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An Analysis of the Evolution of Medicine in Nineteenth Century England
via The Development of the Anatomical Model per Human Dissection

Isabelle Freeman

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PSU History Challenge

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“Prying bodies out of the ground is hard work with dry weather, but newly placed soil makes digging much easier” he muttered under his breath as he knelt down to place his shovel to the side of the open grave. Then, after shaking the uncharacteristically positive thoughts from his head, he bent down to check that the rope was secure. After a few tugs he nodded to himself and raised his right arm, as if to wave. Moments later the body was tugged, head first, from the previously occupied grave.¹

In 19th century England, as the number of executions dwindled, the demand for cadavers began to be fulfilled through less legal means. Body snatchers, also known as resurrectionists, were people who “snatched” freshly buried bodies and sold them to anatomists. Body snatching was a common practice in the 1800s and those involved did not ask too many questions. In fact, this practice happened so frequently that it was not unusual for medical students to remove any identifying features they could in case authorities instituted a search of the campus.²

During the 1500s, increasingly accurate anatomical knowledge began to spread as a result of Andreas Vesalius’s research, however this knowledge did not truly reach England, specifically London, until the 1800s, when physicians began human dissections due to the surplus of human corpses.³ Many people suffered as a result of this grim practice, however the increasing practice of human dissection shifted the medical system from diagrams based on theories and philosophy to a system rooted in a methodical and academic process. This shift in methodology had a huge impact on the way that medical research was carried out from that point onwards in England.

1. Levinson, David. "Body Snatching." Encyclopædia Britannica. January 11, 2019.

<https://www.britannica.com/topic/body-snatching>.

2. Piers D. Mitchell, Ceridwen Boston, Andrew T. Chamberlain, Simon Chaplin, Vin Chauhan, Jonathan Evans, Louise Fowler, Natasha Powers, Don Walker, Helen Webb, and Annsofie Witkin. "The Study of Anatomy in England from 1700 to the Early 20th Century." *Journal of Anatomy* 219, no. 2 (2011), 94.

3. Andreas Vesalius is known as The Father of Modern Anatomy

In England, during the 1800s, many suffered as a result of cadaver procurement. The development of the anatomical model allowed medical research to shift away from textual, comparative, and process based medicine to medicine rooted in human anatomy and physiology.

The humoral system originates from the Ancient Greek philosophers Aristotle, Hippocrates, and Galen. This system is based on the elements earth, water, fire, and air with each element corresponding to a variety of different factors. Earth corresponds to black bile and has the qualities cold and dry.⁴ Water corresponds to phlegm and has the qualities cold and moist.⁵ Air has the qualities hot and moist and corresponds to blood.⁶ Fire has the qualities hot and dry and corresponds to yellow bile.⁷ This system is relevant because physicians at the time believed that illnesses were caused by an imbalance of these elements and in order for people to heal these imbalances has to be righted. These imbalances were fixed by draining the body of whatever element was in excess. Illnesses with hot and moist symptoms were often “cured” via a common practice called bloodletting; which was the procedure of draining the blood, or “air,” from one’s body. While the practitioners of bloodletting may have had good intentions, the entire system the practice was based on was fundamentally flawed. Instead of being a medical system based on cold hard data, the humoral system was a series of beliefs surrounding the human body based on ideas and philosophies and dictated by authoritative texts. Physicians would look at charts in books, or memorize the charts, and then treat the illness based upon where they fell within the chart.⁸ This would have been fine if the books carried accurate data, however that was often not

4. See Appendix Image A

5. See Appendix Image B

6. See Appendix Image C

7. See Appendix Image D

8. One such book is the *Fasciculo di Medicina*

the case and those who came for medical care would often worsen as a result of the treatments.⁹

The humoral system was covered in multiple medical textbooks; however, one of the more well known books was the *Fasciculo di Medicina*. Considered to be the first illustrated textbook related to medicine, the “*Fasciculo* convey[s] a paradigm shift from the medieval approach of the 1491 edition to the emergence of contemporary medicine.”^{10,11} The first edition was printed in 1491 and the speed with which a second copy was sent out is proof of how in demand it was.¹² As the medical text circulated, it also continued to spread the idea of medical practices based in knowledge.¹³ This idea of medical practices being based on replicable data was vital to the beginnings of the scientific process in relation to human anatomy.

Interest in human anatomy did not truly spread to the medical community of England until the nineteenth century. During that time period surgeons only had access to bodies that were donated to them. All of that changed in 1752.¹⁴ The Murder Act of 1752 tried to reduce criminal acts and dissuade criminal activity by adding “some further terror and peculiar mark of infamy” to executions and allowing the bodies of those executed to be dissected, among other things.^{15,16} This act only intended to reduce criminal activity, however by providing surgeons with access to cadavers it created a new problem; before long the demand for bodies exceeded

9. Greenstone, Gerry, MD. "The History of Bloodletting." *BC Medical Journal*, 1st ser., 52, no. BCMJ (February 2010): 12-14. BCMJ.

10. Salvatore, Dimaio, Federico Discepola, and Rolando F. Del Maestro. "Il Fasciculo Di Medicina of 1493: Medical Culture through the Eyes of the Artist." *Neurosurgery* 58, no. 1 (2006), 2.

11. Appendix Image E

12. Leonardo da Vinci used the 1493 Italian edition as his main source of medical knowledge

13. Salvatore, Dimaio "Il Fasciculo Di Medicina of 1493: Medical Culture through the Eyes of the Artist."

14. L, Rosner. "A. W. Bates, The Anatomy of Robert Knox: Murder, Mad Science and Medical Regulation in Nineteenth-Century Edinburgh." *Social History of Medicine*, vol. 24, no. 1, 2011, 80-102.

15. Previously surgeons would have to commit, or condone, murder or corpse stealing in order to have access to any cadavers.

16. "1751: 25 George 2 C.37: The Murder Act." The Statutes Project. March 01, 2017.

<http://statutes.org.uk/site/the-statutes/eighteenth-century/1751-25-geo2-c37-murder-act/>.

the supply and the shortage began to be fulfilled via a black market. The London Burkers, notorious suppliers of human cadavers, confessed to having “stolen” more than five-hundred bodies in 1831; many of them having been murdered.¹⁷ The London Burkers namesakes, Burke and Hare, were close friends. When an elderly tenant of Hare’s passed away still owing money, they decided to pay off his debt by selling his corpse.¹⁸ After discovering this lucrative business, they struck again, this time *murdering* one of the older tenants. Realizing they could drug, or intoxicate, and then suffocate their victims with little to no harm to the bodies, the corpse type preferred by medical students, they began to lure the poor and vulnerable into Hare’s lodging house.^{19,20} This murdering spree quickly escalated until they were caught. Burke was hanged however Hare remained alive to flee the country after.^{21,22}

This was not the end of the grim practice however, in fact many body snatching “gangs” copied Burke and Hare’s work. One of the more infamous gangs was led by John Bishop. John Bishop was caught after he attempted to sell the corpse of a twelve-year-old boy to King’s College and the staff realized that the body did not appear to have been buried. Bishop and his accomplice were executed in 1831 on charges of murder and, ironically, their bodies were used as cadavers.²³ These horrific murders caused the Anatomy Acts to be introduced in 1832. This act directly pertained to cadaver procurement, unlike the Murder Act of 1752, and attempted to

17. Ibid

18. The tenant owed about four-hundred “euros,” after adjusting for inflation, and after selling his body they received about seven-hundred “euros,” also adjusting for inflation.

19. After Burke and Hare were caught this method of murder became known as ‘Burking’

20. Students and physicians preferred the bodies to be as undamaged as possible so they could observe the human body in an undamaged state

21. William, Roughead. *Burke and Hare*. Edinburgh: William Hodge and, 1921, 67-76.

22. Hare was offered immunity from prosecution if he testified against Burke, as they did not have enough evidence to ensure a guilty verdict for him

23. “The Resurrection Men — Body Snatching in 19th Century Britain.” *Owlcation*.

<https://owlcation.com/humanities/resurrectionists-body-snatching-in-19th-century-britain>

reduce corpse stealing. The act “recognized the need for bodies for medical education and research” and fought against body snatching by making bodies more available to the medical community.^{24,25} It made bodies more available by allowing unclaimed bodies from workhouses and prisons to be dissected by medical students.²⁶ The act allowed the educated to take advantage of the poor and imprisoned, a motif that is continued by the actions of Universities during that time period.

Universities were also involved in the corpse trade, however they tended to purchase their corpses from areas further away, whereas hospitals would just use bodies from nearby slums. One dilemma that Universities faced by outsourcing for bodies was transportation issues, which led to the phenomenon known as the “dead-train.” The dead-train allowed for tightly packed bodies to travel long distances without further rotting.^{27,28} Cambridge is one example of a university that purchased bodies from the port city of Hull that had suffered many deaths as a result of poor sanitation. Cambridge transported the bodies using a rail service that ran from Hull to the Cambridge railway station and then buried the bodies, post-dissection, in common graves in a single cemetery at Mill Road in Central Cambridge. From 1858 to 1914, 3,500 dissected paupers were buried in the Mill Road grave.²⁹ This process dehumanized the paupers whose corpses were taken advantage of by Universities and was so prevalent during this

24. David, Levinson. "Body Snatching." *Encyclopædia Britannica*. November 16, 2017.

<https://www.britannica.com/topic/body-snatching>.

25. The practice of body snatching did not truly end until embalming

26. Well known universities such as Cambridge, Oxford, and King all purchased corpses during the 19th century

27. The bodies had to travel over 100 miles and the speed and efficiency of the train ensured that the bodies were still viable for dissection

28. "The Victorian Trade in Dead Bodies." *History Extra*. August 15, 2018.

<https://www.historyextra.com/period/victorian/the-victorian-trade-in-dead-bodies/>.

29. Ibid

time that it is sometimes hard to trace genetic lines because of how many bodies were taken. Despite the quantity of bodies taken, in all kinds of conditions, there was a preferred type of corpse.

The ideal corpse was a thin male of at least eighteen years. Students, wanting to reduce the amount of time spent cutting fat away, preferred thinner corpses over more well fed bodies.³⁰ Younger bodies were preferred as they were less damaged and worn, however the bodies also needed to have fully matured so that students could build an accurate, and fully developed, model. Despite these preferences, most bodies that graced the dissection tables were servants, prostitutes, and the dispossessed who lived in overcrowded lodging houses.^{31,32} These people had a vastly different funeral experience than the rich. After a pauper died, their relatives could briefly view the body after paying a fee to the undertaker.

Then, if the body was under fifty, the Undertaker would inform a body snatcher of a possible sale and the body would be sold, dissected, and buried in an unmarked grave. Countless poor and vulnerable people suffered for the medical advancements people benefit from today. On February 29th in 1896 the *British Medical Journal* published one of the first Skiagraphs of a child.^{33,34} As it was important to get a stable image and because children are smaller, the bodies that were used in Skiagraphs were often dead children whose bodies had been stolen from their families.³⁵ Countless people benefit from x-rays, but remembering the bloody beginnings of the Skiagraph, and countless other medical advancements, is important. Remembering people who

30. Ibid

31. Ibid

32. Between 1832 and 1930 these groups accounted for more than six-thousand dissected bodies

33. Skiagraph is a less common word for x-ray

34. "The Victorian Trade in Dead Bodies"

35. Ibid

were taken advantage of for progress is vital to how we move forwards as a species.

While there were many prominent physicians during this time period that straddled the line between scientific advancement and outright cruelty John Hunter is one of the most notorious. Hunter was well known for his seemingly endless supply of cadavers. At a teaching hospital that received a few bodies a year, Hunter stood out for his ability to procure bodies almost daily. While corpse robbing could explain the surplus of cadavers, historians believe that Hunter killed some of the cadavers himself in order to continue his work.³⁶ Hunter improved medical knowledge of teeth, venereal diseases, the role of the lymphatic system, child development, digestion, bone growth and structure, and gunshot wounds.³⁷ Despite all of these incredible discoveries, it is important to note the number of people that suffered and died to help further Hunter's discoveries and medical advancements.³⁸ Human dissection, while vital to the development of the anatomical model and countless other medical advancements, was often an incredibly cruel practice. This practice was particularly cruel as the bodies of poor and destitute were often stolen and violated without their consent, or they were killed for their them.

The procedures and scientific approaches that were developed during this time period changed the way that the British community approached medicine. Physicians began to look for solid evidence that medical procedures actually benefited the patient. They also began to confirm theories and ideas, such as vaccinations or human anatomy, could actually be proven and experiments could be replicated among fellow practitioners. The scientific processes that were

36. Wendy, Moore. *The Knife Man*. London: Transworld Digital, 2010, 13-110.

37. Ibid

38. It is estimated he killed more than 27-41 people

encouraged during this time period, in London hospitals and universities, also helped physicians, such as James Spence, prove and disprove their theories to fellow practitioners.^{39,40,41} This ability to build off of others' advancements and theories allowed for a spike in medical and scientific developments.

Human dissection allowed students and practitioners to view the systems of the body and the ways they interacted, which helped with the development of medical care, such as disease treatment, as people began to see how certain injuries or illnesses actually impacted the body. Cadavers were a great learning tool in mapping out how different systems interacted. They also enabled students to both view the inner workings of bodies and see how diseases, injuries, and remedies affected the cadavers.⁴² Physicians, by seeing and interacting with the systems of the body, began to connect physical problems with parts of the systems of the body. Instead of attempting to cure an illness by "balancing the humors" doctors, such as Edward Jenner, began to look for treatments that gave visible and provable results.^{43,44} Despite the results, however, many advancements, such as the skiagraph, were done unethically.

Human dissection has gone through various stages of legality and illegality over the course of European history. Even now human dissection is considered taboo by people on both religious and moral levels.^{45,46} As a result of some religions, such as Christianity, believing that

39. Cambridge, Oxford, and King are a couple universities that led the medical community in human dissection and the distribution of the anatomical model

40. James Spence worked with John Hunter to improve tooth implants

41. *The Knife Man*

42. Bruce, Robinson. "History - British History in Depth: Victorian Medicine - From Fluke to Theory." *BBC*. February 17, 2011. http://www.bbc.co.uk/history/british/victorians/victorian_medicine_01.shtml.

43. Edward Jenner pioneered the small pox vaccine

44. *The Knife Man*

45. *Ibid*

46. Due to Roman and Greek religious practices many religions see human dissection as a taboo

bodies had to remain intact for the afterlife; for the beginning of the eighteenth century, only criminals who had been executed were dissected. This dissection, along with the execution, was seen as punishment for criminals who broke the law, as they believed those who were not ‘whole’ would suffer in the afterlife. This belief did not endear human dissection to people at the time. After the Anatomy Act was passed poor people who died in workhouses and hospitals were also dissected. “Dissection was no longer solely associated with individuals who were executed for murder, it was also associated with the shame of dying in poverty.”⁴⁷ Slowly this mindset began to shift, however during the nineteenth century, dissection was mainly seen as a punishment where criminals, the poor and vulnerable lost their lives. The affluent could pay for graves, funerals, and even watchmen — all things that poorer people could not afford.⁴⁸

While many scientific advancements were made as a direct result of the dissection of human cadavers, some question the cost of this progress. In the mid-to-late nineteenth century many body snatchers “made” their own corpses in order to have them be as fresh and undamaged as possible. Consequently many poor people, who could go missing without anyone (important) noticing, died in order for physicians to develop accurate anatomical models, research the systems of the human body, see how certain diseases and injuries impacted the human body, and countless other advancements.

The medical advancements that occurred during the 1800s in London would not have been possible without the destruction of the humoral system through human dissection. An

47. "Researchers in Museums." *Health Chatter Research Department of Behavioural Science and Health Blog RSS*. <https://blogs.ucl.ac.uk/researchers-in-museums/2016/01/20/question-of-the-week-was-using-human-remains-for-science-taboo/>.

48. Watchmen were people who would watch over the graves (or a grave) until the bodies were no longer ‘fresh’ enough to be at risk of getting stolen

accurate anatomical model for humans acted as the basis for other medical practices, including surgeries such as hysterectomies and heart operations.⁴⁹ Human dissection was, and is, vital to the development of medical treatments and processes as cadaver dissection allowed physicians to view how diseases and injuries impacted the human body and how treatments affected those injuries and diseases. Having an anatomical model as a solid foundation to build ideas off of allows all medical professionals to be more precise, have better knowledge of what part of the body they are working with, know how their treatment impacts their patients, what treatments to provide, students to learn about the human body outside of the theoretical, and scientists to learn more about how the human body works and functions.

Despite the many cruelties of the medical system and research processes during the nineteenth century, the development of the human anatomical system and, consequently human dissection, is vital to the modern understanding of human anatomy and medical knowledge. Without the surge of human dissection during this time period, England would not have begun to centralize human anatomical knowledge using Latin or begun to develop a medical system based on provable data. This globalization of common words and a common anatomical system helped propagate the spread of ideas throughout the world and led to many medical advancements, such as blood transfusions, more *successful* surgeries, sanitary practices, vaccinations, and much more. Human dissection was vital to the globalization of medicine and acted as a solid foundation for other medical practitioners.

49. *The Knife Man*

50. The first successful 'heart' surgery was to repair the pericardium, some do not consider this the first heart surgery as the pericardium is a sac *around* the heart

Appendix

Image A:



This image depicts the element earth. The old man resting on the table is meant to symbolize a melancholic temperament along with old-age and a scholarly attitude.

Plaster, Gail Kern. *Humoring the Body: Emotions and the Shakespearean Stage*.

Chicago:University of Chicago Press, 2014.

Image B:



This image shows the element water and is intended to emphasize the leisure that is preferred by this element through the musical instrument.

Plaster, Gail Kern. *Humoring the Body: Emotions and the Shakespearean Stage*.

Chicago:University of Chicago Press, 2014.

Image C:



This image symbolizes air, the man depicted is a womanizer and is seen embracing a woman which is meant to reflect the sanguine disposition of the aforementioned element.

Plaster, Gail Kern. *Humoring the Body: Emotions and the Shakespearean Stage*.

Chicago:University of Chicago Press, 2014.

Image D:



The choleric man furiously beating the woman surrounded in a red frame reflects the temperament of the fire element.

Plaster, Gail Kern. *Humoring the Body: Emotions and the Shakespearean Stage*.

Chicago:University of Chicago Press, 2014.

Image E:



This image shows one of the diagrams of the humoral system that can be found in the *Fasciculus di Medicine* and provides an idea of what medical diagnosis and care would have been like before the development of the anatomical model and other, more modern, medical advancements.

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