by both Elkington's & co, Birmingham and Franchi and Son's, London, 1873.

Figure 15

George Pull, “Dish” or so-called Temperance Basin, 1869, moulded earthenware with coloured glazes, diameter: 42.85cm, height: 3.8cm (Victoria and Albert Museum London, 1080-1871)

Figure 16

Detail of figure 15 showing the colour in the fabric folds of the goddess.

Figure 17

George Pull, view of the back of the Temperance Basin.

Figure 18

Unknown artist, “Dish” or so-called Temperance Basin, 19th century, earthenware with lead glazes, diameter: 42.85cm (Victoria and Albert Museum London, C.2316-1910)

Figure 19

Royal College of Art, “3D Print” of so-called Temperance Basin, 2018, resin print, height 40cm (Victoria and Albert Museum, M.23-2018)

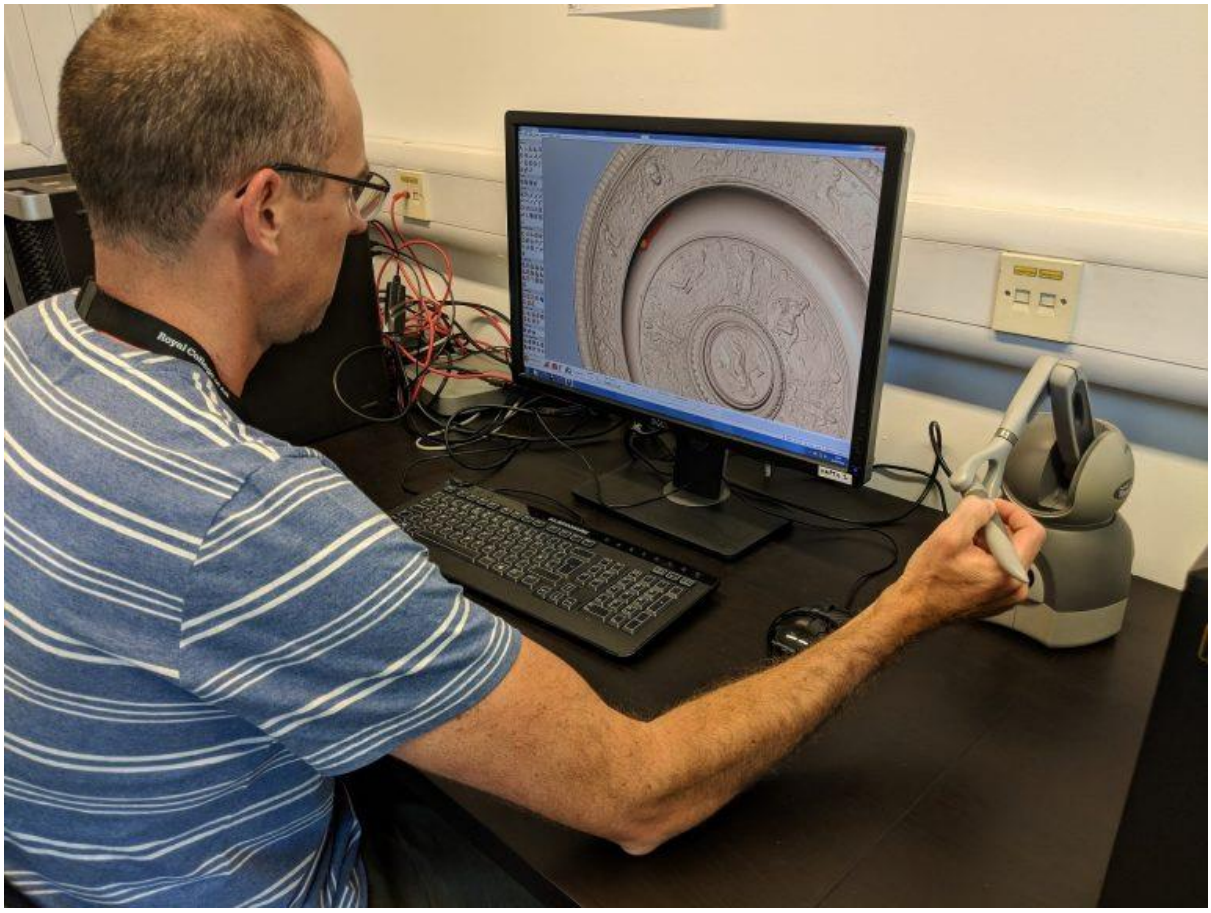

Figure 20

Digital artist from the Royal College of Art at the Victoria and Albert Museum editing the scan of the Temperance Basin before reprinting it, 2018.

Figure 21

Factum Arte, three scaled reproductions of Canova's Pauline Bonaparte as Venus Victrix, in glass, wax and 3D printed resin on display at the 'A World of Fragile Parts' exhibition, Venice Biennale, 2016.

Figure 22

The Chitra Nirmal Sethia Gallery between the Cast Courts, Victoria and Albert Museum London, 2018.

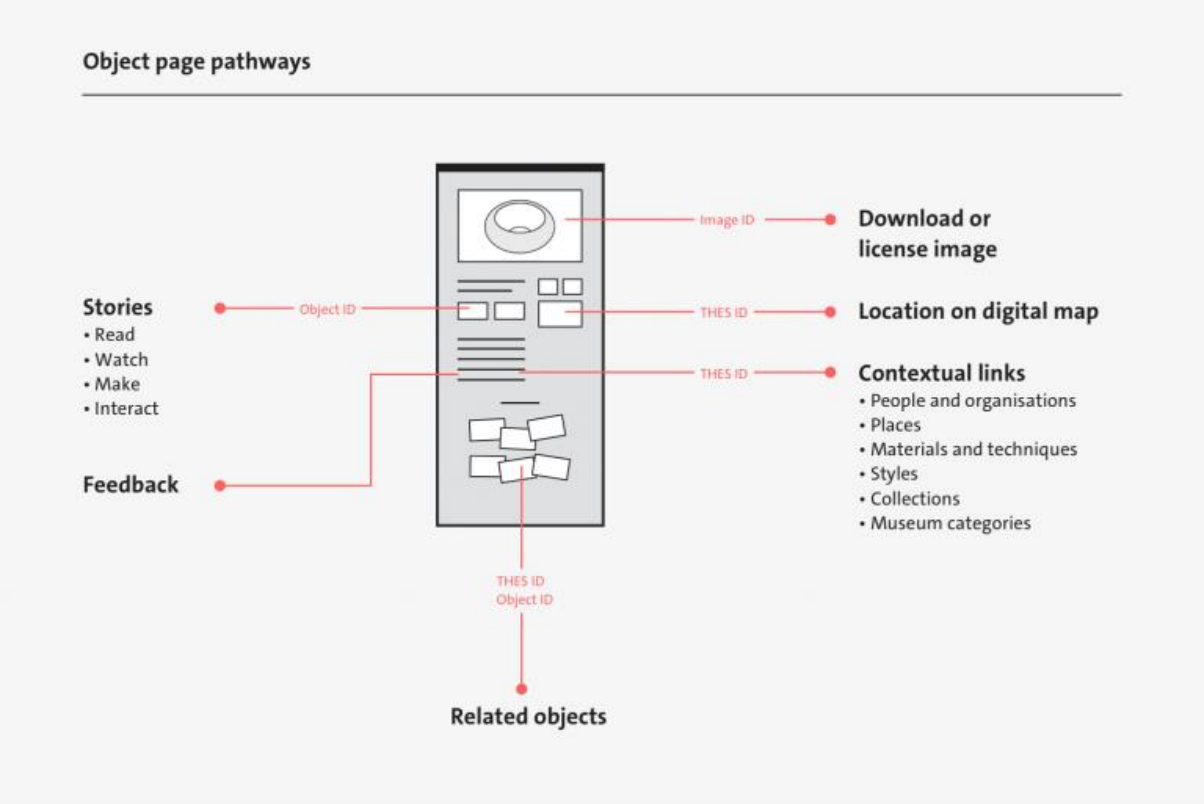

Figure 23

Object pathways image and new format for the Victoria and Albert Museum Explore the Collections site, Beta launched 2021.

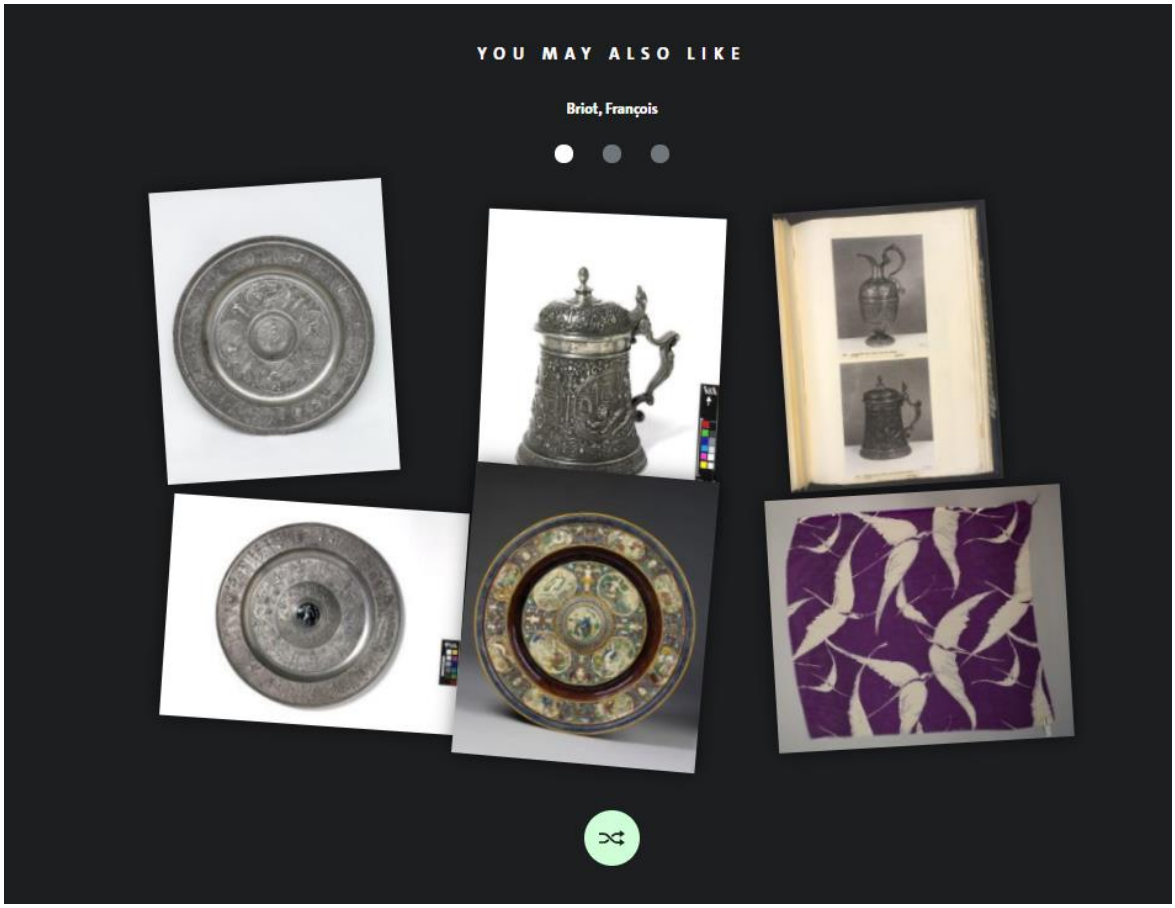

Figure 24

Authors own image, 2021. ‘You may also like’ feature shown suggesting the basin by Pull on the page for the basin by Briot.

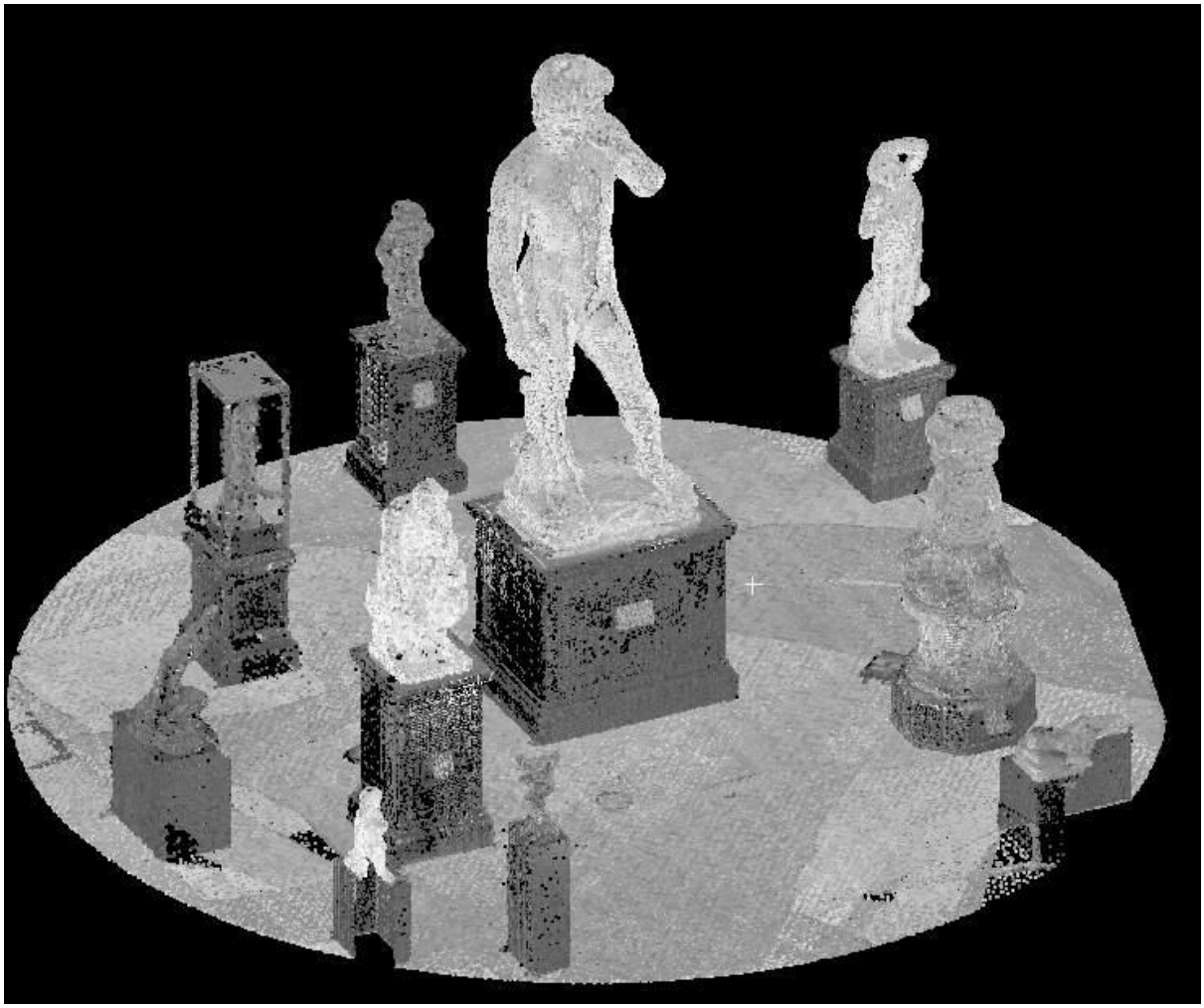

Figure 25

Plowman Cravem, greyscale raw digital model of data initially captured by the LiDAR scan of *David* amongst other sculptures in the Cast Courts in 2016.

Figure 26

The cast of *David* at the Victoria and Albert Museum in 2016, with one LiDAR scanner in the foreground.

Figure 27

Sculptors working on the 3D printed body parts of the polystyrene *David* at the 20th Century Fox studios, Australia, 2016.

Figure 28

Vamuseum, 3D model of the Temperance Basin, SketchFab, 2019.

Figure 29

Back of the Sketchfab 3D model.

Figure 30

Detail of the 3D model on Sketchfab, using zoom to highlight the depth of the model basin.

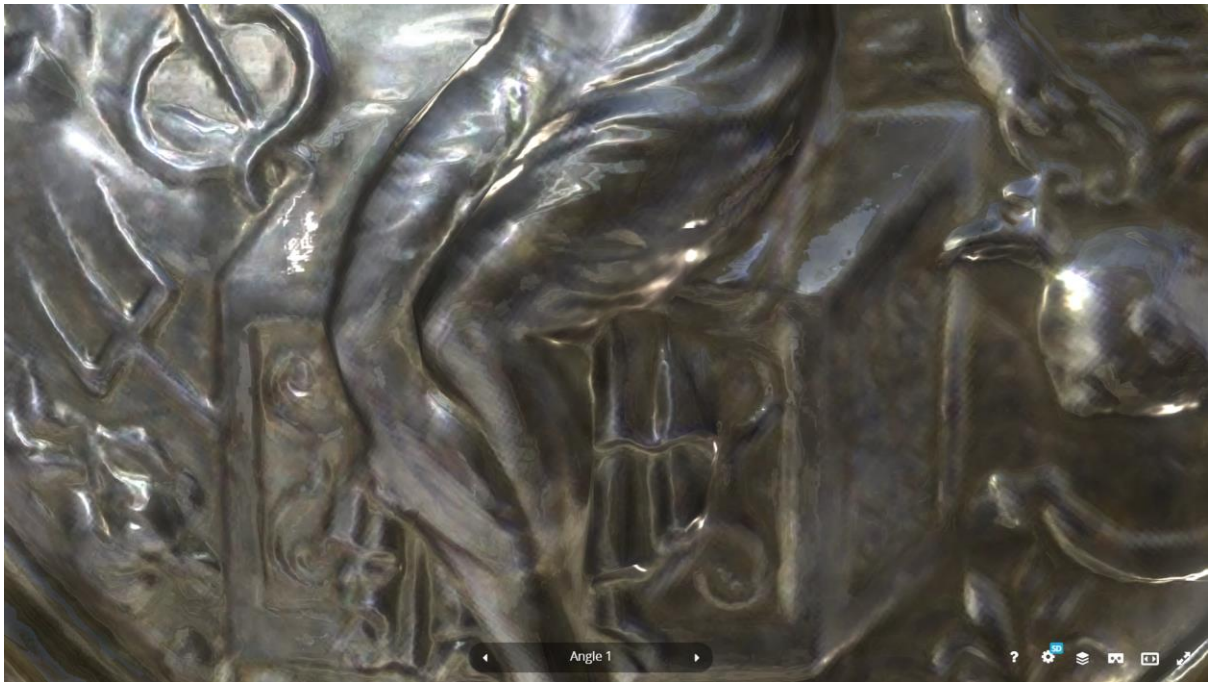

Figure 31

Extreme close up of the centre of the 3D model on Sketchfab, showing the digital material.

Figure 32

Close up of the high resolution image of *The Night Watch*, Rembrandt van Rijn, 1642, oil on canvas, height 379.5 cm, width 453.5 cm, weight 337 kg (Rijksmuseum Amsterdam, SK-C-5) Part of the series Operatie Nachtwacht, Rijksmuseum.

Credits Illustrations

Figure 1. Knott, ‘Cast Courts – One Day to Go!’

Figure 2. The Victoria and Albert Museum. ‘The Story of Michelangelo’s David’.

Figure 3. Rizzo, ‘Guest Post: Part 2 – David’s journey from Florence to V&A’.

Figure 4. Downloaded May 19 2021 <https://collections.vam.ac.uk/item/O85428/fig-leaf-for-idavidi-cast-d-brucciani-co/fig-leaf-for-idavidi-cast-d-brucciani/>

Figure 5. Schmidt, ‘The Art of Shaping Materials’, 413.

Figure 6. The Victoria and Albert Museum. ‘The Story of Michelangelo’s David’ <https://www.vam.ac.uk/articles/the-story-of-michelangelos-david>

Figure 7. Puisto, ‘David Revealed!’.

Figure 8. Downloaded March 3 2021 <https://collections.vam.ac.uk/item/O73192/dish-briot-francois/dish-briot-fran%C3%A7ois/>

Figure 9. Downloaded May 6 2021 <https://collections.vam.ac.uk/item/O76551/tankard-weise-paulus/>

Figure 10. Downloaded March 4 2021 <https://collections.vam.ac.uk/item/O73204/dish-briot-francois/dish-briot-fran%C3%A7ois/>

Figure 11. Downloaded March 6 2021 <https://collections.vam.ac.uk/item/O376501/basin-elkington-co/basin-elkington--co/>

Figure 12. Detail of figure 10.

Figure 13. Detail of figure 11.

Figure 14. ‘Illustrated catalogue of electrotype reproductions of works of art from originals in the South Kensington Museum’, vi. <https://archive.org/details/1873electrotypessouthkensingtonmuseum/page/n9/mode/2up>

Figure 15. Downloaded April 13 2021 <https://collections.vam.ac.uk/item/O8976/dish-pull-george/>

Figure 16. Detail of figure 15.

Figure 17. Downloaded April 13 2021 <https://collections.vam.ac.uk/item/O8976/dish-pull-george/>

Figure 18. Downloaded April 25 2021 <https://collections.vam.ac.uk/item/O9140/dish-unknown/>

Figure 19. Downloaded March 8 2021 <http://collections.vam.ac.uk/item/O1458236/3d-print-royal-college-of/>

Figure 20. Hamer. ‘Adventures in 3D Scanning: A Cast Court For The Digital Age Part 2’.

Figure 21. Cormier, ‘Against a Pile of Ashes’.

Figure 22. Knott, ‘Adventures in 3D Scanning: A Cast Court for the Digital Age’.

Figure 23. Craig, ‘Making the V&A’s collections more discoverable online’.

Figure 24. Downloaded February 22 2021 <https://collections.vam.ac.uk/item/O73192/dish-briot-francois/dish-briot-fran%C3%A7ois/>

Figure 25. Fletcher, ‘Guest post: Michelangelo’s David – Part 2: By-product of the movie industry allows for historical investigation of David’s cast’.

Figure 26. Puisto, ‘Michelangelo’s David – Part 1: Creating virtual copies of casts’.

Figure 27. Seagers, ‘Guest Post: Michelangelo’s David – Part 3: Constructing a full-scale model’.

Figure 28. <https://sketchfab.com/3d-models/copy-of-the-temperance-basin-a506e2a0307e4d589c9c6f8e74846d58>

Figure 29. <https://sketchfab.com/3d-models/copy-of-the-temperance-basin-a506e2a0307e4d589c9c6f8e74846d58>

Figure 30. Detail of figure 28.

Figure 31. Detail of figure 28.

Figure 32. Downloaded June 3 2021 <https://www.rijksmuseum.nl/en/whats-on/exhibitions/operation-night-watch/story/photograph-night-watch>

Bibliography

Secondary Literature

Aguerre, Anaïs and Brendan Cormier, ‘Introduction’ in *Copy Culture: Sharing in the Age of Digital Reproduction*, edited by Brendan Cormier, 19-26, London: V&A Publishing, 2018

Alexander, Edward P. *Museum Masters: Their Museums and Their Influence*, Nashville: American Association for State and Local History, 1983

Ashby, M. F., and Kara Johnson. *Materials and Design: The Art and Science of Material Selection in Product Design*, Oxon: Butterworth-Heinemann, 2002

Baker, Malcolm eds. *A Grand Design: The Art of the Victoria and Albert Museum*, London: V&A Publications, 1997

Baker, Malcolm. ‘The Reproductive Continuum: plaster casts, paper mosaics and photographs as complementary modes of reproduction in the nineteenth-century museum’ in *Plaster Casts: Making, Collecting and Displaying from Classical Antiquity to the Present*, edited by Rune Frederiksen and Eckhart Marchand, 485-500, Berlin: De Gruyter, 2010

Benjamin, Walter. *The Work of Art in the Age of Mechanical Reproduction*. Translated by J. A. Underwood, Harlow, England: Penguin Books, 2008

Bilbey, Diane and Marjorie Trusted. “The Question of Casts” in *Plaster Casts: Making, Collecting and Displaying from Classical Antiquity to the Present*, edited by Rune Frederiksen and Eckhart Marchand, 465-483, Berlin: De Gruyter, 2010

Boon, Marcus. ‘Towards a future museum of copying’ in *Museums as Cultures of Copies: The Crafting of Artefacts and Authenticity*, edited by Brita Brenna, Hans Dam Christensen and Olav Hamran, 253-266, London, New York: Routledge, 2019

Brenna, Brita, Hans Dam Christensen and Olav Hamran eds. *Museums as Cultures of Copies: The Crafting of Artefacts and Authenticity*, London, New York: Routledge, 2019

Codell, Julie and Hughes Linda, *Replication in the Long Nineteenth Century: Re-Makings and Reproductions*. Edinburgh: Edinburgh University Press, 2017

Conn, Steven. *Do Museums Still Need Objects?* Philadelphia: University of Pennsylvania Press, 2010

Cormier, Brendan. *Copy Culture: Sharing in the Age of Digital Reproduction*, London: V&A Publishing, 2018

Cottell, Fran. ‘The cult of the individual’ in *New Feminist Art Criticism: Critical Strategies*, edited by Katy Deepwell, 87-95, Manchester: Manchester University Press, 1995

Coutts, Howard. *The Art of Ceramics: European Ceramic Design 1500-1830*. New Haven: Yale University Press, 2001

Crick, Marion. ‘Preserving the Digital House of Cards’ in *Copy Culture: Sharing in the Age of Digital Reproduction*, edited by Brendan Cormier, 101-106, London: V&A Publishing, 2018

Henning, Michelle. ‘With and Without Walls: Photographic Reproduction and the Art Museum’, in *The International Handbooks of Museum Studies,* edited by Sharon MacDonald and Helen Rees Leahy, 577-602, New York: Wiley-Blackwell, 2015

Hill, Kate. ‘The Public Museum in the Nineteenth Century’ in *Culture and Class in English Public Museums, 1850-1914* edited by Kate Hill, 36-52, Historical Urban Studies Series. London: Routledge, 2016

Hooper-Greenhill, Eileen. ‘A useful past for the present’, in *Museums and the Shaping of Knowledge,* edited by Eileen Hooper-Greenhill, 191-215, London: Routledge, 1992

Latour, Bruno, and Adam Lowe. ‘The Migration of the Aura, or How to Explore the Original through Its Facsimiles’, in *Switching Codes Thinking Through Digital Technology in the Humanities and the Arts*, edited by Thomas Bartscherer and Roderick Coover, 275-297, Chicago: University of Chicago Press, 2011

Lowe, Adam. ‘Changing Attitudes to Preservation and Non-Contact Recording’ in *Copy Culture: Sharing in the Age of Digital Reproduction,* edited by Brendan Cormier, 51-65, London: V&A Publishing, 2018

Lowenthal, David. “Authenticity? The dogma of self-delusion” in *Why Fakes Matter: Essays on Problems of Authenticity,* edited by Mark Jones, 184-192, London: British Museum Press, 1992

Maclagan, Eric. *Italian Sculpture of the Renaissance,* Cambridge: Harvard University Press, 1934

Massé, Henri Jean Louis Joseph. *The Pewter Collector: a guide to British Pewter, with some reference to foreign work,* London: Barrie and Jenkins, 1921

Mayernik, David. *The Challenge of Emulation in Art and Architecture: Between Imitation and Invention*, Burlington, VT: Ashgate Publishing Company, 2013

Napoli, J. Nicolas and William Tronzo. *Radical Marble: Architectural Innovation from Antiquity to the Present*, Routledge: Oxford and New York, 2018

Oxford English Dictionary, Oxford: Oxford University Press, 2000

Presa, Elizabeth. ‘White Work’ in *After Blanchot: Literature, Criticism, Philosophy,* edited by Leslie Hill, Brian Nelson, Dimitris Vardoulakis, 257-269, Newark: University of Delaware Press, 2006

Rich, Jack C. *The Materials and Methods of Sculpture*, New York: Dover Art Instruction, 1947

Tallon, Loic. ‘Digital is More than a Website: An Interview with Loic Tallon’, Interview by Brendan Cormier in *Copy Culture: Sharing in the Age of Digital Reproduction,* edited by Brendan Cormier, 167-173, London: V&A Publishing, 2018

Van den Boomen, Marianne, Sybille Lammes, Ann-Sophie Lehmann, Joost Raessens and Mirko Tobias Schäfer. *Digital Material: Tracing New Media in Everyday Life and Technology,* Amsterdam: Amsterdam University Press, 2009

Online Sources

Alberti, Samuel J. M. M. ‘Objects and the Museum’, *ISIS*, 96:4 (2005) 559-571 [accessed December 2 2020] <https://doi.org/10.1086/498593>

Bailey, Martin. ‘Farewell to forgeries: The V&A’s Fakes Gallery to close’, *The Art Newspaper*, August 31 2009 [accessed April 15 2021] <https://www.theartnewspaper.com/archive/farewell-to-forgeries>

Bock, Felicia G. ‘The Rites of Renewal at Ise’, *Monumenta Nipponica*, 29:1 (1974) 55-68 [accessed November 18 2020] <https://doi.org/10.2307/2383463>

Borri, A. and A. Grazini. ‘Diagnostic analysis of the lesions and stability of Michelangelo’s David’, *Journal of Cultural Heritage*, 7:4 (2006) 273-285 [accessed November 3 2020] <https://doi.org/10.1016/j.culher.2006.06.004>

Boulton, Padraig and Peter Hall. ‘Under Material Skin Lie the Bones of Identity’, *Art & Perception*, 8:3/4 (2020) 387-406 [accessed May 31 2021] <https://doi.org/10.1163/22134913-bja10020>

Briot, Francois. “Dish”, 1585, *The Victoria and Albert Museum* [accessed January 7 2021] <https://collections.vam.ac.uk/item/O73192/dish-briot-francois/dish-briot-fran%C3%A7ois/>

Close, A.J. ‘Commonplace Theories of Art and Nature in Classical Antiquity and in the Renaissance’, *Journal of the History of Ideas*, 30:4 (1969) 467-486 [accessed February 20 2021] <https://doi.org/10.2307/2708606>

Cormier, Brendan. ‘Against A Pile of Ashes’, *V&A Blog*, June 15 2017 [accessed November 3 2020] <https://www.vam.ac.uk/blog/projects/against-a-pile-of-ashes>

Cormier, Brendan. ‘The new power of copies’, *V&A Blog*, December 4 2017 [accessed November 3 2020] <https://www.vam.ac.uk/blog/digital/the-new-power-of-copies>

Craig, Jack. ‘How are the V&A’s online collections used?’, *V&A Blog*, August 16 2019 [accessed May 12 2021] <https://www.vam.ac.uk/blog/digital/how-are-the-vas-online-collections-used>

Craig, Jack. ‘Making the V&A’s collections more discoverable online’, V&A Blog, March 31 2021 [accessed May 12 2021] <https://www.vam.ac.uk/blog/digital/making-the-vas-collections-more-discoverable-online>

D. Brucciani & co. “Fig leaf for *David*”, 1857, *The Victoria and Albert Museum* [accessed April 21 2021] <https://collections.vam.ac.uk/item/O85428/fig-leaf-for-idavidi-cast-d-brucciani-co/fig-leaf-for-idavidi-cast-d-brucciani/>

Della Monica, Matteo, Ferdinando Paternostro, Elena Andreucci and Aldesia Provenzano et al. ‘Michelangelo's David: triumph of perfection or perfect combination of variation and disproportions? A human perspective’, *Italian Journal of Anatomy and Embryology*, 124:2 (2019) 201-211 [accessed May 3 2021] <DOI:10.13128/ijae-10782>

Elkington & co. “Basin”, 1852, *The Victoria and Albert Museum* [accessed February 4 2021] <https://collections.vam.ac.uk/item/O376501/basin-elkington--co/>

Feldman, Edmund B. ‘Teacher as Model Critic’, *The Journal of Aesthetic Education,* 7:1 (1973) 50-57, [accessed November 5 2020] <https://doi.org/10.2307/3332109>

Fletcher, Jonathan. ‘Guest post: Michelangelo’s David – Part 2: By-product of the movie industry allows for historical investigation of David’s cast’, *V&A Blog,* May 23 2017 [accessed 15 March 2021] <https://www.vam.ac.uk/blog/projects/guest-post-michelangelos-david-part-2-by-product-of-the-movie-industry-allows-for-historical-investigation-of-davids-cast>

Foster, Sally M. and Neil G.W. Curtis. ‘The Thing about Replicas – Why Historic Replicas Matter’, *European Journal of Archaeology*, 19:1 (2016) 122–148 [accessed November 20 2020] <https://doi.org/10.1179/1461957115Y.0000000011>

Grundy, Timothy, and Erwin Panofsky. ‘Original and Facsimile Production’, *RES: Anthropology and Aesthetics*, 57:58 (2010) 330-338 [accessed December 12 2020] <https://www.jstor.org/stable/25769986>

Hamer, Alastair, ‘Adventures in 3D Scanning: A Cast Court For The Digital Age Part 2’, *V&A Blog*, January 30 2019 [accessed April 13 2021] <https://www.vam.ac.uk/blog/caring-for-our-collections/adventures-in-3d-scanning-a-cast-court-for-the-digital-age-part-2#comment-826877>

Hardwick, Tom. ‘'The sophisticated answer': a recent display of forgeries held at the Victoria and Albert Museum’, *The Burlington Magazine,* 152:1287 (2010) 406-408 [accessed June 2 2021] <https://www.jstor.org/stable/27823204>

Howes, David. ‘Introduction to Sensory Museology’, *The Senses and Society*, 9:3 (2014) 259-267 [accessed February 5 2021] <https://doi.org/10.2752/174589314X14023847039917>

Hylland, Ole Marius. ‘Even Better than the Real Thing? Digital Copies and Digital Museums in a Digital Cultural Policy’, *Culture Unbound,* 9:1 (2017) 62-84 [accessed November 3 2021] <10.3384/cu.2000.1525.179162>

‘Illustrated catalogue of electrotype reproductions of works of art from originals in the South Kensington Museum’, 1873, Department of Science and Art, National Art Library, Victoria and Albert Museum [accessed May 14 2021] <https://archive.org/details/1873electrotypessouthkensingtonmuseum/page/n7/mode/2up>

Kahn, Rebecca. ‘Locked down not locked out – Assessing the digital response of museums to COVID-19’, *LSE Blog*, May 8 2020 [accessed January 17 2021] <https://blogs.lse.ac.uk/impactofsocialsciences/2020/05/08/locked-down-not-locked-out-assessing-the-digital-response-of-museums-to-covid-19/>

Knott, Becky. ‘Adventures in 3D Scanning: A Cast Court for the Digital Age’, *V&A Blog*, January 25 2019 [accessed April 13 2021] <https://www.vam.ac.uk/blog/caring-for-our-collections/adventures-in-3d-scanning-a-cast-court-for-the-digital-age>

Knott, Becky. ‘Adventures in 3D scanning: New models launched on Sketchfab’, *V&A Blog,* May 10 2019 [accessed April 13 2021] <https://www.vam.ac.uk/blog/caring-for-our-collections/adventures-in-3d-scanning-new-models-on-the-va-sketchfab-page>

Knott, Becky. ‘Cast Courts – One Day to Go!’, *V&A Blog*, November 30 2018 [accessed December 3 2020] <https://www.vam.ac.uk/blog/museum-life/cast-courts-one-day-to-go>

Leitch, Alison. ‘Materiality of Marble: Explorations in the Artistic Life of Stone’, *Thesis Eleven*, 103:1 (2010) 65-77 [accessed November 17 2020] <https://doi.org/10.1177/0725513610381375>

Lorenzi, Rossella. ‘Michelangelo's David is missing a muscle’, October 18 2004, *ABC Science* [accessed May 18 2021] <https://www.abc.net.au/science/articles/2004/10/18/1222193.htm>

Lurk, Tabea, Dragan Espenschied and Juergen Enge. ‘Emulation in the context of digital art and cultural heritage preservation: Requirements, Approaches and yet so much more to do’, *PIK - Praxis der Informationsverarbeitung und Kommunikation*, 35:4 (2012) 245-254 [accessed March 20 2021] <https://doi.org/10.1515/pik-2012-0048>

Massé, Henri Jean Louis Joseph. ‘Some Notes on the Pewter in the Victoria and Albert Museum at South Kensington’, *The Burlington Magazine for Connoisseurs*, 3:7 (1903) 71-85 [accessed January 22 2021] <https://www.jstor.org/stable/855711>

‘Michelangelo’s David’, *Accademia.* [accessed December 3 2020] <https://www.accademia.org/explore-museum/artworks/michelangelos-david/>

Olszewski, Edward J. ‘Michelangelo’s David: Full Frontal Nudity in the Age of Savonarola’, *Source: Notes in the History of Art*, 35:1/2 (2015) 118-125 [accessed March 4 2021] <https://doi-org.ezproxy.leidenuniv.nl/10.1086/685634>

Papi, Clemente. “David”, 1856, *The Victoria and Albert Museum* [accessed November 2 2020] <https://collections.vam.ac.uk/item/O39861/david-plaster-cast-michelangelo/>

Parker, Nils. ‘The Angel in the Marble: Modern Life Lessons from History’s Greatest Sculptor’, *Medium*, July 9 2013 [accessed December 8 2020] <https://nilsaparker.medium.com/the-angel-in-the-marble-f7aa43f333dc>

Patterson, Angus, ‘A Unique Replica: The Wimbledon Ladies Singles Trophy’, *V&A Blog*, July 7 2015 [accessed February 2 2021] <https://www.vam.ac.uk/blog/news/a-unique-replica-the-wimbledon-ladies-singles-trophy>

Patterson, Angus. ‘Copy That!’, Interview by Henry Scott. *The Net Gallery*, March 1 2019 [accessed March 6 2021] <https://thenetgallery.com/copy-that/>

Patterson, Angus. ‘The Perfect Marriage of Art and Industry: Elkingtons and the South Kensington Museum's Electrotype Collection’, *The Journal of the Antique Metalware Society*, 20 (2012) [accessed March 6 2021] 56-77 <file:///C:/Users/phoeb/Downloads/AMS-20-2012%20-%20Patterson.pdf> [Downloaded March 6 2021]

Payne, Emma M. ‘The Conservation of Plaster Casts in the Nineteenth Century’, *Studies in Conservation*, 65:1 (2020) 37-58 [accessed November 22 2020] <https://doi.org/10.1080/00393630.2019.1610845>

Price, Kati. ‘Announcing Explore the Collections’, *V&A Blog*, January 29 2021 [accessed May 12 2021] <https://www.vam.ac.uk/blog/digital/announcing-explore-the-collections>

Price, Kati. ‘Redesigning the V&A’s collections online’, *V&A Blog*, May 30 2019 [accessed May 12 2021] <https://www.vam.ac.uk/blog/digital/redesigning-the-vas-collections-online>

Puisto, Johanna. ‘David Revealed!’, *V&A Blog*, November 24 2014 [accessed December 4 2020] <https://www.vam.ac.uk/blog/caring-for-our-collections/david-revealed>

Puisto, Johanna. ‘Michelangelo’s David – Part 1: Creating virtual copies of casts’, *V&A Blog*, May 22 2017 [accessed January 7 2021] <https://www.vam.ac.uk/blog/caring-for-our-collections/michelangelos-david-part-1-creating-virtual-copies-of-casts>

Puisto, Johanna. ‘Uncovering Michelangelo’s David’, *V&A Blog*, May 23 2014 [accessed December 4 2020] <https://www.vam.ac.uk/blog/caring-for-our-collections/cleaning-david-draft>

Pull, George. “Dish”, 1869, *The Victoria and Albert Museum* [accessed January 7 2021] <https://collections.vam.ac.uk/item/O8976/dish-pull-george/>

Purssell, Sarah. ‘Explore the Collections Beta – give us your feedback!’, *V&A Blog*, February 8 2021 [accessed May 12 2021] <https://www.vam.ac.uk/blog/digital/explore-the-collections-beta-give-us-your-feedback>

Reisinger, Yvette, and Carol J. Steiner. ‘Reconceptualizing object authenticity’, *Annals of Tourism Research*, 33:1 (2006) 65-86 [accessed November 2 2020] <https://doi.org/10.1016/j.annals.2005.04.003>

Rijksmuseum. ‘Most detailed photograph ever of The Night Watch’ [accessed June 3 2021] <https://www.rijksmuseum.nl/en/whats-on/exhibitions/operation-night-watch/story/photograph-night-watch>

Rijksmuseum. ‘Operation Nightwatch’ [accessed June 3 2021] <https://www.rijksmuseum.nl/en/stories/operation-night-watch>

Rizzo, Giuseppe. ‘Guest Post: Part 1 – Clemente Papi: From plaster maker to Royal Bronze Founder’, *V&A Blog*, February 22 2018 [accessed November 20 2020] <https://www.vam.ac.uk/blog/projects/guest-post-part-1-clemente-papi-from-plaster-maker-to-royal-bronze-founder>

Rizzo, Giuseppe. ‘Guest Post: Part 2 – David’s journey from Florence to V&A’, *V&A Blog*, February 28 2018 [accessed November 20 2020] <https://www.vam.ac.uk/blog/projects/guest-post-part-2-davids-journey-from-florence-to-va>

Royal College of Art. “3D Print”, 2018, *The Victoria and Albert Museum* [accessed December 8 2020] <http://collections.vam.ac.uk/item/O1458236/3d-print-royal-college-of/>

Scott, David A, and Donna Stevens. ‘Electrotypes in Science and Art’, *Studies in Conservation*, 58:3 (2013) 189-198 [accessed January 5 2021] <https://doi.org/10.1179/2047058412Y.0000000064>

Schmidt, Filipp. ‘The Art of Shaping Materials’, *Art & Perception*, 8:3/4 (2020) 407-433 [accessed May 31 2021] <https://doi.org/10.1163/22134913-20191116>

Seagers, Chris. ‘Guest Post: Michelangelo’s David – Part 3: Constructing a full-scale model’, *V&A Blog*, May 24 2017 [accessed May 3 2021] <https://www.vam.ac.uk/blog/caring-for-our-collections/guest-post-michelangelos-david-part-3-constructing-a-full-scale-model>

Stumpel, Jeroen and Maarten Wijntjes. ‘Editorial: The Skin of Things’, *Art & Perception,* 8:3/4 (2020) 237–242 [accessed May 31 2021] <https://doi.org/10.1163/22134913-20190834>

The Victoria and Albert Museum. ‘Brass, Pewter & Cutlery in the Collections’, *V&A Online* [accessed March 4 2021] <http://www.vam.ac.uk/content/articles/b/brass-pewter-and-cutlery-in-the-collections/>

The Victoria and Albert Museum. ‘Building the Museum’, *V&A Online* [accessed October 29 2020] <https://www.vam.ac.uk/articles/building-the-museum#slideshow=31131014&slide=0>

The Victoria and Albert Museum, ‘Plaster casts – research resources in the V&A archive’ [accessed January 4 2021] <https://www.vam.ac.uk/blog/wp-content/uploads/Revised-Plaster-casts_09082999c6bfe0f3f21529ea6ae820a3.pdf>

The Victoria and Albert Museum. ‘The Temperance Basin and the art of the copy’, *V&A Online* [accessed January 15 2021] <https://www.vam.ac.uk/articles/temperence-basin>

The Victoria and Albert Museum. ‘ReACH (Reproduction of Art and Cultural Heritage)’, *V&A Research Projects* [accessed November 9 2020] <https://www.vam.ac.uk/research/projects/reach-reproduction-of-art-and-cultural-heritage>

Unknown, “Dish”, 19th cent. *The Victoria and Albert Museum* [accessed February 24 2021] <http://collections.vam.ac.uk/item/O9140/dish-unknown/>

Valentine, Hannah. ‘V&A Reveals Renovated Cast Courts’, 30 November 2018, *GLASS Magazine* [accessed December 1 2020]<https://www.theglassmagazine.com/va-reveals-renovated-cast-courts/>

vamuseum, ‘Copy of the Temperance Basin’, Sketchfab. [accessed March 3 2021] <https://sketchfab.com/3d-models/copy-of-the-temperance-basin-a506e2a0307e4d589c9c6f8e74846d58>

Varutti, Marzia. ‘‘Authentic reproductions’: museum collection practices as authentication’, *Museum Management and Curatorship*, 33:1 (2018) 42-56 [accessed November 30 2020] <https://doi.org/10.1080/09647775.2017.1387589>

Victoria and Albert Museum, ‘How was it made? Electrotype’, August 23 2019. *YouTube Video* [accessed January 4 2021] <https://www.youtube.com/watch?v=PCTqGEPjh6g>

Videtta, Giuliana. ‘Guest Post: Part 1 – The Florentine Copies of Michelangelo’s David by Clemente Papi – The Plaster Cast at Istituto Statale d’Arte’, *V&A Blog*, November 10 2017 [accessed November 20 2020] <https://www.vam.ac.uk/blog/projects/guest-post-part-1-the-florentine-copies-of-michelangelos-david-by-clemente-papi-the-plaster-cast-at-istituto-darte>

Wainwright, Oliver. ‘V&A’s cast courts of beautiful fakes reopen after three years’, November 25 2014, *The Guardian* [accessed March 30 2021] <https://www.theguardian.com/artanddesign/2014/nov/25/victoria-and-albert-cast-courts-reopen>

Weisberg, Ruth. ‘The Art of Memory and the Allegorical Personification of Justice’, *Yale Journal of the Law & the Humanities*, 24:1 (2012) 259-270 [accessed January 22 2021] <https://digitalcommons.law.yale.edu/yjlh/vol24/iss1/12>

Weise, Paul. “Tankard”, 1560, *The Victoria and Albert Museum*, [accessed May 6 2021] <https://collections.vam.ac.uk/item/O76551/tankard-weise-paulus/>