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MUSME, Museum of the History of Medicine, Padua (Italy). A tool for the dissemination of medical-scientific culture

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Abstract

The article addresses the controversial issue of scientific dissemination through the events of MUSME, the Museum of the History of Medicine which was inaugurated in Padua in June 2015. The museum was set up in the building complex that from the first half of the 15th century to the end of the 18th was the home of the hospital of San Francesco. Built for a specific function, the complex was located in the city centre, in the street dedicated to Santa Margherita, today via San Francesco. Its origin is closely connected to the memory of the important research work that has taken place over the years in the medical field and derive from the presence of Padua university in the city, the only one that over the centuries the Serenissima Republic of Venice wanted in its domains, encouraging its activity. The decision to locate the museum in the complex that was home to the hospital of San Francesco was particularly significant given that this ancient medical structure was most likely the first place there was clinical training, namely where pathologies were studied and taught by professors to students on the body of the sick rather than on a theoretical basis.

The purpose of the article is to reach an assessment, albeit provisional, regarding the impact of the new museum on the city community and on visiting tourists at the end of this first period that the museum has been open, naturally taking into account the health emergency of last year.

Keywords: Padua, MUSME, Museum of the History of Medicine, history of health.

1. Introduction

The MUSME, Museum of the History of Medicine, in the city of Padua was built in the building complex that for centuries had housed the city hospital of San Francesco on the initiative of the University of Padua and other institutions, completing the renovation works and fitting out over more than a decade (2001-2013).

The monumental complex was built from the beginning of the XV century on the initiative of Baldo Bonafari of Piombino, who had been an adviser to Francesco Novello of Carrara for some time and then well integrated into the new Venetian administration, and of his wife Sibilia Cetto. These people supported the financial burden of the project, directly at first and then through the commissary of wills until completion at the end of the century. Baldo Bonafari and Sibilia Cetto were authorised to build the hospital by the bishop of the city Marcello and the doge Michele Steno. Near the hospital there were also the lodgings of the Observant Friars, the original part of the future monastery. The presence of Observant Friars was necessary to provide spiritual assistance to the sick.

When work started, there were already *hospitals* in Padua, but they were mostly structures for the poor, travellers and the infirm, where the spirit of charity prevailed. The construction of the San Francesco hospital, instead, was part of a time of a great building renewal of Italian hospitals: these were the years when other important similar structures were built, such as the Maggiore hospital in Milan and the Innocenti in Florence.

The ancient Paduan hospital complex had completely original characteristics, combining medical-health aspects with characteristics of the architecture of a monastery (Fig. 1), including the presence of the church with the cloisters for the friars, built as the final part of the complex.

2. Historical events of the ancient hospital of San Francesco

The hospital occupied a consistent part of the block defined to the north by via S. Francesco, to the west by via del Santo, and to the south by what was then Contrada dei Vignali and is now via Galileo Galilei (Fig. 2). It was designed and built on the basis of specific use from the beginning, and so was not an adaptation of pre-existing buildings. The construction of the adjoining church, with a convent attached, was started a little later. The archived documentation provides a good deal of information on the start of the building work. According to a record made by Bartholomew of Astorellis, archpriest of the Cathedral, the first stone was laid on the 25 October 1414 while contracts for the supply of worked stone were signed on the 6 August and 23 November (50 columns including bases and capitals according to the specified heights and thicknesses, and other items) and wood for the floors and rooves (210 beams about 12 metres long). As Giulio Bresciani Alvarez wrote, "from the substance of those documents it is certain that work on the actual project was already underway in regards to the shape and size of various small construction jobs and the quantity and quality of the materials" [1].

The building site developed the large quadrangular courtyard which was articulated in a double row, with porticoes and loggias, demolished at the end of the nineteenth century, placed on octagonal brick columns. The female ward for hospital stays was completed in 1429, and initially occupied a two-storey wing with the upper rooms equipped with skylights so that the rooms would be well illuminated. The male ward should already have been completed. The building of the church proceeded in the meantime, with the construction of the church and hospital porticoes running along Via S. Francesco, porticoes still present today. A document from the XVI century [2] refers to health personnel being active in the building. There was a medical physician to visit all of the ill at home, both men and women, a surgeon to apply ointments on all of the poor workers, a barber who had to blood let both men and women and be as good a surgeon as he could, a herb or special garden for a pharmacy, and all other things pertinent to it in addition to an unspecified number of male and female nurses.

The hospital of S. Francesco is distinguished by being the first clinical teaching centre (Fig. 3). In 1543, the year in which Andreas van Wesel (Andrea Vesalio, 1514-1564), a professor of surgery at the University of Padua, published the *De humani corporis fabrica* [3] (Fig. 4), Giovan Battista da Monte (1498-1551), who taught ordinary practical medicine and then ordinary theoretical medicine, started by taking his students on to the hospital wards, instructing them about the illnesses being treated.

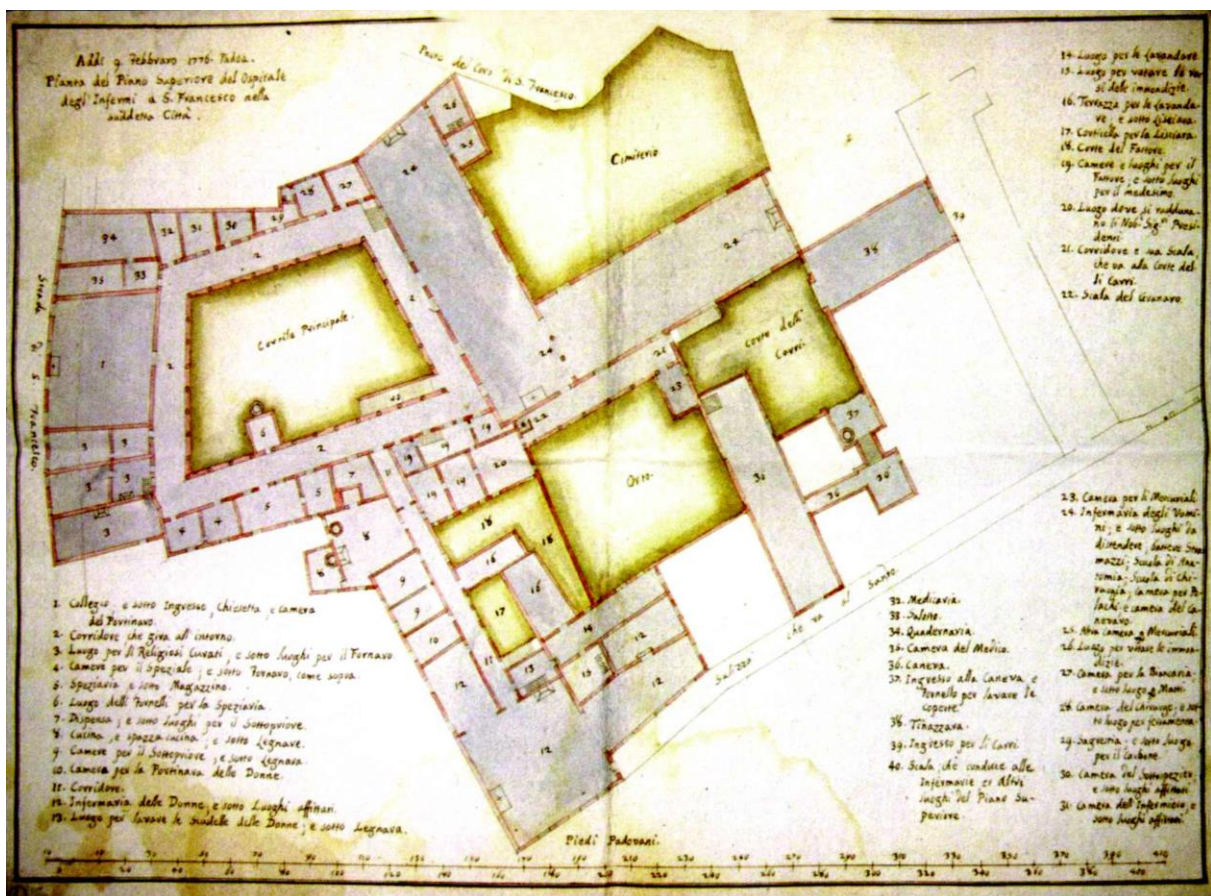


Fig. 1: Domenico Cerato or his school, plan of the upper floor of the ancient hospital of San Francesco in Padua, 1776. Archivio di Stato di Padova, Archivi Privati Diversi, Brunelli Bonetti, b.46.

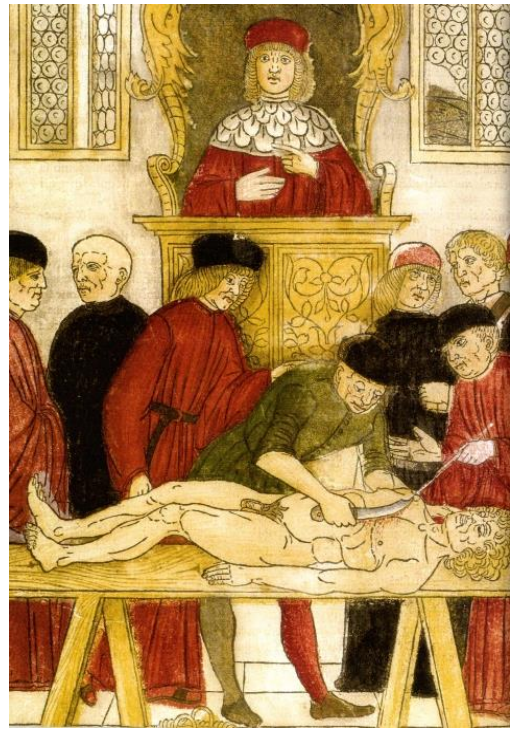


Fig. 2: Map of Padua by Giovanni Valle (1781-1784). The position of the ancient hospital of San Francesco is indicated in the city drawn from the Venetian walls. The university premises are located a short distance away, within the circle of the medieval walls.

Fig. 3: *The Anatomy Lesson*, representation taken from the volume *Fasciculus de Medicina*, possibly by Johannes de Ketham, 1494.

We also know that Albertino Bottoni, from 1576 holder of the first chair of extraordinary practical medicine, conducted clinical activity in the winter of 1577 by leading German students, once the lesson had finished, to the hospital of San Francesco where, together with the excellent Marco degli Oddi – doctor at the very same hospital and holder of the first chair of extraordinary theoretical medicine – examined many patients afflicted by various illnesses. He showed to students precisely how to apply those doctrines that were the subject of his public lessons in practice, exercising his listeners in everything he observed and practiced for their illnesses” [4]. In this regard, the dispute that arose between doctors and professors between the sixteenth and seventeenth centuries regarding the use of corpses for research and teaching purposes, was by no means trivial, as Virgilio Giromani explained at length in one of his essays. Among other things, “there were fewer executions, because since 1545 the lack of oarsmen in the Venetian galleys ensured that sending prisoners to the galley soon imposed itself on other types of sentences” [5]. In the final analysis, the corpses of the poor, who died in the hospital of San Francesco, were extremely valuable, although the practice generated a certain apprehension among the patients.

It would have to wait until 1619 for a university teaching to specify the obligation to visit the sick in the hospital of San Francesco. Moreover, it was in 1764 that the university presence within the hospital walls was officially recognised with the establishment of the medical clinic and the surgical clinic.

The design of the building was not the work of a famous architect. The monumental part, with high arcades and a large door, overlooked the current via San Francesco, where the main entrance was. Here, there was a large double-height room, overlooking the street and the main courtyard, where the Board of Directors most probably met. Four huge windows opened onto via San Francesco (Fig. 5), traces of which remained in the masonry even after the room, once the activity was closed, was divided by an intermediate floor and the openings were transformed into regular windows that illuminated the two new floors. In the restoration project, it was decided to mark the position and size of the ancient openings on the façade by treating the plaster of the affected wall portions with its own colouring.

One of the major problems deriving from the central position in the urban setting of the area chosen by the founders, in the immediate proximity to the circle of the medieval walls, was the impossibility of enlarging the site following the growing needs that were emerging over time. The hospital, however, was able to operate for three and a half centuries, and it was quite important for the progress of medical science and the development of the clinical method of teaching, that its location was very close to that of the historic home of the university, located just inside the walls, beyond the course of the Naviglio Interno that the walls defended.



Fig. 4: Illustration from the set of books on human anatomy written by Andrea Vesalio *Humani corporis fabrica* (1543). *Human Muscle Figure* is the title.



Fig. 5: Façade of the museum on via San Francesco, with the entrance, after the restoration. The backgrounds marked in black correspond to the giant windows of the double-height room that was once present in the ancient hospital (Photo by Andrea Avezzù).

3. The San Francesco building complex after the hospital was moved to its new site

The hospital of S. Francesco stopped being a hospital in 1798 when the new hospital planned by Domenico Cerato (1715-1792) came into operation near the Venetian wall. Cerato was a professor of practical architecture at the University of Padua. He designed a modern Enlightenment-inspired hospital not far from via San Francesco, larger and more modern in concept. He was also the author, in the same years, of the design of the large urban space in the city called Prato della Valle, for which Cerato drew his inspiration from Andrea Memmo, who arrived in Padua with the post of extraordinary Superintendent in 1775.

The S. Francesco complex was used by the military from the start of the nineteenth century and consequently lost several of its buildings. When it was acquired by the Province of Padua in 1960, it was composed of the building on via S. Francesco with the two wings that started along the side of the internal courtyard, partially occupied by later additions. Among the more substantial modifications compared to the original conditions, the complete demolition of the two-way porticoes of the cloister which radically distorted the distribution and the subdivision into two levels of the large room placed between via S. Francesco and the internal façade by inserting a new floor. The subdivision caused the reordering of the fixings in the façade overlooking the road (Fig. 6) where to strengthen the building, the portico columns were covered in masonry.

The initiative of the Regione Veneto, Province and Commune of Padua, Hospital Trust, ULSS 16 (Unit of the Local Health and Social Security Services), and the University of Padua aimed at transforming the remaining part of the old hospital into a centre for public archives housing the history of healthcare, and was finalised in a preliminary plan drawn up by the architect Camillo Bianchi, professor of Architecture and Urban Composition at the University of Padua. The history of Padua and that of healthcare have always been closely interwoven as testified to by the great fifteenth century Paduan work, marking the evolution of medical science, as well as the Botanical Garden, named *Orto dei Semplici*, and the anatomical Theatre.

The public documentation centre was designed to catalogue and safeguard the relevant scientific heritage - books, instruments, furniture and fittings – preserved in various public, private, and university buildings. There was, in this introductory project, a museum space in the old hospital as well as a space for temporary exhibitions, a library with an archive, consultations rooms, a two-hundred seat lecture theatre, small study rooms, and a teaching laboratory in addition to a sector for cataloguing and reproducing images. The repair and restoration of the items characterising the history of the S. Francesco hospital complex constituted one of the main aims of the restoration project.

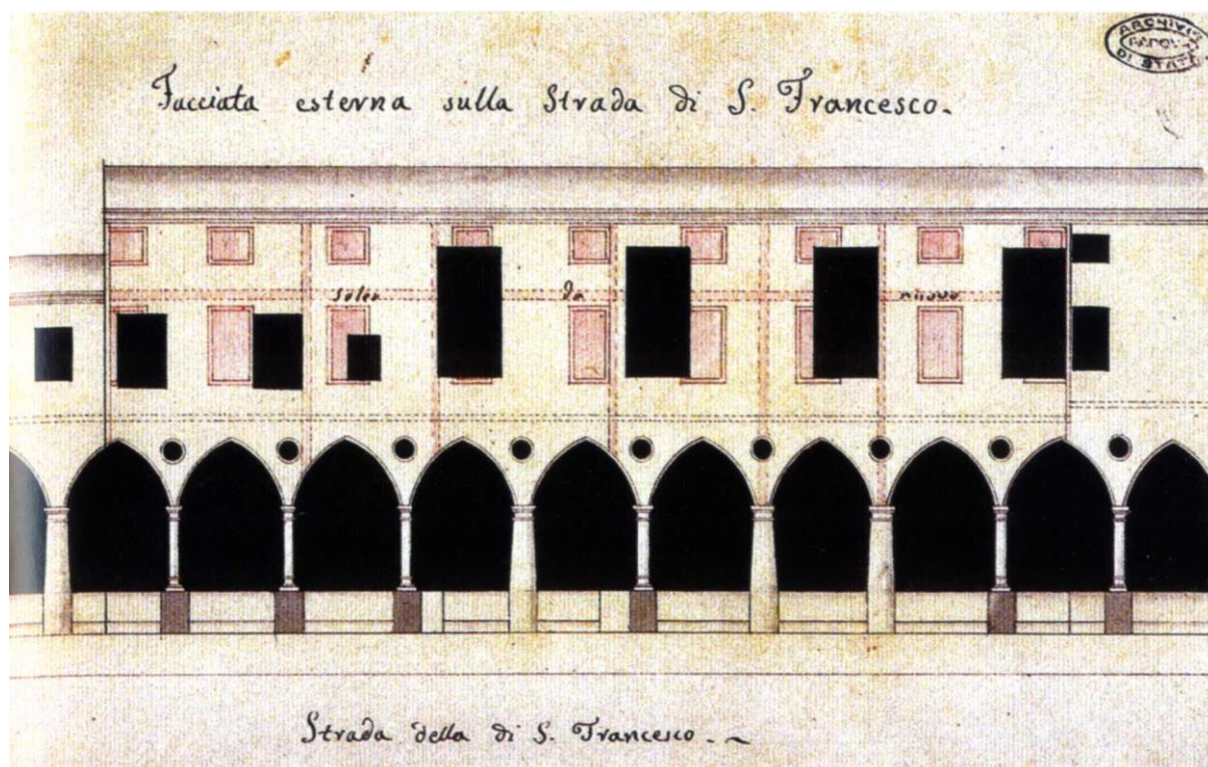


Fig. 6: Giovanni Antonio Businari, façade on via San Francesco, 1817. State Archives of Padua, hospital of San Francesco Grande, b. 1295. The drawing shows the four large windows that illuminated the double-height hall before it was divided into two parts by an intermediate floor.

4. Notes on the restoration and fitting out of the museum

When the restoration project was developed, what was left of the historic complex, mainly the part on via San Francesco, occupied an area corresponding to about a quarter of that on which the hospital stood at the time of its maximum development. The initial arrangement of the spaces was distorted from a typological point of view, since the portico of the main courtyard and the loggia above, which provided access to the rooms on the first floor, had been demolished. New internal stairways had been inserted, and as already noted, the high-rise main hall overlooking via San Francesco was divided into two floors. Other substantial changes were made in 1881, with the demolition of the last arch of the portico on the street at the west end, on the right looking at the façade. Furthermore, in 1909 the long front of the shops under the portico was reorganised and numerous internal changes were made within the various units for residential and commercial use. Finally, two industrial warehouses were built inside the main courtyard that occupied a large part of it, one in the early twentieth century and the other in 1953 [6]. The province of Padua, after purchasing the property in 1959, used only the courtyard, as a parking lot, until the restoration work began in 2001.

The restoration, reorganising the spaces for museum purposes, addressed, among other things, the two main themes, the demolished portico and loggia and the hall divided into two levels. In the first case, the solution studied in the design phase involved a new steel structure, which was only possible to build in the lower order, as a new portico. The hall was restored to its original volume.

The outfitting, designed as a cross between a traditional collection of artefacts and a modern science centre, proposed an exhibition itinerary that interests users of different ages, but in particular younger visitors. In addition to being a museum of medicine, for exploring the theme of the human body and medical sciences, it is also a history museum that tells the story of the development of medicine from an ancient discipline to a modern science, with the focus on the contribution provided by the Paduan medical school.

It is an exhibition that develops history and technology and directly involves the visitors. Many ancient artefacts have been provided by the University of Padua, by the Civic Museums, by the Hospital and by ULSS 16, now ULSS 6 Euganea. There are numerous devices that visitors can interact with, videos and multimedia games designed to illustrate the finds and clarify the themes covered. The rooms contain medical instruments and human remains. Ancient books, normally inaccessible to the public, can be browsed here in a virtual way. Games with different levels of difficulty teach the anatomy of the human body and some stations, with explanatory animated drawings, allow you to measure blood pressure and other physiological parameters for educational purposes [7].



Fig. 7: Interactive experiences in the Museum of the History of Medicine in Padua, designed for young people.

Fig. 8: View of a human figure measuring 8 metres in length located in the hall on the first floor where the double height has been restored, and which is the subject of three-dimensional projections that show the functioning of the human body. The exhibition intends to reinterpret the first anatomical theatre of modern medicine, inaugurated in 1595 in the nearby historic site within the University of Padua.

5. About the first years of the museum's activity

MUSME was inaugurated on 5 June 2015. In the first three years it had a total of about 50,000 visitors each year, a growing number with more and more people coming from outside the region. According to TripAdvisor, the American review website that includes evaluations of tourist and cultural sites, the Museo di Storia della Medicina is ranked third in terms of visitor numbers in Padua, after the Scrovegni Chapel with Giotto's frescoes and the religious-artistic centre of the Basilica of Sant'Antonio [8]. The budget was close to being balanced when the health emergency caused by Covid19 interrupted the development of the project, which positions the museum as a tool to promote and spread understanding of medicine.

In addition to being a museum in the traditional sense of the term, i.e. an exhibition of objects of great historical value, MUSME is an interactive centre enhanced by significant use of cutting-edge technologies, ranging from augmented reality to touchscreens (Fig. 7). One particularly effective example is the virtual anatomical theatre, inspired by a the sixteenth century original preserved in the nearby central building of the university [9]. Here, three-dimensional mapped projections can be performed on a 8-metre long human figure that tells the story of the development of anatomy and the functioning of the human body as we know it today (Fig. 8).

A strong component of play is essential in making the museum attractive for young people. More than 700 schoolchildren visited the MUSME museum each year, and teachers report that when the students were back in the classroom after the visit they paid much more attention to anatomy lessons than before. The intertwining of play and education definitely facilitates young people's familiarisation with medical issues. Indeed, the value of MUSME lies above all in the fact that it is a museum that is also suitable for non-specialists, where an attempt is made to spread its message widely among a varied public while still maintaining a scientific rigour thanks to the advice of authoritative doctors.

In the spring of 2020, the health emergency almost caused the permanent closure of the museum as there was no revenue from ticket sales to cover management of the museum and employee pay. As training and conference activities ceased, another important source of revenue was also lost. At the time the outlook was very uncertain. Backed by extraordinary economic support, MUSME reopened in May of this year, initially on Saturdays and Sundays by appointment, counting on a new post-pandemic stabilisation.

6. Conclusion

Medical museums — which also include displays on hygiene and preventive care — have a history dating back centuries, effectively reflecting the political and socio-cultural orientations of the time. In this sense, a key example is provided by the DHMD, Deutsches Hygiene-Museum, built in Dresden in 1912

on the occasion of a hygiene exhibition on the initiative of the entrepreneur August Lingner [10]. The exhibition was a huge success, with visitor numbers reaching five million. The anatomical and scientific collection illustrating the human body and medical advances formed the central nucleus of a full museum, which was specially conceived and built in 1930 by the architect Wilhelm Kreis in pure Neues Bauen shapes. The rise of National Socialism transformed the initial intent of promoting construction and social sanitation practices into a powerful propaganda mechanism for the Rasetheorie. Having been restored and redesigned in 1992 according to modern exhibition concepts, it is currently aimed at a vast and varied public, combining science, culture, art and social evolution with the use of the most up-to-date means of multimedia communication.

In Italy, the history of science museums goes hand in hand with the establishment and development of university teaching collections. Scientific and medical museums have rarely captured the interest or gained the favour of the wider public, with little desire to promote elitist themes at a cultural and institutional level, these being perceived as unseemly and socially delicate. In Turin, the Luigi Rolando museum collection of human anatomy originated in 1739 as an anatomical museum in the Regia Università (Royal University); in 1898, after various transfers, the anatomy collections were rearranged in their current location, the Palazzo degli Istituti Anatomici (Building of the Anatomical Institutes), in specially constructed monumental rooms [11]. The display did not undergo significant alterations during the twentieth century and today it constitutes an exceptional example of a nineteenth-century scientific museum that has remained practically unchanged. The display cases are full of specimens and almost devoid of explanatory texts, as was usual in nineteenth-century museums, yet they constitute a objective obstacle to the promotion of medical culture among a non-specialist public. To remedy this issue, visitors can only consult three video stations positioned along the route, supported by a paper guide and a *brochure*. The permanent exhibition, which is part of the regional system of natural science museums, features display cases containing wax, wood and papier-mâché models and dry- and fluid-preserved anatomical specimens. These categories of objects correspond to two distinct phases of anatomical museology, the "artificial" anatomy practised between the end of the eighteenth century and the first half of the nineteenth century and "natural" anatomy, which was established later.

The limits of this museum concept can be measured by the success otherwise enjoyed by the MACA museum, Museo A come Ambiente (Environmental Museum), the first European museum entirely dedicated to environmental issues, conceived and built in 2004 on the basis of a design by Agostino Magnaghi with a layout by Carlo Degiacomi at the Pirelli former industrial centre [12]. Since its inauguration, the institute has achieved extraordinary popularity with young audiences, ranking first place in terms of visitor number among Turin's scientific museums. The museum experience is based on experimentation with a strong element of play, and is supported by a team of entertainers specialised in scientific communication aimed at school and preschool age groups. This model has now been tested to great effect in the well-known MUSE, Museo delle Scienze di Trento (Trento Science Museum), designed by Renzo Piano [13].

The exhibition of anatomical models within the 14 scientific museum sections that make up the SMA, Sistema Museale di Ateneo dell'Università di Bologna (University of Bologna Museum System) in the historic site of Palazzo Poggi is no different from the example in Turin. Established in 1907 and reopened in 2013 with updated exhibition concepts, it includes an exquisite eighteenth-century collection of anatomical wax models made for medical and surgical clinics [14]. In the example from Bologna, thanks in part to its strategic location in the heart of the university city, the positive balance achieved in the pre-Covid period highlighted a positive trend in visitor figures. Unfortunately, this stopped in the pandemic, during which time, in keeping with the general situation, the museum's activities faced considerable difficulty and were exclusively supported by virtual and remote exhibitions and educational initiatives. Due to necessary restructuring works, the partial relaunch scheduled for June 2021 will involve only some museum collections and will not include the sectors related to medicine and anatomy.

At the moment in which the Covid 19 health emergency seems to be surmountable, the main aim of the Museum of the History of Medicine of the city of Padua is again to combine history and current events. Contemporising history and the enhancement of tradition are the tools that will play the greatest role in the success of the museum.

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