

REVIEW PAPER

**NEW LIFE TO ITALIAN UNIVERSITY ANATOMICAL COLLECTIONS:
DESIRE TO GIVE VALUE AND OPEN MUSEOLOGICAL ISSUES.
CASES COMPARED**FRANCESCA MONZA¹, GABRIELLA CUSELLA², ROBERTA BALLESTRIERO³, ALBERTO ZANATTA⁴¹Department of Medicine and Aging Sciences, University of Chieti, Chieti, Italy²Department of Public Health, Experimental and Forensic Medicine, Unit of Human Anatomy. University of Pavia, Pavia, Italy³Central Saint Martins, University of the Arts, London. The Gordon Museum of Pathology, London, United Kingdom⁴Museum of Pathological Anatomy, University Museums Centre, University of Padua, Padua, Italy

The anatomical museums are one of the most difficult categories of museums to deal with because the issues addressed and the stored materials are complex to communicate and often not suitable for all audiences. The history of medicine teaches us that the knowledge of our body is a fascinating topic that continues to be the subject of study and research.

The Italian anatomical museums are mostly university property, often closed and with specimens in urgent need of restoration.

Their rooms still house important collections of human biological samples, dry or in liquid, collected between the eighteenth and twentieth century: a historical heritage that testifies to the evolution of medical science and provides a searchable archive of biological and genetic data.

The curator of such a museum must confront many issues – museological, legislative and ethical – many of which are unclear and incomplete.

This article provides an overview of museological issues in the anatomical area in order to offer ideas and visions, from a comparison of three different examples: the Museum of Human Anatomy of the University of Pavia, the Museum of Pathological Anatomy at the University of Padua and the Gordon Museum of Pathology in London.

Key words: medical heritage, medical museum, history of medicine, human pathology.

Introduction

In this paper, we will focus on three different museums: The Anatomical Museum of Pavia, currently closed; the Museum of Pathological Anatomy of University of Padua, which is under restoration and construction, and the Gordon Museum of Pathology in London, an active museum used for medical education.

These museum environments consist of historical collections, all of which are university property and born for didactic and training purposes.

The Anatomical Museum of Pavia – a crystallised museum

One of the richest and most ancient Italian anatomical collections is preserved in the rooms of the Museum of Human Anatomy of the University of Pavia (Fig. 1) at the Department of Public Health, Experimental and Forensic Medicine. It consists of over two thousand anatomical specimens, mostly natural, dry or in liquid, collected since the late '700s from the main Anatomists in Pavia: Giacomo Rezia (1745-



Fig. 1. Anatomical Museum of Pavia, view from the top

1825), Antonio Scarpa (1752-1832), Bartolomeo Panizza (1785-1867), and Giovanni Zoja (1833-1899) [1]. In particular, Antonio Scarpa was the first director and collected precious preparations describing some of his most important discoveries on hernias, the sense of smell and hearing organs, but also the heart's blood vessel and nerves. Antonio Scarpa always preferred natural anatomical preparations obtained partly by desiccation or maceration [2], partly by using resins and wax, and partly by preserving them in "wine spirit", kept in custom-made glass vases that were made following his directions. He also preserved entire human bodies, creating anatomical statues [3].

Additionally, he focused on an important topic for the time: "microscopic preparations". In 1804 Antonio Scarpa published an *Index rerum Musei Anatomici Ticinensis*, the first printed catalogue serving as a guide for the students. At the time, the collection consisted of 365 pieces, organised following the se-

quence of the didactic plan in osteology, splanchnology, neurology, aesthesiology, and angiology. His successor, Bartolomeo Panizza, from 1815 to 1864, increased the collection by adding over a thousand more preparations. In particular he increased the osteology collection and created the "eminent craniums" section, with the skulls of celebrities and university professors. These were functional for the phrenological studies that were popular at the time. Also, another section consisted of mummies and ancient skulls.

The last important director of the museum was Giovanni Zoja (director from 1864 to 1899), who took care of the expansion of the collection and its cataloguing. He reorganised the museum for 20 years with great care and had prints made in 1890 of the last catalogue [4] that are still useful and essential for us today. The catalogue cited 2678 pieces, and like other academic collections, the anatomy collection kept growing during the '800s but also lost its didactic central role and over the years was used less and less.

The museum represents today a rare example of "crystallisation" of an anatomical collection from the 19th century (Fig. 2). It consists of three exhibition halls; preservation is taken care of by some members of the Anatomy Institute, but it is closed to the public and is possible to visit only with a valid request. The collection today – even if remarkable in terms of quantity and quality of the materials – has not yet received the institutional attention that it deserves, and it is rarely in use for study and research. Recently it became part of the "University Museum Centre", with the aim of increasing the value of the collections.

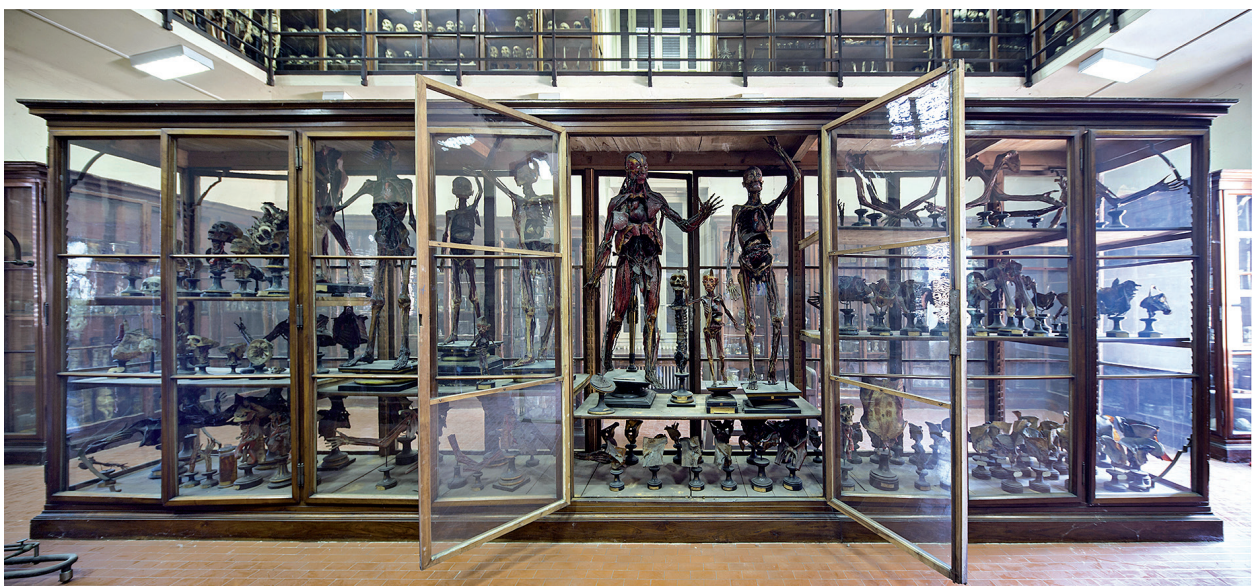


Fig. 2. Entire human bodies in the Anatomical Museum of Pavia

The Collection of Pathological Anatomy of Padua – a newly set up project

The collection of the Museum of Pathological Anatomy of the University of Padua consists of more than 1300 pathological specimens, preserved in formalin or dry (Fig. 3). The museum was founded in 1870 by Lodovico Brunetti (1813-1899), a young assistant to the famous pathologist Karl von Rokitansky (1804-1878) in Vienna. Brunetti was called to the University of Padua in 1855 to occupy the first Chair of Pathological Anatomy and to direct the new Institute of Pathology, just adjacent to the city Hospital “Giustiniano”. He was convinced that clinics and pathology should be located close to one another because they complemented each other in the understanding of disease.

Brunetti held the chair from 1855 to 1887, introducing the Padua Medical School to the classic tradition of pathological anatomy at that time headed by Rokitansky, based mostly on morphological studies of organs and on the analysis of macroscopic lesions [5]. Brunetti revolutionised Padua’s medical school by creating a Museum of Pathological Anatomy inside the institute, so his students could study and touch the pathological specimens with their own hands. In 1881 Brunetti wrote: *In my school I’m very demanding, but in what? The rooms of my assistants and mine are very simple. I’m demanding in the anatomical theatre and in the museum* [6]. Brunetti developed in Padua a new method for the preservation of human tissues called *tannisation*, especially for adding new specimens to the collection. This procedure was based on the use of tannic acid for preserving organic tissues and was aimed at satisfying the pathologist’s need for preparations to be created “quickly, completely, economically”, while ensuring complete preservation of the original three-dimensional shape of fresh tissues and organs [7].

Over the years, the museum continued to grow, thanks also to Brunetti’s successors Augusto Bonome (1857-1922) and Giovanni Cagnetto (1874-1943): these three men are responsible for most of the present collection, which was further boosted in the late 1960s by a large number of specimens relating to heart diseases [8]. Originally, the collections of the museum were arranged inside glass display cases with a wooden framework: fine to look at but impractical for use. During the 1970s, Vito Terribile Wiel Marin (1939-2015), professor of pathology at that time, made the first renovations to the museum,



Fig. 3. A cabinet in the Museum of Pathological Anatomy of University of Padua

replacing the nineteenth-century cases with glass and aluminium cabinets; some pieces were restored and the formalin was renewed [5].

Today, the specimens are distributed throughout 28 large aluminium-framed glass structures, subdivided according to the organs displayed, the parts of the body where they were located, and the type of pathology. The Museum of Pathological Anatomy contains more than 1300 specimens, which on account of their rarity and the variety of pathologies represented, make it one of the most important and valuable of its kind in the world [9].

At present, the museum appears as a silent container of cases that seem to have lost all their historical and scientific value, which instead, over time, has increased exponentially. A new project of renovation was undertaken in 2017. The restoration was approved in view of the celebrations due in 2022, when the University of Padua, founded in 1222, will celebrate its 800th anniversary. The showcases will be replaced by a unique structure that is completely sealed, so as to safeguard visitors from the emission of formalin produced by some of the specimens. The room in which they are housed is to be redesigned according to current safety regulations. A new exhibition path is being developed that will arrange the exhibits in an informative manner, combining medical history with medical museology, paleopathology, and pathological anatomy [5].

The new exhibition will include the use of textual, iconographic, and interactive supports. For instance,

the most significant specimens will be arranged by a scientific description, based on their pathology. They will be correlated by the clinical history, if present, taken from the archive of the institute, where the autopsy records have been preserved since 1855. Where possible, they will be supported by modern analysis, such as histological, X-ray or computed tomography investigations. Finally, they also will be accompanied by videos or illustrations relating to the history of the disease represented by the specimen. The intention is to make the museum accessible on several cognitive levels, organically linked to each other, but also legible individually, depending on the interests of the visitor.

The Gordon Museum of Pathology – a museum for medical education

The Gordon Museum of Pathology is an independent department now affiliated to the Faculty of Life Sciences & Medicine at King's College London (KCL).

Created in 1826, it is one of the largest pathology museums in the world and Britain's largest medical teaching museum [10]. Its primary function is medical education at both undergraduate and post-graduate levels. It provides a range of services and functions to the School of Medicine, training medical, dental, and biomedical students and professionals to diagnose disease (Fig. 4).

The Museum, which has a growing collection of approximately 8000 pathological specimens, sup-

ports the studies of over 9500 current healthcare students [11].

It is not a public museum but is open to the “medical public” of KCL and the associated hospital trusts. The Gordon Museum welcomes a large number of specialised visitors: students from medicine, dentistry, biomedicine, physiotherapy, physiology, nursing, and obstetrics as well as scholars from other universities in Great Britain and international universities. The estimated average number of visitors is 25,000 per year.

The oldest specimen dates from 1608 and the most recent was added within the last few years. It is, in fact, one of the few medical museums in the country that continues to accept new specimens to document new and emerging diseases.

The museum is fully licensed by the Human Tissue Authority and operates under Human Tissue Act (HTA) legislation, which is a requirement of institutions holding human material, and it is checked every two years. The Human Tissue Act 2004 covers England, Wales, and Northern Ireland. The HTA was established to regulate activities concerning the removal, storage, use, and disposal of human tissue. Consent is the fundamental principle of the legislation, and different consent requirements apply when dealing with tissue from the deceased and the living.

A key principle of the HT act is that all human bodies and materials of human origin within its scope should be treated with respect and dignity. In relation to the public display of human material, this principle applies both to those showing the material, and



Fig. 4. The Gordon Museum of Pathology: The Percy Roberts Theatre with the collection of Lam Qua's paintings



Fig. 5. The Gordon Museum of Pathology: wax model collection of Joseph Towne

to those viewing it. The display of human materials raises some important ethical issues; this acknowledges their unique status within museum collections and the special responsibilities placed on those who acquire and display them. All the specimens present are donations so, even if they are to be used for educational purposes, they have to be treated with respect and dignity.

The introduction of new technologies has simplified access to the numerous collections thanks to the creation of an IT platform where catalogues, programmes, and films are easily accessible thanks to the tablets provided by the museum. For example, at present there are nearly 300 short films (podcasts) with expert commentary, relating to specimens from the Gordon Museum collections. These are not available to members of the public but are freely accessible to medical professionals.

The museum is arranged into four bays, each of which is divided into three floors. The two upper floors are galleries, which ring the bays and hold the collection of human specimens and are organised by topic (same disease in different organs) or presenting the same organ with different condition or disease.

The Gordon Museum was opened in the current location in 1905 and today hosts a number of historically important medical collections. They include some rare specimens and artefacts from Thomas Hodgkin, Thomas Addison, Richard Bright, and Astley Cooper. The Percy Roberts lecture rooms contain the collection of paintings of pre-operative Chinese tumour patients operated on by the medical missionary Rev. Dr Peter Parker (1804-1888) made by

Lam Qua, a successful artist living in Canton, China in the 19th century. Also, the museum hosts the anatomical, dermatological, and pathological wax model collection of the sculptor Joseph Towne (1806-1879), the first and the only historical ceroplastic artist known in the UK (Fig. 5) [12].

Enhance Italian anatomical museums – a possible challenge?

The example of the Gordon Museum in London shows how there can be a functional university anatomical museum, constantly in use for lectures, seminars, congresses, and art exhibitions.

The Italian medical museums, such as the anatomical museum in Pavia and the pathological museum in Padua, would like to re-open the collections because they can be as informative and as useful as their British counterpart.

By planning the opening of the Italian collections to the public with new installations, important ethical, museological, and technical questions have arisen: how can the collections be restored, catalogued, and set up? Can anatomical museums be enlarged and updated with new preparations?

Themes and problems

The anatomical museums describe the human body, but sensitive topics such as sickness and death are by their nature always closely related, so how to present them and for audience should be carefully considered.

Furthermore, the anatomical museums mainly preserve anatomical preparations composed of “human remains”. The human remains, according to the Icom Ethical Code [13], are always considered “culturally sensitive materials”, and this implies important ethical evaluations and comprehensive management based on respect in all phases of the management of a museum, from the acquisition, to the conservation and the preparation of the specimens [14].

The anatomical preparation as a cultural asset

Furthermore, there is no precise definition of anatomical preparation in Italy. To better identify the anatomical preparation and its “status” would be the starting point for “understanding” the anatomical museums: to make, buy, or carry anatomical preparations could constitute, in the extreme, a crime according to the Italian Penal Code (crimes against the piety of the deceased) as some suggested during the exhibition *Body Worlds* by Gunter Von Hagens.

According to Italian legislation, the anatomical preparation stored in a museum falls under the Code of Cultural Heritage (Legislative Decree N42/2004, Urbani Code) and as such is protected.

But it is its presence within a public collection that determines its belonging to the category, not a precise reflection on its nature, which also regulates its possession and the way it is used. The legislation was in fact shaped on the basis of the previous legislation on artistic and architectural heritage, as revealed by art. 10 clause 1, which states that cultural heritage cannot be for “uses not compatible with their historical-artistic character” [15]. The legislator does not contemplate the use of scientific, naturalistic, and anatomical assets, which could instead provide for dissections, sampling, and partially destructive analyses [16].

Ethical-legislative issue

The preservation techniques are one of the elements around which the “anatomical preparation” question rotates, which due to its nature as human remains could be considered by the legislation as a “corpse”.

A rare sentence from 1971 by the Magistrate of Florence, which deals with anatomical ethnographic specimens, can help in this direction: “some human skeletons, of foreign origin and made subject to import and trade to private individuals, do not fall under the notion of corpse depending how much time has elapsed and the extent to which they have been worked on to bring about changes that would remove the propensity arouse pity towards the dead”.

In this case, therefore, the law defines anatomical preparations no longer as cadavers, but as *species nova*, by virtue of the applied techniques that have changed their meaning.

Many international discussions have demonstrated the complexity of the question related to anatomical preparations, which not only involves the legislation on Cultural Heritage, but also health legislation, with biomedical and bioethical implications, related for example to the treatment of human tissues [17]. The most complete is the British legislation [18], which, with the drafting of the Tissue Act [19], ratifies the rules on the remains with less than 100 years, legislation which – as mentioned – applies also to the Gordon Museum.

Restoration and cataloguing

In the case of the need for restoration, it is not clear how to proceed and to whom one can turn. As of now the only officially qualified restorers by the Superintendence for cultural heritage are the ones specialised in artistic and architectural heritage. As is the case for natural heritage restorers, a reference list does not exist for anatomical preparers.

An artefact, once acquired by a museum, must be filed and catalogued. The catalogue’s card is the element telling the story and keeping track of the entire journey through the museum. The current cataloguing cards of the Central Institute for Cataloguing and Documentation (ICCD) of the Italian Ministry for Cultural Heritage and Activities (MIBACT) can be used to catalogue some of the materials present in an anatomical museum. For example, there is the BDI-BDM card for demo-ethno-anthropological materials/non material; the BN card – Naturalistic Heritage; the D card for drawings; the PST card – scientific and technological heritage; and finally, the AT card – anthropological remains, suitable for the cataloguing of skeletons from excavations. A card to correctly catalogue human remains prepared with scientific anthropotomical techniques has not been approved as yet.

New acquisitions

If an Italian anatomical museum integrates its collection with new acquisitions – as the Gordon Museum does – how should it behave? Today, in the absence of dedicated laws, the use of post mortem bodies for academic study, research, and formation is regulated by the Police Mortuary Affairs (DPR 285/1990 – based on the Royal decree of 1933), which dedicates a whole chapter to “Corpses released for academic purposes”. These bodies are “unclaimed” bodies that the health care authority can give to anatomical rooms. The practice, though, has been abandoned and no medical institution utilises unclaimed bodies – or parts of them – for academic purposes [16].

Only one law on post-mortem body donation (presently discussed in the Senate) would open

the doors to anatomical dissection and, maybe, a chance to augment the anatomical collections. Additionally, the National Bioethical Committee stated that for activities involving the human body only donations could be considered for academic and educational purposes [20].

Conclusions

The Gordon Museum of Pathology in London is certainly a best practice that demonstrates how the Italian anatomical museums could be more informative and accessible, either granting access to an audience of specialists or opening the doors to a wider audience with communication and didactic programs. The absence of clear rules in Italy regarding all aspects of the management and preservation of the anatomical collections is today an obstacle to its development.

Clearer regulation in this direction would give guidelines to the curators allowing for better preservation and enhancement of the collections.

Acknowledgements

The photographs of the Anatomical Museum of Pavia were taken by Flavio Chiesa. The photographs of the Gordon Museum were taken by Owen Burke and Roberta Ballestriero. We gratefully acknowledge Mr William Edwards curator of the Gordon Museum of Pathology, Guy's Campus, Kings College London, for his help and for giving permission to publish the photographs of the museum.

The authors declare no conflict of interest.

References

1. Monza F. Anatomia in posa. Il Museo anatomico di Pavia tra XVIII e XX sec., Milano, Cisalpino 2006; 316.
2. Monza F, Badino P, Licata M. Johann Gottlieb Walter (1734-1818) and the technical preparation of bones in an anatomical cabinet in the late eighteenth and nineteenth century, AMHA – Acta Medico-Historica Adriatica, 2017.
3. Monza F, Iorio S. Bodies for science. The display of human statues for educational purposes. *Medicina Historica* 2018; 2: 145-151.
4. Zoja G. Il Gabinetto di Anatomia Umana della R. Università di Pavia, Pavia, Tip. Succ. Bizzoni, 1890.
5. Zanatta A, Thiene G, Valente M, Zampieri F. Testo atlante di patologia nella storia. Dal Museo di Anatomia Patologica dell'Università di Padova. Treviso, Antilia edizioni 2015, 38-44.
6. Brunetti L. Propedeutica ossia guida per il dissettore al tavolo di sezione. Padova: Tipografia del Seminario 1881.
7. Zampieri F, Zanatta A, Ripa Bonati M. L'enigma della 'Suicida punita'. Un grottesco preparato anatomico di Lodovico Brunetti (1813–1899) vincitore della medaglia d'oro all'Esposizione Universale di Parigi del 1867. *Physis – Rivista Internazionale di Storia Della Scienza* 2011-2012; 48: 297-338.
8. Zanatta A, Zampieri F, Ripa Bonati M, et al. Situs inversus with dextrocardia in a mummy case. *Cardiovascular Pathology* 2014; 23: 61-64.
9. Zanatta A, Zampieri F. Origin and development of Medical Museum in Padua. *Curator The Museum Journal* 2018; 61: 401-414.
10. Ballestriero R, Richardson R. Joseph Towne at the Gordon Museum. Pureprint, Uckfield, UK 2017; 12.
11. Gordon Museum: www.kcl.ac.uk/gordon (accessed 26.12.2018)
12. Ballestriero R. Pelle di Cera: I moulagés dermatologici di Joseph Towne al Gordon Museum of Pathology di Londra, Giornate di Museologia Medica (Firenze 11-12 Novembre 2016) Firenze. In: Messeri B, Manetti K. Beni Culturali di ambito dermatologico. *Giornate di Museologia medica*, Firenze; 118-121.
13. Icom, International Council of Museum. Code of Ethics for Museums, 2004.
14. Licata M, Monza F. Ethical issues in paleopathological and anthropological research experiences. *Acta Biomedica* 2017; 88: 315-318.
15. Barbagli F. Le collezioni di interesse naturalistico alla luce del Nuovo Codice dei Beni Culturali e del Paesaggio. *Museologia Scientifica* 2008; 2: 15-17.
16. Monza F, Licata M. Anatomical preparations in museums. A special category of cultural heritage. *Medicina nei Secoli-Arte e Scienza* 2015; 2772: 615-628.
17. Accademia Svizzera delle Scienze Mediche (a cura di), Bio-banche: prelievo, conservazione e utilizzo di materiale biologico umano. Direttive medico – etiche e raccomandazioni, Schwabe, Muttentz 2006.
18. Monza F. Esporre i resti umani: un problema tra ricerca, etica e comunicazione. Il caso britannico. *Museologia Scientifica Memorie* 2014; 11: 241-244.
19. HTA: <http://www.legislation.gov.uk/ukpga/2004/30/contents> (accessed 15.01.2017)
20. Comitato Nazionale di Bioetica (CNB). Donazione del corpo post mortem ai fini di studio e di ricerca 2013.

Address for correspondence

Alberto Zanatta, PhD
 Museum of Pathological Anatomy
 University Museums Centre
 University of Padua, Padua, Italy
 e-mail: alberto.zanatta.1@unipd.it