

How Did the Renaissance Help Develop Human Dissection?

Understanding the human body is very important for the treatment and wellbeing of everyday life. While human dissection is a common practice in present times and human anatomy is very well known, there were times in the past when it was morally and ethically wrong. The Renaissance was a period that allowed for previously condemned thought processes to resurface and be able to be practiced and taught to a new generation and human dissection was one of them.

Human dissection was a practice that occurred well before the Renaissance era, but had disappeared for quite a while. Human dissection can be traced back to the first half of the 3rd century BC in Alexandria where Herophilus of Chalcedon and Erasistratus of Ceos were the first Greek physicians to perform one. Although their dissections were “relatively superficial surgical incisions and excisions prompted by pathological conditions,”¹ since there were many religious morals and taboos during this time. Before it was able to develop any further, these two men had died and the probable cause of the loss of dissections was the emergence of a rival medical school founded by one of Herophilus’ pupils, Filinos of Cos. The empiricists of this school had believed that “human dissection had no scientific utility in anatomy teaching and that desirable clinical results could be obtained by empirical collection of non-invasive, even random observations,”² meaning many people began to believe there was no practical reason to still perform these dissections. Many other reasons including the belief among certain civilisations that messing with the bodies of the deceased would ruin their passage to the afterlife and that it was immoral.³ After the fire of Alexandria and the rise of catholicism throughout Europe, dissections became known as blasphemous and were prohibited the 14th century and the Renaissance era. This setback caused a lot of knowledge from ancient times to be lost and misinformation to be spread.

Since dissections on humans not allowed to be performed for over a millennium, people had begun to perform their research on animals such as monkeys and pigs. One man by the name of Claudius Galenus, or Galen, was known as the physician to the gladiators and would become the father of medicine. He was born in pergamom, which is now modern day Turkey, in the year 129 CE and was raised in the Roman Empire. He had become known for his theatrical dissections of animals which helped them become more popular and had invited a crowd to watch him dissect a monkey while comparing it to the work done from past human dissections.⁴ While his dissections were important for continuing research, they were relied on too heavily and caused some misinformation about human anatomy, such as believing that humans had the same amount of lobes in the liver as a pig when in fact they only have four and pigs have five.⁵ Still, even with the misinformation surrounding certain things, his work would lead the medical field for centuries and would not be disproven until the Renaissance and resurgence of human dissections.

Dissections were still not being performed up until the twelfth century when they were not forbidden, but there were strict rules that had to be followed. One of the rules that was

¹ Ghosh, Sanjib Kumar. “Human cadaveric dissection: A historical account from Ancient Greece to the modern era.” *Anatomy & Cell Biology*, vol. 48, no. 3, 22 Sept. 2015, pp. 153–169.

² Ghosh, Sanjib Kumar. “Human cadaveric dissection: A historical account from Ancient Greece to the modern era.”

³ Brenna, Connor T.A. “Post-mortem pedagogy: A brief history of the practice of anatomical dissection.” *Rambam Maimonides Medical Journal*, vol. 12, no. 1, 19 Jan. 2021.

⁴ Robinson, Andrew. “Galen: Life lessons from gladiatorial contests.” *The Lancet*, vol. 382, no. 9904, Nov. 2013, p. 1548.

⁵ Brenna, Connor T.A.

put in place was that clerics could not be involved in the studies of physical nature which was misinterpreted to mean that they could not practice surgery.⁶ There was also a misunderstanding surrounding Pope Boniface's Bull *De Sepulteris* thinking that it was prohibiting dissections during the 13th century, when in fact it was prohibiting the boiling of the remains of crusaders.⁷ The reality is that in the year 1231 when the Holy Roman Emperor Frederick II decreed that one body can be dissected every five years for education purposes. This allowed surgeons and physicians to be able to view the human anatomy for themselves without relying solely on past research. The first public dissection since Herophilus had performed one was done by Mondino de Luzzi in 1315 on an executed criminal.⁸ These dissections would be done by barber-surgeons while a professor would compare the anatomy of the human subject with the work done by Galen on an animal and would attribute the differences to the sinfulness of the criminal rather than the differences between species.⁹ This advancement of the knowledge of human anatomy would provide aid for the Renaissance age to understand humans more than previously thought.

Dissections throughout the Renaissance were very standardized and always included three roles: There was the barber-surgeon who was the one performing the dissections, the lecturer who was the one giving the lecture to the people observing, and the ostensor who would point out specific parts of the body throughout the dissection.¹⁰ The lecturers at these dissections were always men who were knowledgeable about Galen's theories on human anatomy. Dissections being open to the public allowed people who had never seen a human dissection in person be able to experience one, as well as allow surgeons, physicians, and students to learn more about the human body, even though it was only taught to support Galen's theories. The public interest in dissections only grew further, as did scholarly interest. It had become a very rowdy affair with debates between scholars happening, students being disruptive, and the anatomy college of Padua hired musicians to come play during the process.¹¹ The interest in dissections did not only grow because they were gruesome, but because they showed the intricate workings of the human body by God's hand and the morality of the human body.¹² These dissections had become a form of theatre or a spectacle for viewers to watch and become engrossed in which only furthered the interest and understanding of the human anatomy.

It was during the 16th century that a prominent figure would arrive, Andreas Vesalius, who would lead to a new way of understanding anatomy. He had done his own dissections and had eventually mapped out the entirety of the blood and nervous systems. This advanced the knowledge of anatomy significantly and discredited the widely accepted work of Galen from the previous centuries.¹³ He had done dissections strictly on humans and had done them frequently enough to be able to notice the differences between human anatomy and the work done by Galen on animals. Once Vesalius was certain of the mistakes done by Galen, he had begun lecturing at Padua and Bologna where he would show students a

⁶ Ghosh, Sanjib Kumar. "Human cadaveric dissection: A historical account from Ancient Greece to the modern era."

⁷ "Teaching and Learning Anatomy: A 500 Year History." *Historical Medical Library of the College of Physicians of Philadelphia*, The College of Physicians of Philadelphia, 2024.

⁸ Brenna, Connor T.A.

⁹ Brenna, Connor T.A.

¹⁰ "Teaching and Learning Anatomy: A 500 Year History."

¹¹ Soth, Amelia. "Public Dissection Was a Gruesome Spectacle - JSTOR Daily." *JSTOR Daily*, 24 Jan. 2019.

¹² Soth, Amelia.

¹³ "History - Historic Figures: Andreas Vesalius (1514-1564)." *BBC*, BBC.

human skeleton and would point out the inaccuracies in Galen's work.¹⁴ These new discoveries had set him on the path of creating his own anatomy book with images of his work. Thanks to his work, the misconceptions of human anatomy were resolved and the study of human anatomy had developed past the assumptions that humans and animals were alike.

Vesalius' book was very influential in making his work well known. Published in 1543, *De Humani Corporis Fabrica* was a series of seven books which featured many images of exposed human bodies and visuals of the different systems throughout the body that Vesalius had studied. The book also serves as an instruction manual, depicting which tools are needed for the dissections.¹⁵ Vesalius was known for posing skeletons of those he dissected in different positions to express certain emotions in his images. He would also use a technique of stringing a rope through the eye sockets and having the body help up-right because it was easier for the spectators to view the body than if it was lying down.¹⁶ He was also known for his series of images depicting the muscles of the human body all in different positions in order to display how the muscles would contract and expand in certain positions.¹⁷ His images along with his work spread out throughout schools and influenced the way dissections were and continue to be performed.

Another very important figure for dissections during the Renaissance was Leonardo di Vinci, even though his work was not published until after his death. Leonardo is very well known for his paintings, but he carried out about thirty human dissections of his own. Since he worked in monastery hospitals and medical schools he was able to map out different structures of the human body, such as the internal organs, bones, muscles, functions of the heart, and the reproductive systems.¹⁸ He had eventually taken a break from studying anatomy after being left dissatisfied with his work and being unable to study the human mind, but would eventually come back to continue his research with access to be able to study the human brain.¹⁹ He was able to study the different layers of the human body and used engineering techniques to picture the body from multiple angles.²⁰ He had made great work studying the heart and had come close to understanding the true functions of it, but stuck with past beliefs he was not able to fully understand it and had ended his study of it.²¹ His work had never ended up reaching the public eyes until the late 1800s where it had no real use, but his studies had shown that there was a lot more finding that had occurred throughout the Renaissance than was previously thought. His lack of publication and accusations of sacrilegious practices had created an idea that he was not allowed to perform dissections, when his work shows the opposite and that he was able to discover plenty of things about the human body. Both Leonardo, Andreas, and many others during the Renaissance would pioneer the vocabulary that illustrations of anatomy could be recorded and greatly affect the way human anatomy is portrayed and understood.

France took a little longer than Italy had when it came to performing dissections since they only began in the 14th century. The French anatomist and surgeon Henri de Mondeville

¹⁴ "Comparative Anatomy: Andreas Vesalius." *Understanding Evolution*, UC Museum of Paleontology.

¹⁵ *The Fabric of the Human Body (De Humani Corporis Fabrica)* By Andreas Vesalius, The Science Museum.

¹⁶ *The Fabric of the Human Body*.

¹⁷ *The Fabric of the Human Body*.

¹⁸ Clayton, Martin. "Leonardo's Study of Anatomy." *Leonardo in the Royal Collection*, Royal Collection Trust.

¹⁹ Clayton, Martin

²⁰ Clayton, Martin

²¹ Clayton, Martin

performed the first unauthorized human dissection in 1315 at the University of Montpellier.²² His work had helped France legalize human dissection in 1340 after having to solely rely on the texts written beforehand. Another important figure of this time in France was Guy de Chauliac who is regarded as the 'father of surgery' who gathered his knowledge of human anatomy from dissections. He had gone to the University in Bologna to study anatomy, witnessing a dissection while he was there and was able to spread that knowledge upon his return to France.²³ This return of knowledge also played a very essential role in the legalizing of dissections in France, which would eventually happen in 1340 with the University of Montpellier making them official and the first sanctioned dissection happening at the University of Paris in 1407. These were very big strides taken towards the spreading of knowledge and dissections throughout Europe.

In England dissections were prohibited until 1540 when King Henry VIII, he had only allowed the dissections of four executed criminals a year to be performed by a selected group of physicians and surgeons from the Royal College of Physicians and Company of Barber Surgeons.²⁴ These dissections were thought of as another form of humiliation for those who had committed murder, but the supplies necessary to perform these dissections were insufficient.²⁵ By the year 1831, only 11 bodies were available for the 900 student studying anatomy which had led some facilities to turn to desperate measures and begin to accept bodies from grave robbers while asking no questions about the ways they had procured it.²⁶ This growing need for cadavers was not helped by the inadequate preservation of the bodies by the English. Without any way of receiving more bodies, more and more illegal acts became common practice like body-snatching and even murder. The graves of the poor people was the most common method of getting bodies and the knowledge of the grave robber, or 'resurrectionists' as the schools would call them, became more well known and condemned by the public.²⁷ Many people who would murder and sell the bodies of the victims would in turn be executed and have their body given to the schools for dissections.

As the situation began to grow out of control, a new regulation titled the Warburton Anatomy Act of 1832 had to be put in place where the schools could use the bodies of unclaimed individuals for their dissections which included those of poor people who could not afford proper burials or those who had died in prisons, asylums, or workhouses.²⁸ The desperation shown by the schools enforced the growing desire for knowledge about the human body, but without the proper legislation and rules it spiraled out of control and brought about more problems. This act had caused a lot of unrest throughout the poorer population of England at the time and had caused some riots outside and within the medical schools all of which caused the schools to become very secretive of getting the bodies.²⁹ Many people attempting to calm the growing unrest of the poor population, but eventually after many amendments made to the Anatomy Act it was abolished along with the right to 'unclaimed

²² Ghosh, Sanjib Kumar. "Henri de Mondeville (1260-1320): Medieval French Anatomist and Surgeon." *Medievalists.Net*, 2015.

²³ Ghosh, Sanjib Kumar. "Human cadaveric dissection: A historical account from Ancient Greece to the modern era."

²⁴ "Anatomy: Art and Science." *Science Museum*, Science Museum, 10 July 2019.

²⁵ "Anatomy: Art and Science."

²⁶ "Anatomy: Art and Science."

²⁷ Ghosh, Sanjib Kumar. "Human cadaveric dissection: A historical account from Ancient Greece to the modern era."

²⁸ "Anatomy: Art and Science."

²⁹ "A History of Human Dissection." *The Royal College of Surgeons of England*. Royal College of Surgeons.

bodies'.³⁰ This act had caused a lot of uproar and shows the beginning of new methods for human dissection post-Renaissance.

While there were many barriers that prevented the improvement and advancement of medicine and dissections, there were many important figures and actions displayed that carried on. Without the Renaissance, these practices would not have resurfaced during these times and knowledge of the human body would have been delayed significantly. The art and science that revolves around human dissections of the Renaissance provide the knowledge and tools necessary for understanding how dissections came to be and how important they were for human anatomy.

³⁰ "A History of Human Dissection."

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