Nineteenth-Century Sculpture and the Imprint of Authenticity

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In 1864, sculptor Harriet Hosmer published an article in the *Atlantic Monthly* entitled 'The Process of Sculpture'. Hosmer's express aim was 'to correct the false but very general impression, that the artist beginning with the crude block, and guided by his imagination only, hews out his statue with his own hands'.[1] This article revisits Hosmer's idea of the centrality of the artist's touch to nineteenth-century sculpture, examining how ideological shifts and technological advancements together imbued the sculptor's touch with unprecedented import. The pursuit of the sculptor's touch escalated with the perception that sculpture was becoming divorced from sculptors' hands, particularly as it seemed more inherently replicable than its sister art by virtue of its capacity to be recast. Equally, the desire for the preservation of the sculptor's ostensibly authenticating touch persisted in parallel with, or in response to, the development of a series of machines which threatened to eradicate the human touch from what had long been characterized as a mechanical art. The nineteenth-century experience of sculpture was certainly mediated by the desire to get 'very much nearer to the actual touch of the artist', as Edmund Gosse termed it.[2] This article examines how and why this was the case.

Nineteenth-century sculpture: neglected sibling of the sister arts

The state of sculpture in the nineteenth-century press speaks to its place as the sister arts' neglected sibling. Sculpture's press presence rapidly increased during the Victorian era, and was typified by a remarkable hostility towards the art. Articles with such subtle titles as 'Why is English sculpture unsuccessful?' provided detailed commentary on the failure of

[1] Harriet Hosmer, 'The Process of Sculpture', *Atlantic Monthly*, December 1864, pp. 734–38 (p. 734).
[2] Edmund Gosse, 'The Place of Sculpture in Daily Life', *Magazine of Art*, January 1895, pp. 368–72 (p. 370).

Britons to succeed in the mechanical art, as one exemplary article from aesthetic journal *The Dark Blue* demonstrates:

> When one considers the contemptuous criticism, the chorus of scorn and fury, which greets every fresh work that is produced, there is no more touching illustration of the truth that 'Hope springs eternal in the human breast,' than the manner in which we still go on, erecting statue after statue, in the fond dream that our perseverance will at last be rewarded with something approaching a work of art.[3]

Such critical dismissals of sculpture were unsurprising; the age-old debate as to the supremacy of painting over sculpture was alive and well in the nineteenth century. The roots of these attitudes were firmly embedded in the lectures delivered at the Royal Academy, where theories of sculpture's inferiority had been formalized by its first president Sir Joshua Reynolds in his tenth discourse. One of Reynolds's students, James Northcote, recalled Reynolds's infamous lecture on sculpture in which

> he commenced by explaining his reasons for not having sooner noticed this particular branch of art, on the principle that Painting is much more extensive and complicated than Sculpture, and affords, therefore, a more ample field for criticism; and consequently as the greater includes the less, the leading principles of sculpture are comprised in those of painting. The former he considered as an art of much more simplicity and uniformity than the latter, as it cannot with propriety, or the best effect, be applied to many subjects.[4]

Reynolds's reductive analysis of sculpture as comprising merely part of an aesthetic whole formed by the greater art of painting impacted students' conceptions of the art, and their desire to practise it. Sculpture was faring no better in critical and theoretical publications. Ruskin, for example, in works such as *The Seven Lamps of Architecture* (1849), virtually ignored sculpture but for praising its decorative utility as architectural adornment.[5]

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[3] H. E. P. Platt, 'Why is English Sculpture Unsuccessful?', *The Dark Blue*, December 1871, pp. 428–33 (p. 428).

[4] James Northcote, *Memoirs of Sir Joshua Reynolds* (Philadelphia: Carey, 1817), p. 220.

[5] John Ruskin, *The Seven Lamps of Architecture*, new edn (Orpington: Allen, 1880), p. 124.

There was an increasing belief among sculptors that the Royal Academy had failed in its job to educate the public in how to read sculpture. Pre-Raphaelite sculptor Thomas Woolner believed that a primary reason for the tendency to privilege painting over sculpture was that, due to sculpture's neglect by the Royal Academy, the public had forgotten how to read it despite their literacy in deciphering painting. The culprit, he believed, was colour. Woolner referred to the 'national indifference towards the human form, when regarded without the accompaniment of colour', his tone reminding us that his is the voice of the sole Pre-Raphaelite sculptor. He explained:

> However inane a picture is in design; the conception false and coarse; action sprawling and devoid of meaning; arrangement anyhow; figures stuffed into corners to 'fill up'; and tho' the proportions are absurd, and there is not a single line of true drawing throughout the whole work; let the colour be but bold and harmonious, *it is* enough; and every objection is silenced by the ecstatic exclamation 'Ah, but what colour! What a fine juicy bit of colour!'[6]

Certainly, the absence of colour was a key concern of nineteenth-century critics of sculpture. Vernon Lee, in her *Belcaro* essay 'The Child in the Vatican', frames the modern obsession with colour — or its absence in sculpture — as the aesthetic spirit of the age. The 'fancy language of our modern child is the language of *colour*', wrote Lee. The child is struck by the statues' illegible whiteness; for the child, statues are

> vague, white things, with their rounded white cheek, and clotted white hair, with their fold of white drapery about them [...]. For they are dull things, in their dirty whiteness: they are doing nothing, these creatures, merely standing or sitting or leaning, they are looking at nothing with their pupilless white eyes.[7]

In addition to this blank illegibility, the child is also perplexed by their impression of sculptures' multiplicity, so suggestive of replication: 'their vagueness, their unfamiliarity, they seem also to be all alike, even as, on

[6] Thomas Woolner, Royal Academy Lectures, Royal Academy Archive, MS WOO1–5.

[7] Vernon Lee, *Belcaro, Being Essays on Sundry Aesthetical Questions* (London: Fisher Unwin, 1881), pp. 20–21.

first acquaintance, we sometimes ask ourselves whether those sisters or brothers we know are four or only three; for in the unknown there is no diversity' (pp. 20–21).

This nineteenth-century decline in the public popularity of sculpture led to the expansion of the marketplace well beyond Britain's borders. Sculptors of large public works quickly took advantage of the growing international market by making bids for colonial commissions. Such commissions, however, were attended by their own set of challenges. British sculptors interested in colonial commissions had to carefully build and leverage their colonial networks to secure the opportunity to submit designs from a distance, after which they relied on finding trustworthy agents to conduct their financial transactions in the colony. Successfully obtaining a commission was hardly a guarantee that it would be seen through to execution, with new governments frequently failing to honour commissions of the old, and such banalities as a delayed letter meaning the loss of a colonial commission. Furthermore, sculptures destined for the colonies were immediately dispatched upon completion, denying their creators the opportunity to exhibit their work locally and thereby secure additional commissions.[8] As the work of Sarah Burnage, Deborah Cherry, Jason Edwards, Barbara Groseclose, and Partha Mitter has emphasized, sculptors by necessity had to become creative as to how to preserve and circulate their work.[9] As a result, sculpture began to circulate globally in different incarnations; from preserving likenesses in photographs, to making collectible medallions, cameos, and statuettes. Despite the practical challenges posed by colonial commissions, there was great incentive to pursue them as, in England, it was becoming increasingly

[8] Letter from Thomas Woolner to Henry Parkes, 22 August 1875, State Library of NSW (SL NSW). Woolner's frustration at this restriction persisted, and he complained to Parkes again in a letter of 17 October 1875 (SL NSW): 'I have enclosed phos [*sic*]: of 3 of my last works: — the Parsee is Sir Cowasjee Jehangeer Readimoney of Bombay. I was not allowed to exhibit it here as the Committee were anxious to have it in its place before the arrival of The Prince of Wales.'

[9] See, for example, Sarah Burnage, 'Commemorating Cornwallis: Sculpture in India', *Visual Culture in Britain*, 11 (2010), 173–94; Deborah Cherry, *Beyond the Frame: Feminism and Visual Culture, Britain 1850–1900* (London: Routledge, 2000), pp. 109–12; Jason Edwards, 'From the East India Company to the West Indies and Beyond: The World of British Sculpture, *c*. 1757–1947', *Visual Culture in Britain*, 11 (2010), 147–72; Barbara Groseclose, *British Sculpture and the Company Raj: Church Monuments and Public Statuary in Madras, Calcutta, and Bombay to 1858* (Newark: University of Delaware Press, 1995); Partha Mitter, *Art and Nationalism in Colonial India, 1850–1922* (Cambridge: Cambridge University Press, 1994).

difficult to secure commissions. Traditional means of winning work via competitions were declining and major public commissions were heavily influenced by the Prince of Wales on the advice of the President of the Royal Academy Lord Leighton, who tended to distribute work among his coterie.

Public taste for sculpture and its aesthetic qualities was therefore not being successfully cultivated, resulting in diminished interest in the art, fewer patrons, and — ultimately — fewer sculptors. This point clearly requires clarification as, on one level, nineteenth-century literature seems to be teeming with references to statuettes on the mantelpiece. Recently, in response to increasing interest in nineteenth-century materiality, there has been an effort in sculpture studies to broaden our definition of sculpture to encompass the full range of material culture that was increasingly invading everyday life in the nineteenth century, answering the need for what Jason Edwards has called work which 'usefully contest[s] the current scholarly focus on imaginative, ideal works intended for elite country houses [...] in favour of a broader conception of sculpture in an expanded, regional, material cultural field'.[10] While Edwards rightly argues that such *objets* deserve scholarly analysis, we must simultaneously avoid the anachronism of classifying such material artefacts as sculpture when the Victorians themselves did not perceive of embellished cutlery, decorative clocks, or water fountains as such. As Anthony Hughes and Erich Ranfft have pointed out, we must maintain our awareness of 'the fuzzy borderline between "sculpture" and the "applied" arts where the production of multiples is the norm rather than the exception'.[11]

The taxonomy of nineteenth-century sculpture is another question in itself, but for our purposes it is important to acknowledge the Victorian distinction between a *sculpture* (or statue) and the *statuette*. This distinction was clarified earlier in the nineteenth century when, as Patrizia Di Bello has highlighted, showcases such as the 1862 International Exhibition placed sculptures in the Fine Art section and statuettes in a separate section entitled Industrial Art.[12] Towards the *fin de siècle*, the New Sculp-

[10] Jason Edwards, 'Review Essay', *Visual Culture in Britain*, 10 (2009), 201–07 (p. 202).

[11] Anthony Hughes and Erich Ranfft, 'Introduction', in *Sculpture and its Reproductions*, ed. by Anthony Hughes and Erich Ranfft (London: Reaktion Books, 1997), pp. 1–6 (p. 4).

[12] Patrizia Di Bello, '"Multiplying Statues by Machinery": Stereoscopic Photographs of Sculptures at the 1862 International Exhibition', *History of Photography*, 37 (2013), 412–20 (p. 417).

ture once again blurred these borderlines.[13] The New Sculpture mediated somewhat between sculpture as fine art and the statuette, a mass-produced adornment available at a scale and price point to suit the middle-class market but — as I will later examine — still imprinted with the original sculptor's authenticating thumbprint thanks to the reinvigoration of bronze casting.[14]

Sculpture and hierarchies of touch: sculpting women, sculpting workmen

In response to this perceived neglect, nineteenth-century sculptors aimed to raise their profile. Many began contributing technical articles to the press in the hope that respect for sculpture might be rehabilitated through cultivating a more general understanding of the complexity of sculpture's production. There was surprisingly limited public understanding of the specialized technical and collaborative processes involving not just the atelier but also the foundry, thanks to the lack of public education about sculpture and also the propagation of the myth of the lone sculptor which was dispersed so effectively by portraits of solitary sculptors with their works.[15] In an attempt to defend and legitimize their art in

[13] For more on the 'New Statuette', see Martina Droth, 'Small Sculpture *c*. 1900: The "New Statuette" in English Sculptural Aesthetics', in *Sculpture and the Pursuit of a Modern Ideal in Britain*, ed. by David J. Getsy (Aldershot: Ashgate, 2004), pp. 141–57.

[14] Di Bello also usefully highlights the difference between fine art and commodities, and draws on Benjamin and Marx to suggest how statuettes were inflected by class aspiration, emphasizing how commodity culture prizes goods for 'their "representational" value. Commodities were endowed with the fetishistic, magic power to represent and thereby fashion oneself as a better individual, and, in particular, a person of taste and gentility' (p. 415). In doing so, Di Bello's point recalls Edmund Gosse in 'The Place of Sculpture in Daily Life': 'I should feel it a matter of exquisite and trembling delight to choose the figure which is to welcome me every time that I enter my house, and by which every stranger will try to guess my character before he sees me. I am sure that such a statue, if it were really beautiful and noble, would become more indispensable to one than any single picture' (Gosse, p. 369). As the subject of visual consumption, the statuette comes to signify not only what it literally represents, but the status and character of its owner.

[15] See, for example, Mariannecci, *Hosmer on ladder with sculpture of Thomas Hart Benton* (*c*. 1860–62; Schlesinger Library, Radcliffe Institute, Harvard University); unknown photographer, *George Frederic Watts RA, Compton, Surrey* (*c*. 1902; original

the face of these latest press contributions to a long history of elision, several sculptors — some as renowned as John Gibson and Harriet Hosmer — began to write articles detailing the technical processes governing their art.

The work of female sculptors was central to the revelation of the collaborative nature of the sculptural atelier. Female sculptors provoked particular debate in the press, raising questions not only of women's artistic abilities but also their bodily capability to pursue the most physically demanding of fine arts.[16] The authenticity of works by female sculptors was particularly suspect with their creators accused of dependence upon male contemporaries or studio assistants.[17] Sculptor Mary Grant wrote with delight of her studio's collaborative activity: 'Studio very busy. Five men at work — a lovely sight! — two men on marble of memorial, one casting bust of Mrs Drummond, one carving lettering, one polishing marble — while I am still busy modelling in my inner studio.'[18] Most famously, Harriet Hosmer brought a lawsuit against the *Art Journal* and *The Queen*, after both publications printed allegations that her celebrated *Zenobia* was in fact sculpted by Italian workmen in Rome.[19] Touch became the cornerstone of the argument which played out in the press; the issue became one of the sculptor's handling of the sculpture versus that of the workmen. 'The Process of Sculpture', Hosmer's double defence of herself and her art with which I opened this article, aimed to 'raise the veil on the mysteries of the studio [to enable readers] to form a just conception of the amount of assistance to which a sculptor is fairly entitled'.[20]

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glass-plate negative, Watts Gallery Archive); Frank Dudman, *Thomas Woolner* (*c*. 1883; National Portrait Gallery, London).

[16] There was, of course, also the question of the propriety of women modelling the human form, though in many ways it was not until Rainer Maria Rilke's biography of *Rodin* in 1903 that the potential eroticism of the relationship between sculptor and sculpture was explicitly explored.

[17] For more on female sculptors, see Shannon Hunter Hurtado, *Genteel Mavericks: Professional Women Sculptors in Victorian Britain* (Bern: Lang, 2012).

[18] Joan Copeland, 'A Mark on Time: A Study of the Diary and Letter Book of Mary Grant, Sculptor, 1830–1908' (Archbishops' Diploma for Readers thesis, Lambeth Palace, 1995), p. 13 (July 1876).

[19] Hosmer claimed damages of one thousand pounds but withdrew her suit subject to the editor of *The Queen* publishing an apology in both *The Times*, Parisian publication *Galignani's Messenger* (read widely by expatriates), and the *Art Journal* printing several apologies.

[20] Hosmer, p. 734. For a detailed account of the *Zenobia* controversy, see Cherry, pp. 101–41.

In addition to illustrating the gender politics of sculptural touch, such articles' detailing of sculptural processes simultaneously revealed that the creation of sculpture in the nineteenth century was in fact the work of many hands. Studio assistants usually undertook the preparation of marble blocks based on small-scale models before the sculptor took up the chisel, and bronzes were often prepared by workmen in a foundry rather than the artist's studio. Yet in dispelling the myth of the lone sculptor by detailing these complex and often collaborative processes involving multiple craftspeople in the studio and workmen in the foundry, such writings unwittingly opened sculpture to criticism of inauthenticity due to the number of hands involved in the production of a single work. In criticism and in literature, scepticism emerged towards sculpture as an art form due to its replicability and the perceived difficulty in detecting an original produced by an *artist* from a copy produced by *workmen*. This was a particularly vexed issue which itself challenged the Romantic notion of the individual genius artist through increasing public knowledge of collaboration between gentleman artists and working-class craftsmen.

A further hierarchy of touch therefore emerged in the sculptural world. As Deborah Cherry points out, in the fashionable atelier, 'labour was invisible: nineteenth-century glitterati did not want to be present at, or even observe, the mess of making' (p. 109). Di Bello has similarly argued that both sculpture and photography 'relied on the disavowal of the anonymous, mechanical labour that went into making them'.[21] Further than this, nineteenth-century sculpture increasingly relied on an imaginative fetishization of the celebrity sculptor whose phantom presence was conjured by the trace of their fingerprint on what was perceived as the original work of art. As sculptural practices became more transparent, then, critics questioned what constituted an 'authentic' sculpture and demonstrated a preoccupation with the viewer's ability to recover evidence of the sculptor's touch, often by quite literally seeking the trace of the sculptor's fingerprints on the statue itself. Hierarchies of touch were again at play, with the workman's touch elided as that of the artist genius was celebrated, or even fabricated. As a result, sculpture came under further scrutiny and now required close inspection for imprints of authenticity, for traces of the genius sculptor.

[21] Di Bello, p. 412. Interestingly, some sculptors worked to reverse this trend, increasingly striving to render the touch of unseen labourers visible, with Thomas Brock, Harriet Hosmer, and Thomas Woolner, for example, appearing in photographs with their assistants and workmen.

Sculpture's secret history of handling: touching the imprint of authenticity

This idea of close inspection for marks of authenticity brings us to briefly consider sculpture's secret history of public handling. In his remarkable 1778 book *Plastik*, Johann Gottfried Herder theorized an embodied aesthetics of sculpture, arguing that, by virtue of the necessity of assimilating multiple perspectival viewpoints, the art appeals to an imaginative form of touch in which 'one's eyes become one's hands [...], sight reveals merely shapes, but touch alone reveals bodies'.[22] Mark Paterson has recently highlighted that 'whereas the two-dimensionality of painting seemingly separates the viewer from the viewed, implying a necessarily scopic distance, sculpture entails more of an involvement with, and sharing of, the three-dimensionality of that sculptural space'.[23] This was certainly the case in the museum space prior to the 1850s, where the handling of sculpture was commonplace, particularly when sculptures were displayed among cabinets of curiosities and artefacts. As Constance Classen has also emphasized, the outlawing of touch in the gallery and museum was a Victorian intervention and

> the highly deferential mode of behaviour that became the standard in late nineteenth-century museums reflected not only a perceived need to impose order on heterogenous museum visitors, but also a change in attitude to museum holdings [in which] the masterpieces and treasures of the museum came increasingly to be regarded as inviolable.[24]

Yet in rendering the touching of sculpture illicit, this Victorian museum culture heightened the desire to do so, or to imagine doing so, and relocated the handling and inspection of sculpture to the home.

In the more private space of the nineteenth-century home, touching sculpture could also be the conduit for a connection between the celebrity sculptor and viewer. This was certainly the opinion of Edmund Gosse, famous for coining the term the 'New Sculpture' in his *Art Journal* articles

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[22] J. G. Herder, *Sculpture*, ed. and trans. by J. Gaiger (Chicago: University of Chicago Press, 2002), p. 35.
[23] Mark Paterson, *The Senses of Touch: Haptics, Affects and Technologies* (Oxford: Berg, 2007).
[24] Constance Classen, *The Deepest Sense: A Cultural History of Touch* (Urbana: University of Illinois Press, 2012), p. 152.

but lesser known for a series called 'The Place of Sculpture in Daily Life' published in the *Magazine of Art*, in which he wrote:

> Let us suppose that a sculptor is commissioned to produce a bust, and that it is not stated in what material it is finally to be executed. It is not necessary, in most cases, that he should concern himself with this until the actual clay model is finished. He models his head, as all sculptors have done from the earliest times, in wax or clay, and the latter he is obliged to keep moist by means of syringes and wet cloths from day to day until the work is done. Then, perhaps, as he looks over the bust from every side, to perceive what more can be done to perfect it, he sees that a little lock of hair projects too much below the ear, and he puts his thumb there and presses it down. The next step is to cast it in plaster; and then, if it is to be executed in marble, the laborious business begins by which a workman points a block of that substance, and mechanically hews it out in a rough shape. Last of all, the sculptor himself takes it in hand, and goes carefully over it with his chisel and finishes it. This marble head, then, will be an exquisite and artistic copy of the head the artist made in clay, but will have no touch from the clay upon it. It will be, in a certain sense, a translation into another material. But suppose that the work is to be executed in bronze; a workman makes a mould from the plaster cast, and this is taken to the foundry and the molten metal poured in. When it is cool, and the mould is broken off, what comes out is the finished work in bronze. It requires nothing more than a little chasing at the seams, and it is not a translation of the original, but that original itself. That last light thumb-mark behind the ear is there repeated for ever in the unyielding bronze, and across the surface of the patina we seem to feel the very breath of the master as he bent over his handiwork in the latest act of creation. (p. 370)

This sculpted head passes through many hands. Gosse's sculptor anthropomorphizes his sculpture as though it is his own child, tending it with wet cloths, subduing its little rogue lock of hair with a paternal thumb. This piece transports us from the gentle intimacy developed between the sculptor and his model in his studio out to the labour of the workman, who mechanically hews a rough shape or who pours and breaks it in a foundry. Whether executed in marble or Gosse's preferred bronze, the sculpture is the work of many hands; the sculptor is inevitably divorced

from his work which must be subjected to the mechanical workmen or to the foundry.

Yet where the mass production of sculpture has more recently been seen to undermine the aura of the original, to anachronistically reference Walter Benjamin, Gosse frames the new fashion for bronze as an aesthetically pleasing and financially expedient solution. For Gosse, bronze casting is a means of producing an infinite number of *originals* — perfect thumb-printed incarnations identical to the clay studio version which can be purchased by the masses who may then, in their private homes, align their own thumb with the print of the master himself. This desire for a physical connection with the creator's touch is, of course, reminiscent of the fetishized handling of religious relics, and links to the original desire to touch the body of Christ (Classen, p. 154). In the Victorian celebrity-centric context — and particularly in the final decades of the century where artists, their homes, and haunts were increasingly fetishized — the desire to touch the authenticating imprint of the sculptor displaces the desire to touch the sculptor themselves. Classen has usefully drawn out the connection between touch and temporality, writing that 'the sense of touch is perceived as annihilating both space and time. This oft perceived ability of touch to bridge space and time gave it a special value in the museum setting' (p. 155). When restored to the intimacy of the private home, therefore, the imprint of authenticity below the bronze-cast sculpture's ear connects the proud owner with the authenticating sculptor — a connection that is all the more essential given that Gosse's article, and indeed the New Sculpture's mass production of statuettes, asks us to take an imaginative leap in reformulating what it means to own an original sculpture. The increasing fashionability of bronze casting enables the creation of an interminable number of 'originals', whether they be perceived as such or merely a clever reconfiguring of the market; yet another of the New Sculpture's 'rivalrous acts of differentiation and disidentification'.[25]

Sculpturing machines and inanimate sculptors

Central to this changing market was the involvement of machines. A recurring dream of inventors throughout the nineteenth century was the design of a sculpting machine. James Watt, during the years of his retire-

[25] Jason Edwards, *Alfred Gilbert's Aestheticism: Gilbert Amongst Whistler, Wilde, Leighton, Pater and Burne-Jones* (Aldershot: Ashgate, 2006), p. 3.

ment to his garret in the early nineteenth century, developed prototypes for just such a machine which would build upon the replication principles of his copying press in order to copy sculptures using parallel hinged arms: one with a pen which was traced around the original work while the other arm was attached to a blade which replicated the original in a soft material such as wax or alabaster.[26] The machine successfully reproduced sculptures and medallions, though Watt never secured a patent for this invention. The first sculpture Watt successfully copied was an apt choice: a small head of his old friend Adam Smith, father of modern economics.

Inventions by sculptors Angus Robertson and William Behnes followed, and in 1844 sculptor and inventor Benjamin Cheverton capitalized on Watts's work by patenting what he called a 'three-dimensional pantograph'. The machine was extremely similar to that developed by Watts — it was essentially a scissor frame which required an operator to trace one end over the contours of the sculpture to be copied while, on the other end of the scissor, a pointed device replicated the sculpture in alabaster but at a reduced scale.[27] Even with the development of this remarkable machine, which was soon widely relied upon for the mass production of statuettes, these replicas were still the work of many hands. The alabaster model produced by the pantograph was passed to a block cutter who would portion the model into sections. From these, a mould would be made, usually in plaster of Paris, into which a slip would be poured. The resulting pieces would be passed to the repairer who would reassemble them into a single entity, carefully concealing the joints while guarding against collapse and managing the statuette's inevitable shrinkage. After being left to dry thoroughly for at least a week, the statuette would be fired in a kiln at 1100˚C. A workman would then painstakingly file down the joins before returning it to the kiln at an even higher temperature which would, through vitrification, produce the creamy smooth surface for which Parian (a porcelain imitation of marble) is renowned. The pantograph coupled with the use of Parian saw an incredible increase in the production of statuettes: by 1850, one pottery alone reportedly produced 460,000 pieces in a single year (Barker, p. 6).

Yet, so many hands were still involved and the preoccupation with producing an automatic sculpture machine persisted. Watts's early nineteenth-century dream of a sculpting machine came into being when, in

[26] René Schils, *How James Watt Invented the Copier: Forgotten Inventions of our Great Scientists* (New York: Springer, 2011), p. 41.
[27] Dennis Barker, *Parian Ware* (Princes Risborough: Shire, 1998), pp. 5–6.

1898, an Italian engineer and sculptor by the name of Augusto Bontempi invented and registered a patent for what he called a 'Sculpturing Machine' (*Fig. 1*).

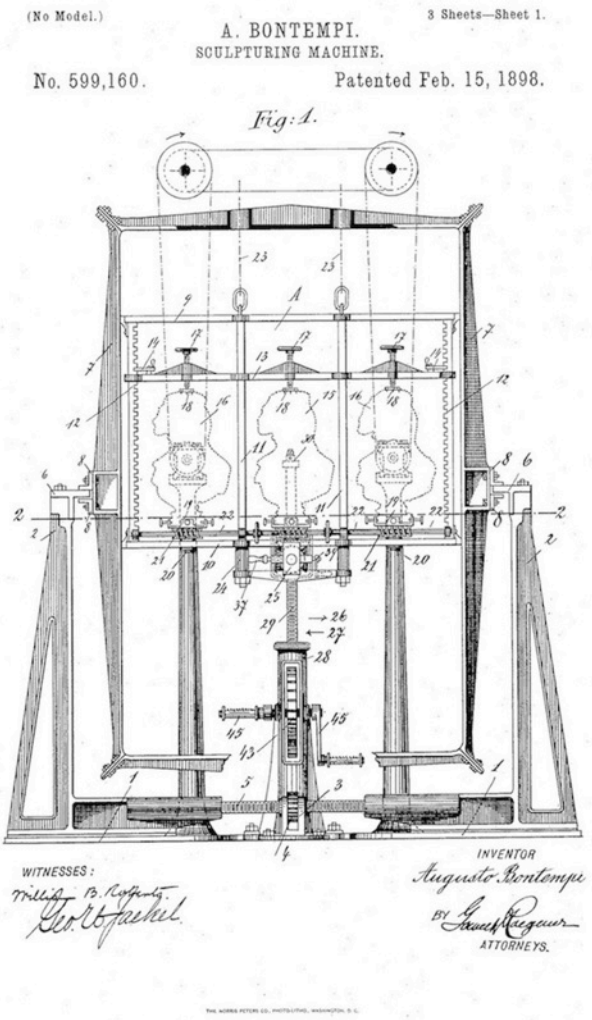


Fig. 1: Patent for Augusto Bontempi's 'Sculpturing Machine'.

The *British Architect* described the machine and its potential to revolutionize sculpture upon its arrival in England:

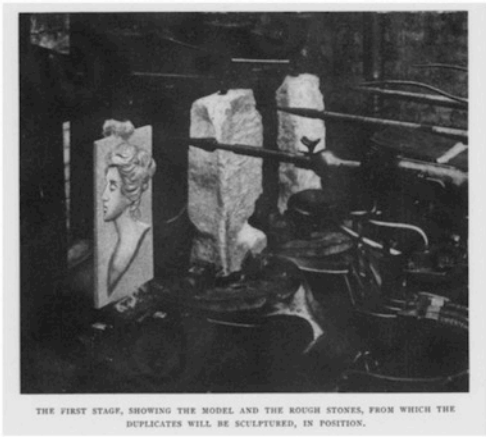
> An Italian sculptor named Bontempi, says the *Engineer and Iron Trade's Adviser*, invented a machine which threatens to

> revolutionize the sculptor's art. At present when a sculptor has completed his clay model of the statue which is eventually to be seen in marble, he hands it over to a man known as a 'pointer', who by the aid of an instrument of that name drills hundreds of tiny holes of various depths in the block of marble which is to be carved into an exact resemblance of the clay model. Then comes the man with the chisel, and it is his laborious task to chip away the marble, guided by the depths of the holes. When he has finished the sculptor puts in a few touches, and the bust or statue is completed. The principle of the new machine is that of the pantograph. The clay model and the block of marble are set side by side opposite a dummy pointer and a long revolving drill — or it may be two, as the machine will attack two marble blocks simultaneously. By pressing a button the dummy pointer can be moved all over the clay model — whether bust, statue, or group of figures. The revolving drill in its turn follows a corresponding course, cutting its way into the marble like a knife into cheese. Every nook and cranny, every wrinkle or dimple, in the model can be repeated in the marble; the copy is mathematically perfect.[28]

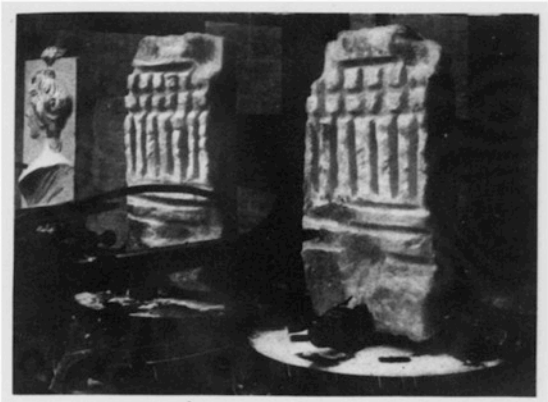
Oscillating between vocabularies of violence and innovation, the article exemplifies the inevitably mixed responses to this invention: a sense of loss in the relegation of wrinkles or dimples to mathematical equations paralleled by an excited complicity in the invention's potential for perfection.

Photographs published in the *English Illustrated Magazine* in 1905 appear to debunk other reports that the machines had been abandoned after they repeatedly shattered the stone they were to carve. These photographs trace the progress of the sculpture at half an hour's, two hours', and three hours' work (*Fig. 2*). It seemed that the human touch in sculpture could be retired: *The Times* excitedly reported that 'the output of one of the largest of these machines is estimated to be equal to that of 26 craftsmen, and that it can do in hours what could only be done by hand in days'.[29]

[28] 'Notes on Current Events', *British Architect*, 14 August 1903, pp. 112–13 (p. 113).
[29] 'Machine Sculpture', *The Times*, 5 October 1904, p. 8.



THE FIRST STAGE, SHOWING THE MODEL AND THE ROUGH STONES, FROM WHICH THE DUPLICATES WILL BE SCULPTURED, IN POSITION.



AFTER A HALF-HOUR'S WORK.

Fig. 2: Photographs of Bontempi's Sculpturing Machine, in 'Sculpture by Machinery', *English Illustrated Magazine*, October 1905, pp. 72–79.

Bontempi's first Sculpturing Machine had made its way to British shores in 1903, when Arthur Conan Doyle and sculptor W. G. Jones bought the British rights to the machine and opened the Automatic Sculpture Syndicate in a shed near the Albert Bridge in Battersea.[30] Conan Doyle and Jones had acquired the machine and British patent from Bontempi who, it seems, was by no means having a good time in Italy where he had been subjected to the widespread rage of Italian sculptors

[30] Arthur Conan Doyle, *The Return of Sherlock Holmes*, ed. by Richard Lancelyn Green (Oxford: Oxford University Press, 1994), p. 378.

who felt his invention threatened their very existence. They were certainly not overestimating the machine's potential: where the pantograph had facilitated the rescaling and replication of a sculpture, it still required an original sculpture to be copied, thus preserving the sculptor's role in the process. Bontempi's Sculpturing Machine had the potential to render the sculptor's hands entirely unnecessary, as a fascinating article titled 'An Inanimate Sculptor' in the *Illustrated London News* would demonstrate (*Fig. 3*).

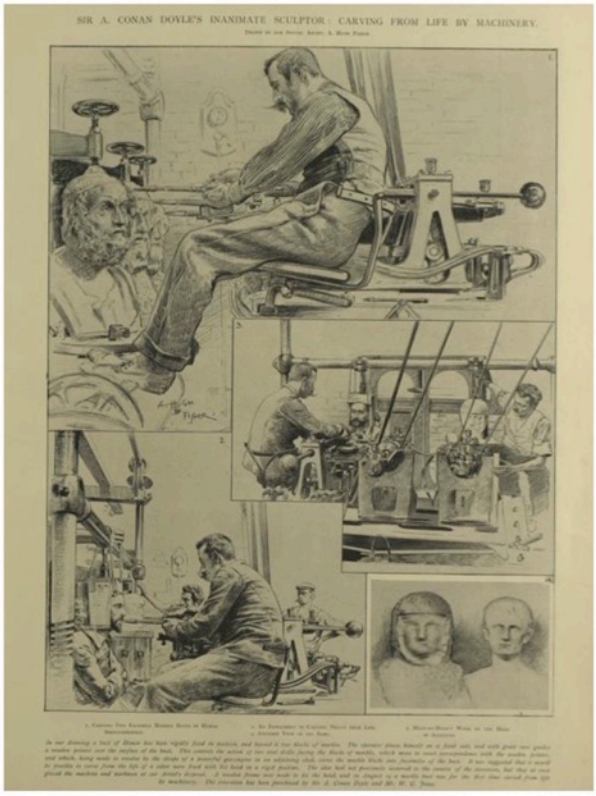


Fig. 3: 'Sir A. Conan Doyle's Inanimate Sculptor: Carving from Life by Machinery', *Illustrated London News*, 22 August 1903, p. 273.

The *Illustrated London News* sent a special artist, Alfred Hugh Fisher, to report on the machine. During his visit, it seems Fisher conducted an experiment which he later referred to as 'the carving of heads from life'. In Fisher's words:

> It was suggested that it would be possible to carve from the life if a sitter were fixed with his head in a rigid position. The idea had not previously occurred to the owners of the invention, but they at once placed the machine and workmen at our Artist's disposal. A wooden frame was made to fix the head, and on 14 August a marble bust was for the first time carved from life.[31]

Despite such grand reportage by the special artist-turned-inventor, the resulting sculpture was not a complete success; the accompanying text admits the head tilts at an odd angle due to minute movements in the special artist's position. Nevertheless, it did illustrate the capacity of 'an inanimate sculptor' to carve from life. It also spoke to the existence of this powerful possibility in the nineteenth-century imagination; the article's title alone recalls Thomas Carlyle's concern in 1829 that 'the living artisan is driven from his workshop, to make room for a speedier, inanimate one'.[32]

Sculptography and the allure of immediacy

After the press debut of sculpturing machines, reports appeared claiming that 'leaders of fashion and beauty in London society are now "sculptographed" while they wait, with the same facility and luxurious comfort as they are pictured by fashionable photographers'.[33] Of sculpture's many intersections with photography in the nineteenth century, sculptography is surely one of the most fascinating and neglected. Though it was represented as a highly mechanized process by the press, in reality it returned the process to strikingly *manual* artistry. Combining solar enlargement with pastel portraiture and metal bas-relief sculpture, the sculptograph usually displayed the soft lines and low image density of solar enlarge-

[31] 'Sir A. Conan Doyle's Inanimate Sculptor: Carving from Life By Machinery', *Illustrated London News*, 22 August 1903, p. 273.
[32] 'Signs of the Times', in *The Collected Works of Thomas Carlyle*, uniform edn, 16 vols (London: Chapman and Hall, 1857–58), III: *Miscellanies: vol. II* (1858), 98–118 (p. 100).
[33] H. Wood Smith, 'Sculpture by Machinery', *English Illustrated Magazine*, October 1905, pp. 72–79 (p. 74).

ments which, unfortunately, make these sculptographs extremely difficult to photograph so as to show their three-dimensional quality (*Fig. 4*).[34]

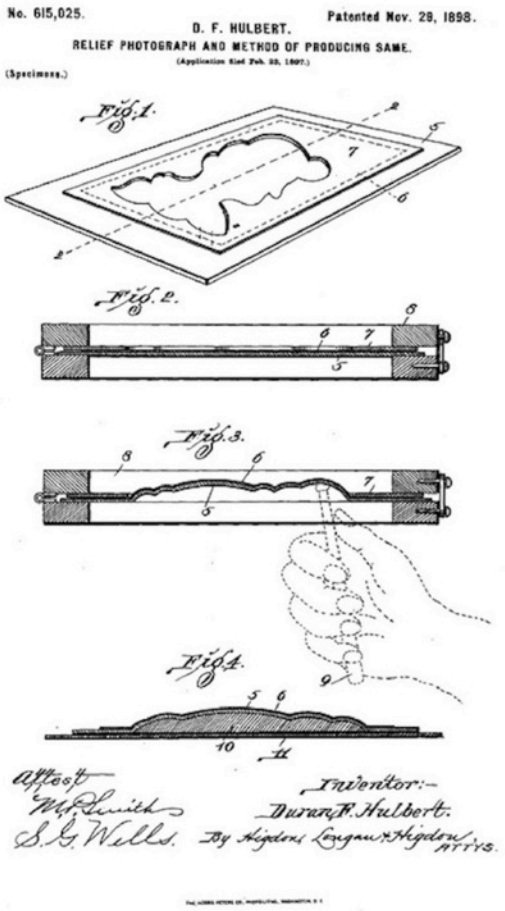


Fig. 4: Patent for D. F. Hulbert's 'Sculptograph'.

To produce a single sculptograph, the sculptographer would usually take a solar enlargement of their subject, and extensively rework it in pastels usually leaving the sitter's face unobscured. One patent existing

[34] For an excellent — and rare — consideration of sculptography, see an unpublished technical analysis of American sculptographs by art conservationists Lisa Duncan and Jessica Keister, 'In pursuit of reality: a technical study of two obscure photographic processes of the nineteenth century', unpublished paper, Winterthur/University of Delaware Program in Art Conservation, 2008.

for sculptographs, by Duran Hulbert, suggests the importance of a matte appearance as 'embossed photographs should not be glossy or shiny, and such paper should be used as will avoid this objection'.[35] Hulbert developed a series of techniques for reducing the glossiness of sculptographs, from preparing paper with a rough surface and sensitized with a solution of silver nitrate, to placing a fine cloth against the face of the print during embossing to reduce the shine. The primary paper support would then be stuck to a soft white metal secondary support. Usually this metal was lead — a metal that was cheap and adequately soft to be sufficiently malleable for sculpting — or an alloy of lead and tin. Frequently, sculptographs were advertised as 'aluminium sculptographs'. However, at a time where aluminium was so costly to extract that it was worth more than gold, it gave the impression of great glamour and was a particular advertising trait of the Great Eastern Art Company which traded in New York. In reality, aluminium would be an unlikely support as it is not adequately malleable, and the surface itself would not be visible — quite a waste of a valuable commodity when lead would do the trick. Claiming an aluminium sculptograph backing, however, would have been an excellent way to raise the price of the sculptograph for fashionable clientele.

The metal would be shaped to give the appearance of a bas-relief sculpture, with the highest point usually being the sitter's nose which might sit approximately three centimetres higher than the surrounding background. The background would usually be attached to a chipboard backing, and the gaps between the metal and backing would be filled with wax or resin.

Though specific accounts of such sittings taking place remain elusive, such press reports speak to the existence of this powerful possibility in the Victorian imagination. Sculptography never realized its promise in the nineteenth century, being most effective conceptually rather than practically. What is particularly of interest, however, is the fact that press reports overlooked the obvious manual nature of the process and laboured the imaginary idea of the immediacy of the sculptography. One imaginative article, for example, entitled 'Busts made in slices by means of speed-photography', summarized this new and fashionable sculptural practice as 'portrait-sculptures of massed laminations, calling for a sitting of only five seconds'. Even where machines were not involved, the fiction

[35] D. F. Hulbert, 'Relief Photograph and Method of Producing Same', United States Patent No. 615025, 29 November 1898.

of their usurping human artistry was more interesting than the truth of the human sculptor's authenticating touch.

Sculpting machines, sculpting bodies

The relationship between sculpture and touch was complicated by efforts in the nineteenth century to reproduce, rescale, and replicate sculptures and by the invention of 'inanimate sculptors' — machines with the potential to eradicate the sculptor's touch altogether. Yet, as this article demonstrates, the anxiety about sculpture in its numbers was catalysed as much by ideological shifts as it was by technological change. The preoccupation with sculpture's authenticity escalated just as the art was increasingly conceived as a collaborative creative process rather than the production of a sole genius. Gosse conceptualized the consumption of bronze casts as a way of, as he put it, 'getting nearer to the actual touch of the artist'. Yet it was also this desire to mass-produce sculptures which drove the development of machines capable of eradicating the sculptor's touch entirely. Bontempi's original patent had quite succinctly expressed the truly revolutionary aspect of his machine. 'This invention', the patent reads,

> has for its object an apparatus by which sculptured images or works of art may be made [...]. This apparatus is characterized, essentially, by the various devices being concentrated at one place and being capable of being operated by one person.[36]

As such, it was Bontempi's machine that realized the mythic notion of a sculpture being the work of a single creator undertaken in a single location. Harriet Hosmer's desire to correct preconceptions about the sculptural process also takes on new meaning in light of the sculpturing machine; it is no longer the myth of the lone sculptor which requires debunking but the assumption that a sculpture must be hewn by human hands. A century-long quest to build an inanimate sculptor had rendered the touch of a human artist unnecessary. By the turn of the century, the polite imperative which greets us as we approach a sculpture — 'Please do not touch' — could now be directed to the sculptor themselves.

[36] Augusto Bontempi, 'Sculpturing Machine', United States Patent No. 599160, 15 February 1898.

In our era of bioprinting, the relationship between human touch and sculpture has been further complicated by the capacity of machines to sculpt human body parts. Medical biofabrication recalls methods not only used in the traditional sculptural atelier, but also those employed by sculpting machines and by sculptographers.[37] Soft tissue biofabrication, for example, usually involves the use of moulding methods recalling traditional casting, while the bioprinting of bone replacements often entails the accumulation of numerous two-dimensional layers to achieve the desired three-dimensional shape, as was employed in the production of the nineteenth-century sculptograph.

Through the technologies of biofabrication, humans are no longer just the sculptors but the models *and* the medium, in the form of human cells. Vladimir Mironov, the former Director of the Advanced Tissue Biofabrication Center at the Medical University of South Carolina, has acknowledged this parallel between bioprinting and human sculpting. [38]

[37] There are five main three-dimensional printing techniques, including stereolithography, inkjet printing, selective laser sintering, fused deposition modelling, and laminate object manufacturing. For a summary of these technologies, see Bethany C. Gross and others, 'Evaluation of 3D Printing and its Potential Impact on Biotechnology and the Chemical Sciences', *Analytical Chemistry*, 86 (2014), 3240–53.

[38] Of course, many parallels exist. Like Conan Doyle's sculpturing machine depicted in the *Illustrated London News*, or the myth of the immediate sculptograph, speed is of the essence. Lawrence Bonassar, a biomedical engineer as part of a team of Cornell University biomedical engineers and Weill Cornell Medical College physicians bioprinting ears for children with congenital deformities, explains that 'it takes half a day to design the mould, a day or so to print [the ear], 30 minutes to inject the gel [containing the human cells], and we can remove the ear 15 minutes later. We trim the ear and then let it culture for several days in nourishing cell culture media before it is implanted.' See 'Bioengineers, physicians 3-D print ears that look, act real', *Cornell Chronicle,* 20 February 2013 <http://www.news.cornell.edu/stories/2013/02/bioengineers-physicians-3-d-print-ears-look-act-real> [accessed 18 September 2014].

Just as the capacity of the sculpturing machine moved beyond the need for a sculptor's touch, so the sculpted body may indeed exceed the current capacity of the human body itself. Indeed, the idea of authenticity has been overtaken by artificiality. Michael McAlpine, director of a Princeton-based team which developed a printable bionic ear, writes that 'this field has the potential to generate customized replacement parts for the human body, or even create organs containing capabilities beyond what human biology ordinarily provides.' See Manu S. Mannoor and others, '3D Printed Bionic Ears', *Nano Letters*, 13 (2013), 2634–39; also John Sullivan, 'Printable "bionic" ear melds electronics and biology', *News at Princeton*, 8 May 2013

He writes that 'the work of future specialists in human printing will be indistinguishable from the work of an artist or sculptor. In this context, bioprinting is the realization of Pygmalion's dream and materialization of the Greek myth about Pygmalion and Galatea.'[39] In realizing this dream, bioprinting's reliance on sculpting and printing technologies has a significant nineteenth-century inheritance, with a genealogy stretching back to James Watt's garret which housed both his sculpting machine and his copying press. Now more than ever, the nineteenth-century history of sculpture touched only by machines is one with which we should be more familiar. As Vernon Lee reminds us, 'we also, the sounding ones, are the brethren of the statues' (p. 48).

<http://www.princeton.edu/main/news/archive/S36/80/19M40/index.xml?section=topstories> [accessed 12 September 2014].

[39] Vladimir Mironov, 'On Art and Science: Bioprinting & Pygmalion's Dream?', unpublished paper.