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The Afterlife of the Leiden Anatomical Collections

Hands On, Hands Off

Hieke Huistra

The Afterlife of the Leiden Anatomical Collections

The Afterlife of the Leiden Anatomical Collections starts where most stories end: after death. It tells the story of thousands of body parts kept in bottles and boxes in nineteenth-century Leiden – a story featuring a struggling medical student, more than one disappointed anatomist, a monstrous child, and a glorious past. Hieke Huistra blends historical analysis, morbid anecdotes, and humour to show how anatomical preparations moved into the hands of students and researchers, and out of the reach of lay audiences. In the process, she reveals what a centuries-old collection can teach us about the future fate of the biobanks we build today.

Hieke Huistra is an assistant professor in the history of science and medicine at Utrecht University.

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Introduction

In this book, death is not the end. It is not even the beginning – we enter the story weeks, months, years after the body went cold. Anatomists have already cut open the corpse, taken out the organs, injected the vessels, boiled the bones, put the resulting preparations in jars and boxes, and added these preparations to their institutions' collections. We are in the nineteenth century, the age in which institutional medical collections flourished, but we could observe similar practices in later periods, including our own. The body parts kept and the preparations made would be different, though. Nineteenth-century collections contained injected organs, macerated skeletons, bottled fetuses, stuffed animals, and microscopic slides; nowadays, laboratories and clinics keep frozen embryos, blood samples, cell lines, preserved brains, and full bodies. The new collections have not completely replaced the old ones: many of the preparations collected by nineteenth-century anatomists were never discarded. Our medical institutions keep both historical and contemporary collections, and studying the former may help us understand a thing or two about the latter. That is why I wanted to tell the story of a nineteenth-century anatomical collection.

Collecting human body parts raises moral questions about how we should handle human tissue. Most of us agree that bodily material should not be collected and stored against the wishes of the donors or their relatives, but we disagree about how explicit and specific their consent should be. Contemporary collections of bodily material, usually called biobanks, often contain samples taken primarily to diagnose or to treat the donor, such as blood drops taken from newborns during the heel prick test.[1] Can scientists use heel prick blood collected two or three decades ago to study genetic disease markers? Or should they first locate the now grown-up donors and ask them for their permission to use their blood samples no longer just for diagnosis, but now also for research? And if scientists want to reuse the blood in a new research project a few years hence, should they again seek permission? Or does it suffice to ask donors to consent just once to all possible future research use, by giving so-called broad or blanket consent?

Most researchers using biobanks prefer broad consent models, because these maximize their freedom and minimize hassle; indeed, most biobanks ask donors for broad consent, if they explicitly ask for consent at all.[2] Yet,

it is unclear whether such broad consent holds up legally.[3] Furthermore, several studies have shown that at least part of the general public (i.e., potential and actual donors) would prefer more specific types of consent, for example because they want to exclude for-profit research or controversial research methods such as stem cell research or cloning.[4] Thus, as a society, we still need to determine whether we consider broad consent sufficient for future research use. And as individuals, as long as biobanks continue to use broad consent, we need to decide whether we want to consent to future research use when asked. Both questions would be easier to answer if we knew more about this future research use, but the whole point of broad consent, of course, is that we don't. We cannot predict what researchers will do with our bodily material in the future. We can, however, try to make an educated guess, and to do so, it helps to study the past. A historical case study provides the timescale we need to see what happens with collections of bodily material in the decades or centuries after they have been established. This book presents such a case study: the anatomical collections in nineteenth-century Leiden.

The Leiden collections are the oldest institutional collections in Europe; the nineteenth century was a period when medical research and teaching changed profoundly – a change sometimes labelled 'the birth of modern medicine'. In this book, I show that the old collections remained relevant in the new medicine, however fundamental the changes may have been. In doing so, I propose a new way of understanding anatomical collections: as dynamic and flexible entities, meant for hands-on use, and reused time and again. Medical historians tend to see anatomical collections as static objects, intended to be classified, arranged, and admired from a distance. By contrast, I argue that the collections were not just for looking, but also for handling: preparations were taken out of their jars, passed around to be felt and smelled in class, and reinvestigated and redissected in the laboratory. During this use, the preparations changed both physically and conceptually. For example, researchers might cut up macroscopic preparations to investigate their microscopic structure and thus adapt old preparations to new theories. This flexibility characterizes preparations (anatomical models, for instance, lack it); it follows from their material properties. As philosopher of biology Hans-Jörg Rheinberger has observed, preparations are made of what they represent.[5] This allowed researchers to return to the original tissues time and again, extracting new information that enabled reinterpretation and thus the collections' prolonged use in research and teaching. This prolonged use was further stimulated by the scarcity of raw material for the preparations: fresh human bodies were rare and their arrival was unpredictable. This encouraged researchers to retain and reuse old preparations.

Flexibility and scarcity shaped not only the path of the Leiden collections, but also the trajectories of collections in other places and periods. All preparations are made of what they represent; the raw material is rarely abundant. Indeed, as I will show with examples from other countries, old collections continued to be used in the new medicine throughout Europe.

This lifts the Leiden story above the local, and allows us to tie the past to the present. Cell lines and injected kidney preparations are made with different techniques, but both are made of what they represent, and of material that took considerable effort to acquire. Based on my analysis of the Leiden case, I will propose that these similarities make it likely that the collections we are currently building await a comparable fate to those of earlier centuries: medical institutions will hold on to them for prolonged use in research and teaching. Furthermore, I will suggest that the combination of scarcity and flexibility may also tempt researchers to hoard bodily material when they can, sometimes even without any consent. This happened, for example, in the Royal Liverpool Children's Hospital, locally known as Alder Hey; in 1999, it was discovered that doctors at the hospital had routinely been removing organs from deceased children without their parents' consent for decades.[6]

Thus, history can show us where we may be going. But it also sheds light on how we got to where we are now, and this helps us to think about the present-day dilemmas posed by historical collections. As mentioned above, many historical anatomical collections are still housed in hospitals and laboratories. Their presence raises several problems; I wish to discuss two of these.

First, according to our moral norms (and sometimes according to historical norms, too), some of the body parts in these collections should never have been collected at all. Collecting without consent was common, and some collectors even ignored the explicit instructions of the deceased or their relatives. The eighteenth-century skeleton of Charles Byrne (1761–1783), known as the Irish Giant, is a well-known example. Having been exhibited as a curiosity during his lifetime, Byrne specifically requested burial at sea to prevent his body being dissected after death, but the surgeon-anatomist John Hunter bribed his way into acquiring Byrne's body. The skeleton is still on display in the Hunterian Museum at the Royal College of Surgeons of England. Some argue that Byrne's last wish should be granted; others favour keeping the skeleton at the Hunterian, partly on the grounds that retaining it could provide us with useful medical knowledge.[7]

Another painful practice was the gathering of bones and body parts in areas colonized by the collectors' countries, as European physical anthropologists did in the nineteenth and early twentieth centuries.[8] The anthropologists used this material to develop theories that we now consider racist, as they assumed a hierarchy within the human species. This hierarchy ranked the collected below the collectors, thus offering a scientific justification for the power relations that had led to the collecting in the first place. Although the theories lost ground in the twentieth century, the material lingered in medical institutions. Since the late twentieth century, the families and groups from which the material was originally taken have increasingly requested its return, but their requests have sometimes encountered resistance. If we view the collections as the leftovers of obsolete theories, this resistance is hard to justify: if the material no longer serves any medical purpose, why not return it?

Again, the promise of future usefulness partly explains why medical institutions have been, and continue to be, reluctant to part with the material.[9] This explanation might lead us to accept their reluctance, but it might also help us to find ways to overcome it.

A second problem raised by the historical collections kept in medical institutions concerns their public accessibility. Some argue that the preparations should be put on public display. Historical anatomical preparations can teach us about two major parts of our identity: our bodies and our past. They can do so in a powerful way, because they are 'the real thing' (although simultaneously they are not, as we will see in Chapter 2). They not only display the human body, they *are* the human body. And rather than merely illustrating a historical story, they *are* from the past – they might be the closest we will ever get to meeting our ancestors. But their 'realness' also complicates displaying them. They were created out of actual people, and in many cases, we do not know whether these people consented to keeping, let alone openly displaying, their remains. Thus, the accessibility question has an ethical dimension. And yet, if we look more closely, we see that historical anatomical collections are often difficult to access not because of principled decisions, but for practical reasons: they are housed on the outskirts of towns and open on weekdays only. This book shows that these practical hurdles result from a historical process that started not because moral attitudes to displaying human body parts changed, but because medical researchers and teachers, who continued to use the collections, moved to new spaces and adopted new methods. This does not mean that ethical questions were never considered, but we should not overestimate their importance.

Acknowledging the more mundane contingencies involved in closing off anatomical collections clarifies the debate on whether they should be publicly accessible nowadays. Not only does it explain why many modern collections are closed, but it also prevents us from misinterpreting each closed collection as a moral objection to displaying human remains. Furthermore, it suggests that if we decide to open up historical anatomical collections further, we need to do more than simply allow the general public to enter: being open in theory is not the same as being accessible in practice.

The story of the Leiden anatomical collections matters, because it helps us handle both historical and contemporary anatomical collections: not by answering the ethical questions involved, but by providing a long-term perspective that is crucial for building the nuanced understanding that should, I think, precede moral judgment. The story of the Leiden anatomical collections matters for another reason as well: it helps us solve an open question in the history of medicine. In the next section, I will outline this question and explain why we should search its answer in Leiden. Subsequently, I define some of the main terms used and outline the structure of this book; after which we are ready to move on, or rather back, to nineteenth-century Leiden, where the actual story begins.

Anatomical collections in the nineteenth century

In the history of medicine, the nineteenth century is famous for two things: the birth of the clinic and the rise of the laboratory.[10] However, it was just as much the age in which institutional anatomical collections flourished; a fact that has long been overlooked by medical historians focusing on the aforementioned birth and rise. Until the early twenty-first century, most historians at best neglected nineteenth-century anatomical collections; at worst, they explicitly stated that anatomical collections had become redundant and had been replaced by hands-on learning, clinical teaching, and laboratory research.[11] In the last 15 years, historians have started to rewrite this narrative: scholars such as Erin McLeary, Samuel Alberti, and Jonathan Reinarz have shown that rather than disappearing, anatomical collections were used in medical research and teaching throughout the nineteenth century.[12] However, their insights have yet to reach general histories of modern medicine.[13] The idea that the clinic and the laboratory superseded collections and museums continues to persist, perhaps because although the flourishing of anatomical collections has been described, it has not yet been fully explained. This book extends our current explanation and in doing so aims to help promote insight that anatomical collections continued to matter in what was supposedly the age of the clinic and the laboratory.

The problem is that at first sight, anatomical collections do not seem to fit into the spaces that, according to most existing historiography, occupied centre stage in the new medicine: the clinic and the laboratory. In these new spaces, practices such as bedside teaching, dissecting, hands-on training, and experimenting played a key role. Since we are used to seeing anatomical collections as hands-off, static objects, it is easy to assume that they lost functionality: preparations, we think, were not to be touched, handled, dissected or experimented upon. But this assumption is at odds with the boom in anatomical collections during exactly this period. In universities, hospitals, and laboratories throughout Europe, large amounts of time, money, and space were invested in keeping and extending anatomical collections. In Strasbourg, for example, a small university collection of just over 200 preparations was extended rapidly from 1804 onwards: in 1820, the collection contained about 3,000 preparations; in 1870, over 4,000.[14] In Berlin, pathologist Rudolf Virchow (1821–1902) built a collection of over 23,000 preparations.[15] In London, comparative anatomist Robert Edmond Grant brought together around 10,000 preparations – and that is not counting the ones he had to discard because they had been damaged by two of the museum curator's greatest enemies, rats and students.[16]

How can we not only acknowledge, but also understand this flourishing of anatomical collections? So far, the standard explanation has been that the clinic and the laboratory were not the only spaces that mattered in the new medicine, but that museums also continued to be important, or became even more so. British historian Jonathan Reinarz has suggested we rename the

nineteenth century 'the age of museum medicine'.[17] In his work on ways of knowing, historian of science and medicine John Pickstone has argued that a series of research fields emerged early in the nineteenth century that relied on a museological way of knowing, based on collecting, classifying, arranging, and comparing.[18] Some of these new fields, such as pathological anatomy and a specific type of comparative anatomy, belonged to medicine, and thus nineteenth-century medicine required museums and their collections.

Seeing the rise of the laboratory and the birth of the clinic as an addition to, instead of a replacement for, the museum partly explains the enduring importance of anatomical collections. Similar claims have been made for fields other than medicine. Historian of biology Lynn Nyhart has written about the claim that zoological laboratories replaced natural history museums at the end of the nineteenth century, and why it is wrong.[19] She suggests that the development of biology is best represented not by a tree (with natural history and its museums as the trunk, and specialties such as zoology and its laboratories as the branches), but by a growing landscape of research fields. The boundaries between the fields may change as the landscape expands, but the fields continue to coexist. Applying the landscape metaphor to the development of medicine captures how laboratories and clinic emerged as new areas, while museums did not disappear. But this is only part of the story: collections did not just exist in museums adjacent to the clinic and the lab; they were also housed *inside* the new spaces. The Leiden physiological laboratory, for instance, housed a collection, although the new physicalist orientation transformed physiology into a discipline based on an experimental way of knowing.[20]

Pickstone briefly addresses this issue, explaining that experimental styles of biology and medicine were based on data that had to be collected and stored.[21] However, it is not clear why these data collections also had to include collections of anatomical preparations, let alone collections of preparations partly created in the 'old' medicine. And yet they did, as I will show in the first two chapters with examples from Leiden and beyond. I focus on the Leiden collections because they are an excellent case not only for proving that old collections were used in new spaces, but also for investigating how this was possible, because the Leiden collections were probably the least likely collections to fit the new theories and practices. They were the oldest institutional collections in Europe, established in the late sixteenth century and in their heyday in the eighteenth century – if they could be used in the new nineteenth-century medicine, all European collections could. In other words, if we can find an explanation that covers this extreme case, it likely covers other, more moderate cases as well.

Nonetheless, it is never wise to generalize based on a single case study. One could object to taking the oldest institutional collections as the main case that perhaps the institution housing these collections was encumbered by its long past and had become old-fashioned. Maybe Leiden continued to use its collections not because they were useful in the new medicine, but