Anatomical Models: A History of Disappearance?

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In her introduction to *Ephemeral Bodies: Wax Sculpture and the Human Figure*, Roberta Panzanelli presents the history of wax as “a history of disappearance – transformed, softened, liquefied, and sometimes lost forever”.1 Wax objects are today seldom part of our environment. Apart from some popular museums, such as Tussaud’s, wax models are no longer used, no longer in vogue, and this is most particularly the case for wax anatomical models which used to be the pride of eighteenth- and nineteenth-century natural history cabinets and medical museums. Whilst in the nineteenth century wax, wood, papier-mâché, and plaster were amongst the most current materials used for artificial anatomies, wax remained favoured in the eighteenth century for its malleability, its lifelikeness and resemblance to human flesh.

The aim of this special issue is to renew interest in the tools that were used to replace the human body in medical education, particularly focusing on the anatomical models that have today fallen out of fashion. Many of the articles gathered here deal with the debates surrounding the use of anatomical models, the way in which they participated in the construction and dissemination of medical knowledge as well as the meaning(s) of anatomical models whose shape, structure,
and texture evolved in time. As underlined in the following articles, anatomical models served above all medical education. An early case in point might be, for instance, the French surgeon Guillaume Desnoues (1650-1735), whose models circulated through Italy, France, Germany, Denmark and England at the very beginning of the eighteenth century. His collection undoubtedly paved the way for the circulation of many other wax anatomical models throughout Europe, whether these were destined for medical museums or public exhibitions (from fairs to public anatomical museums). The French surgeon, exiled in Italy, started working in 1699 with the artist Gaetano Zumbo (or Zumbo) (1656-1701), famous for his macabre artworks, such as The Plague or The Tomb, which featured decomposing corpses. The partnership aimed at first to provide Desnoues with enough models and preparations for his courses. But the two men quickly started exhibiting and selling their models. Although the association of Desnoues and Zumbo did not last long, both went on making, exhibiting and selling anatomical models in the following years, this time in Paris. Desnoues formed a partnership with another artist, François de La Croix, presenting his models for the first time in Paris in 1711 and creating the very first museum of wax anatomical models.  

This first museum foreshadowed other successful commercial ventures, such as Philippe Curtius’s (1737-1794), a doctor who gave up his medical career to open two venues in Paris, the Salon de Cire (which opened in 1776) and the Caverne des Grands voleurs, boulevard du Temple (which opened in 1782). Both were of course meant for popular entertainment (and the career of Curtius’s “niece”, Marie Tussaud, née Grosholz [1761-1850], in France and in England certainly typifies the commercial potential of waxworks), but their original connection with the medical field remains nonetheless telling.

Both Desnoues and later Curtius, halfway between the world of exhibitions and entertainment and the realm of medical education, point out the complex position of many anatomical models, an issue that Anna Maerker develops in her article, focusing on the significance of live performance in the medical profession with the French doctor Auzoux’s papier-mâché models in the second half of the nineteenth century. Auzoux’s marketing of his detachable papier-mâché models reveal the complex status of anatomical models which, as exemplified by Desnoues’s and Curtius’s models a century before, had been exhibited alongside freaks and automata whose mechanisms represented the marvels of human (and animal) physiology, reflecting thereby contemporary research into and exploration of human anatomy, for various audiences. Desnoues’s models, for instance, though exhibited in the Parisian museum, also regularly crossed the Channel, and were hired by British surgeons offering courses in anatomy to medical professionals and the lay public alike. Because of the lack of wax modellers in England (only Joseph Towne [1806-1879], who worked at Guy’s Hospital, stands out among British modellers), many

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anatomical models were imported from France, Italy or Germany throughout the eighteenth and nineteenth centuries. Thus, these emblems of Enlightenment science, enabling the education of wealthy gentlemen, offer an insight into the evolution of medical knowledge and its dissemination. Together with other preparations, such as dry or wet preparations ("natural" anatomies), anatomical models were increasingly used as substitutes for cadavers at a time when anatomy became central in medical education. Indeed, because the changes in medical education led to a rise in the demand for dead bodies, the shortage of cadavers for dissection in Britain ensured the fortune of the entrepreneurial model makers, with Desnoues crossing the Channel at the beginning of the eighteenth century and with Auzoux following later, as Maerker explains in her article.  

This collection of articles tackles the increasing part that anatomical models played in medical education and in the constitution and dissemination of medical knowledge. The articles trace the evolution of anatomical models, from the heydays of anatomical waxes displayed in natural history cabinets and epitomized by Italian modellers, such as Felice Fontana (1730-1805) and Clemente Susini (1754-1814) in Florence, Ercole Lelli (1702-1766), Giovanni Manzolini (1700-1755) and Anna Morandi (1716-1774) in Bologna, or André-Pierre Pinson (1746-1828) in Paris, to the making of models increasingly aimed exclusively at medical students. Once again, early examples such as that of Desnoues’s models in the early eighteenth century are emblematic: after Desnoues’s death in 1735, his anatomical models were bought by a medical professional, Dr George Thomson, who exhibited them alongside other preparations. However, Thomson’s addition of a catalogue to explain his anatomical models indicates the progressive narrowing of the audience to which the models were destined. The catalogue, explaining the marks and figures added on the models and including a “Dissertation on the Parts of Generation in Men and Women, of the

3 Unlike in France, as Maerker’s article recalls, where the Hôtel-Dieu and the Charité had been the official providers of corpses to the medical school since 1798, the lack of cadavers was particularly felt in England because of the anatomy legislation. The beginning of anatomy legislation may be traced back to 1540, when Henry VIII allowed anatomists the use of the bodies of four hanged felons per year. This allowance was extended to six by Charles II, until the 1752 Murder Act granted anatomists the use of all the criminals hanged at Tyburn, and later Newgate, from 1783. The 1832 Anatomy Act radically reformed anatomy, granting anatomists the right to use unclaimed pauper bodies from workhouses. See BAILEY James Blake, The Diary of a Resurrectionist, 1811-12, to which are Added an Account of the Resurrection Men in London and a Short History of the Passing of the Anatomy Act, London, Swan Sonnenschein & Co., 1896, and RICHARDSON Ruth, Death, Dissection and the Destitute, Chicago & London, The University of Chicago Press, [1987], 2000, p. 36.

4 Syllabus, pointing out every part of the Human System; likewise the different positions of the Child in the Womb &c, as they are exactly and accurately shewn in Anatomical Wax-Figures of the late Mons. Denone. To which is added, a Compendium of Anatomy, describing the Figures, Situation, Connection, and Uses of all the Parts of the Human Body, London, John Hughes, 1739; London Daily Post and General Advertiser 1393 (Monday, April 16, 1739).
Fœtus in the Womb, of the Birth, &c.”5 paved the way for the use of detachable models in medical schools which would characterize the nineteenth century – then exclusively reserved for professional use in medical institutions.6

The issue of the links between anatomical models and their audiences underlie all the articles gathered in this special issue. During the nineteenth century lay and professional audiences were increasingly separated whilst medical museums gradually severed from natural history museums. In the second half of the eighteenth century and throughout the nineteenth century more medical museums opened their doors, creating a greater perceptible tension7 between public anatomical museums and medical museums. In England, around forty anatomical museums were created in the second half of the eighteenth century,8 climaxing in 1813 when the Royal College of Surgeons opened the Hunterian museum, in London, based on the collections of John Hunter. In France, the Dupuytren and Orfila museums opened respectively in 1835 and 1847, the latter patently shaped after the Hunterian museum. The opening of such venues worked in tandem with a move away from the public – a move which was related in part to changes in medical research. Indeed, with the emergence of pathological anatomy and the shift from normal anatomy, Italian waxes, highlighting the marvels of the human machine, just like other normative models like Pinson’s or Jean-Baptiste Laumonier’s (1749-1818) in France, became outmoded and were gradually supplanted by models illustrating the pathological body (most strikingly exemplified, perhaps, by dermatological moulages).

Furthermore, the opening of a large number of venues showed how medical museums and their collections not only played a significant part in the teaching of anatomy, but reflected as well the part that anatomy itself had come to play in medical education. In England, for instance, since the 1815 Apothecary Act, which required students to attend anatomy lectures and dissection classes to qualify as surgeon-apothecaries, anatomy teachers benefited from the increase in students and actively competed with the London teaching hospitals. The rise in privately run

5 Daily Advertiser 3706 (Saturday, December 4, 1742).
6 Denoues’s models terminated their journey at Trinity College Dublin in 1753.
7 See, for instance, the case of the German “doctor”, Dr Joseph Kahn, in London, whose Anatomical and Pathological Museum (1851-1872) mixed natural and artificial anatomies, including a dismountable Venus (38 pieces). First opened to men only, the anatomical museum quickly admitted women, providing lectures by medical professionals. A room showing the damages of sexually transmitted diseases was reserved for professionals only. The medical journal The Lancet particularly praised the museum when it opened, advising students and physicians alike to visit. See “Dr Kahn’s Anatomical Museum”, The Lancet 1 (1851), p. 474. For a history of public anatomical museums see BATES A. W., “Indecent and Demoralising Representations”: Public Anatomy Museums in mid-Victorian England’, Medical History 52 (2008), pp. 1-22.
anatomy schools explains the high number of anatomical museums at the time, since it was compulsory for anatomy teachers to possess their own collection. The significance of anatomical museums in medical education was even stressed in manuals, such as in John Frederick Knox’s *The Anatomist’s Instructor, and Museum Companion: Being Practical Directions for the Formation and Subsequent Management of Anatomical Museums* (1836). As Knox argued, “[e]xperience … has convinced me that museums cannot be too numerous or extensive. Without museums the profession would be in the state of man without a language”. His remark on the central part played by museums in medical education is typical of medical professionals’ increasing reliance upon three-dimensional models for their lessons and theories of visual education, suggesting that knowledge had to be conveyed directly through the senses.

Marieke Hendriksen’s article in this collection, on the use of textiles in anatomical objects and preparations, explains that the evolution of the presentation of anatomical objects (following, as she argues, fashion throughout the seventeenth [Frederick Ruysch], eighteenth [Anna Morandi] and nineteenth centuries) is revealing of the changing role of such models and preparations. As Hendriksen contends, the gradual disappearance of textiles, aimed at humanizing models and making them less repulsive, also indicates their change of function. This change is noticeable as well in the models’ material changes, as in the case of Auzoux’s papier-mâché models, made of detachable pieces, whilst others were equipped with handles as Birgit Nemec’s article on Hochstetter’s anatomical models in Vienna recall, evidencing their use in hands-on activities. The need for cheaper models aimed at a more practical use explains nineteenth-century modellers’ experiments with different materials, from plaster to papier-mâché and various resins. Hence, there followed the serial production of anatomical models in the second half of the nineteenth century, by modellers like Jacques (1789-1851) and his son Jules (1826-1904) Talrich, the Tramond, Deyrolle and Auzoux companies in France, Paul Zeiller (1820-1893) and Adolf (1820-1889) and Friedrich Ziegler in Germany. Their models offered specialized parts of the body, internal organs or specific types of waxes as the Zieglers, who became famous for their wax embryos. The success of these

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9 The ownership of a museum with a collection worth more that £500 was compulsory to be recognized by the College of Surgeons; BATES A. W., “Indecent and Demoralising Representations”, *op. cit.*, p. 5.


anatomical models aimed at a more specialized instruction explains the fierce competition between several companies and the development of marketing strategies. Popular modellers sold their models throughout the world, as several of the following articles point out, such as Maerker’s essay on Auzoux or Nike Fakiner’s on Gustav Zeiller’s models. In France, Jacques Talrich, for example, an army surgeon who started modelling around 1823, and became the official modeller of the Paris medical school in 1824, sold his models in England, Ireland, Scotland, Germany, Russia and America.\textsuperscript{13} His son, Jules, continued to export his anatomical models, which were increasingly aimed exclusively at medical students. As Jules Talrich argues in the introduction to his catalogue,\textsuperscript{14} the wax models’ hyper-realistic shapes and colours and low price ensured their success as teaching aids for medical students.\textsuperscript{15} The models could be “hanged on a wall in an amphitheatre, or placed on a turntable so that the professor may at all time have all the muscles of the human body joined to the skeleton”.\textsuperscript{16} Some preparations were even made so as to match the curriculum,\textsuperscript{17} and the models were detachable so as to enable students to study them.\textsuperscript{18} Together with a catalogue explaining colours, models of different sizes were also sold so as to adapt to amphitheaters and smaller classrooms. A look at the catalogue quickly shows the variety of anatomical models for sale: Talrich proposed a mix of natural and pathological anatomy (venereal and syphilitic diseases, pathologies of the eye, etc.), teratological specimens, and curiosities of sorts (such as a series of six hands including the hand of a giant and that of a dwarf\textsuperscript{19}). Some models were also designed for surgical operations, such as amputations; others for forensic medicine (such as models illustrating wounds from various weapons or vitriolized faces and busts modelled directly from corpses in the Paris Morgue). The models were all made after medical books and treatises (by Paul Broca [1824-1880], Ludovic Hirshfeld [1816-1876], Constantin Bonamy, Jean-Baptiste Marc Bourgery [1797-1849], Marie Philibert Constant Sappey [1810-1896] and Jean Cruveilhier [1791-

\textsuperscript{13} Siècle, 22 avril 1852, qtd. in Catalogue des Modèles anatomiques et préparations nouvelles pour les démonstrations de physiologie organique de l’homme, modèles en staff peint et cires résistantes, de Jules Talrich, modéleur d’anatomie à la faculté de médecine de Paris, Paris, 1886, n.p.

\textsuperscript{14} Catalogue des Modèles anatomiques … de Jules Talrich, op. cit., p. 6.

\textsuperscript{15} Ibid., n.p.

\textsuperscript{16} “suspendus au mur d’un amphithéâtre, ou placés à volonté sur une selle tournante, de manière à ce que le professeur ait toujours à la portée de sa main tous les muscles du corps humain avec leurs attaches sur le squelette”, Ibid., p. 5. My translation.


\textsuperscript{18} Ibid.

\textsuperscript{19} Ibid., p. 30.
1874)\textsuperscript{20} for models on the nervous system, for instance) and often involved the help of medical professionals.

The issue of the collaboration of modellers with scientists and medical professionals permeates this collection. As Fakiner’s article shows, Gustav Zeiller (1826-1904) worked in collaboration with scientists, such as the German physiologist Carl Bogislaus Reichert, helping the latter produce his atlas on the human brain (\textit{Construction of the Human Brain}), enhancing therefore the role of wax models in relation to other media. Gustav Zeiller was also well-known by the leading German scientists of his time, from Johannes Peter Müller (1801-1858) and Friedrich Theodor von Frerichs (1819-1885) to Emil Du Bois-Reymond (1818-1896), while his brother, Paul, another wax modeller, mentioned above, worked in collaboration with anatomists. Likewise, the French company Tramond, located 9, rue de l’Ecole de médecine in Paris,\textsuperscript{21} near to the anatomy theatre, worked in close collaboration with the medical faculty to make both artificial and natural anatomies which were used in the faculty, as well as being sold to medical schools and museums around the world.\textsuperscript{22} Tramond’s work with anatomists like Félix-Anatole Le Double (1848-1913), creating for instance a collection of papier-mâché anthropological anatomical models\textsuperscript{23} or pieces for demonstrations in gynaecology\textsuperscript{24} or neurology,\textsuperscript{25} as his collaboration with Broca illustrates, indicates once again the rising specialization of such anatomical models, increasingly focused on individual parts of the body, and which reflected the expansion of medical specializations.

As suggested at the beginning of this introduction, however, despite the popularity of many models (as Fakiner recalls, for instance, Gustav Zeiller’s waxes were exhibited at the Industrial Exhibition in Munich in 1854 and at the Global Exhibition in Vienna in 1873) and the undeniable part that such models played in the dissemination of medical knowledge,\textsuperscript{26} debates around the scientific value of these models were not rare. The old associations of anatomical models with freaks and

\textsuperscript{20} \textit{Ibid.}, p. 20.

\textsuperscript{21} The company was bought by Auzoux in 1929.

\textsuperscript{22} Tramond’s models were even bought by Moscow University. See LANNOIS M., “La Clinique Bazanova de Moscou”, \textit{Lyon médical : Gazette médicale et journal de médecine réunis} 86 (1897), pp. 414-15, p. 415.


\textsuperscript{25} In \textit{Mémoires sur le cerveau de l'homme et des primates} (1888), Paul Broca mentions several times the part that Tramond played in the development of his research; BROCA Paul, \textit{Mémoires sur le cerveau de l'homme et des primates}, Paris, C. Reinwald, 1888, p. 713.

\textsuperscript{26} See Broca’s comments on the role that Tramond’s moulds played in the popularisation of his research on brain convolutions; BROCA Paul, \textit{Mémoires sur le cerveau de l'homme et des primates}, op. cit., pp. 615, 711.
automata in the eighteenth century clung to these emblems of medical knowledge, more especially so because most of the anatomical models that were used in medical schools were identical to the models that circulated in fairs or were exhibited in public anatomical museums, such as Paul Zeiller’s models, sent to Joseph Kahn’s museum in London, Spitzner’s in Paris or A. Präscher in Berlin, or Jules Talrich’s, which were sold at his own public anatomical museum situated 5, rue de Rougemont in Paris. As a result, even when displayed at Great Exhibitions at the end of the nineteenth century, the models were not infrequently disregarded by reviewers who argued that the pieces belonged more to the fair than to medical venues, or were suitable only for secondary schools, as was often the view of Auzoux’s models.

The vexed question of the scientific value of anatomical models has resulted in their neglect, scientists and art historians alike associating anatomical models with the world of popular entertainment more than praising them as objects that were once central to medical practice. However, groundbreaking studies, such as Thomas Schnalke’s *Diseases in Wax: The History of Medical Moulage* (1995) or Soraya De

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29 This is the case, for instance, of one of Talrich’s models exhibited at the Great Exhibition of 1889. The model was that of a lightly clad hysteric: “Cette femme est une déclassée…, presque à tous les points de vue, mais au moins au nôtre ; elle n’a rien pouvant lui donner le droit de figurer à côté des pièces scientifiques ; sa place est dans un de ces musées forains, qui portent, pour certains cabinets, la mention : ‘Visibles pour les hommes seulement’”; BAUDOUIN Marcel, *Guide médical à l’exposition universelle de 1889 à Paris*, Paris, E. Lecrosnier et Babé, 1889, p. 272.
30 BAUDOUIN Marcel, *ibid.*, p. 270. This was not always the case. In the following review, Auzoux’s models are compared with Tramond’s and praised for their quality: “Il faudrait que tous les élèves de première année puissent assister à un cours spécial, fait par un agrégé ou un prosecteur, sur un modèle d’anatomie artificielle, d’anatomie elastique, de Auzoux. Ces modèles, fabriqués avec une matière particulière, très solide et très légère, se démontent couche par couche et sont perfectionnés avec une admirable précision. En se livrant à cette étude, qui devrait précéder les dissections, il est incontestable que les élèves y gagneraient. J’en acquiers la preuve tous les jours ; car, dans mes cours, je me sers des préparations du sujet et des préparations artificielles de Auzoux, et j’ai la certitude que mes élèves apprennent l’anatomie lorsqu’ils assistent assidûment à mes leçons. 

INTRODUCTION

Chadarevian and Nick Hopwood’s (eds) *Models: The Third Dimension of Science* (2004) have successfully reclaimed the significance of this part of the material history of medicine. This collection certainly aims to follow in their footsteps and explore further these symbols of medical knowledge. For many of these collections, as Birgit Nemec’s article highlights, also show that what remains of some damaged collections must be protected, not solely for the cultural and historical value of the anatomical objects, as Nemec contends, but also because many of them encapsulate wider issues, such as political debates, which informed the construction and dissemination of medical knowledge.

The fate of anatomical museums whose scientific value is now nearly obsolete has recently raised the awareness of scholars, artists, curators and medical practitioners involved in or working close to medical collections. The “*Leiden declaration on human anatomy/anatomical collections concerning the conservation & preservation of anatomical & pathological collections*” signed by the participants, delegates and supporters of the International Conference on “Cultures of Anatomical Collections”, held at Leiden University, 15-18 February 2012, expressed concern about the storage and preservation of collections of human anatomy and pathology throughout the world and urged for the care of their collections, be they human and animal preparations, wax and other models, drawings, photographs or documents and associated archives. In France, a conference held in Montpellier in November 2012 stressed the bleak future of many anatomical collections coming from private collections and hospitals, such as the Dupuytren, Orfila, Delmas and Rouvière collections or those of the Paris Assistance Publique (AP-HP). Bad storage and conservation, lack of space, poor maintenance, limited funding, and even lack of interest doom the forgotten patients and artificial models which were once the pride of so many museums in the previous centuries.

By way of conclusion, we wish to focus our discussion on a local example: the anatomical museum of the Toulouse faculty of medicine. Originally situated in the city centre, the museum was moved to the Rangueil campus in the 1970s, a removal which resulted in the collection being separated from its archives, lost in the university or discarded during the transition. The collection is now kept on the first floor of the anatomy department. The museum comprises many anatomical models and preparations, from mounted skeletons to dry and wet anatomies (the latter mainly foetuses from the histology department), examples of comparative anatomy, anatomical charts, x-rays, and photographs. Exclusively used as a teaching museum, the museum hosts numerous models typical of the last decades of the nineteenth century. Many wax models bought from the Tramond company are to be found;

others by Auzoux, Deyrolles, Talrich, Ziegler or Franz Jos Steger, in wax, plaster or papier-mâché, remain behind the dusty display cabinets, unattended. The place epitomizes the state of many a medical museum in Europe, where anonymous patients are left to mould and suffer from unsuitable storage conditions. Often damaged and discoloured, or simply too old-fashioned to be of any use to medical students, the models and preparations bear witness to the evolution of teaching methods. Thus, as with the articles gathered in this collection, the following photographs of the Toulouse medical museum, by artist Valentina Lari, are poignant reminders of the passing of time. Uncared for and consigned to oblivion, Lari’s Sleeping Beauties are meant to remind viewers that because the exhibited or hidden pieces of anatomy in medical museums and hospitals are also pieces of history, the importance of such collections for the history of medicine, as well as for medical research in general, must not be ignored.
Valentina Lari, Liminality (2014). Film stills.