



Figure 1: Rembrandt van Rijn, *The Anatomy Lesson of Dr Nicolaes Tulp*, 1632. Oil on canvas, 169.5 x 216.5 cm. Mauritshuis, The Hague.

Medicine in art

The depiction of the evolution of medicine in art and the effects of commissioning and the media as shown by Rembrandt van Rijn's *The Anatomy Lesson of Dr Nicolaes Tulp* and Thomas Eakins' *The Gross Clinic*

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Since the dawn of time, mankind has developed the field of medicine to advance health and cure diseases. Throughout history, there has been much

advancement in the field such as penicillin and anaesthetics, with artists choosing to portray these leaps in their artworks. Rembrandt van Rijn and Thomas Eakins, in *The Anatomy Lesson of Dr Nicolaes Tulp* and *The Gross Clinic* respectively, each painted a doctor while using numerous visual techniques and symbolisms to depict the great advancements these doctors had achieved. Despite the similar artistic methods and general direction, the two paintings greatly differ in what the artist wanted to portray and how each utilised his skills to implement this in his work.

This article will analyse how the advancements in medicine were portrayed by the two artists from different angles and how commissioning and the media affected their artistic directions.

The Anatomy Lesson of Dr Nicolaes Tulp (Figure 1) shows a surgeon dissecting the forearm of a cadaver in front of seven other surgeons. The surgeon on the right is Dr Nicolaes Tulp; the official City Anatomist of the Amsterdam Guild of Surgeons in 1623. He is dissecting the muscles on the forearm of a criminal named Aris Kindt while explaining the anatomy to his audience.¹ His right hand holds the forceps that manipulate the tendons while his left hand is raised and flexed. Other details include a book in the bottom-right corner and Rembrandt's signature in the background.

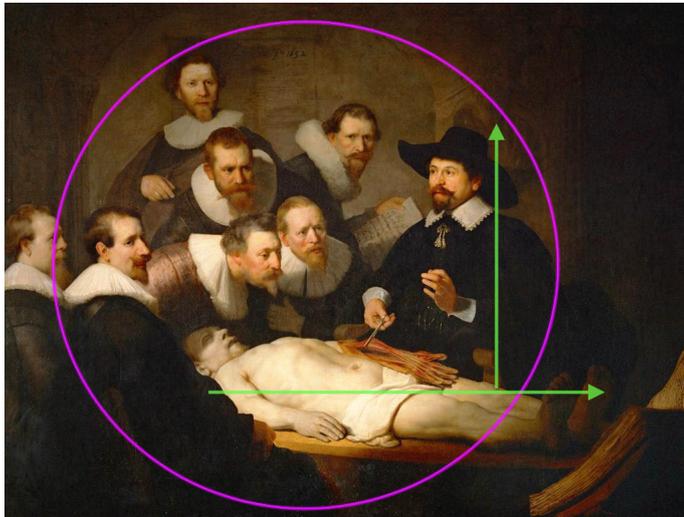


Figure 2: Circular area of focus and brightness (purple circle) and straight line figures (green arrows) in Rembrandt van Rijn, *The Anatomy Lesson of Dr Nicolaes Tulp*, 1632. Oil on canvas, 169.5 x 216.5 cm. Mauritshuis, The Hague.

Rembrandt was famous for using colours and lighting to effectively emphasise the subject.² This is clearly visible in this work. The first holistic feature is the shadows curving around Dr Tulp, the surgeons and the cadaver, binding them in a circle of focus and setting the basic composition of the painting. The figures outside of this circle were added later and do not reflect the original intent of the artist.³

Another defining feature is the straight lines that Tulp and the cadaver form, as opposed to the random, chaotic arrangement of the other surgeons.³ This naturally divides the painting into three parts. Tulp and the cadaver have their backs to dark areas, essentially framing the brighter upper-left quadrant. This sharpens the aforementioned circle, diverting the viewer's attention to what is happening within that area.

If composition and lighting set the framework for Rembrandt's visual message, then colours fill in the details. The general hue, or colour tone, is warm yellow-brown with the background being a dull gradient. Much variation in colour is seen within the circle of focus, especially in the skin tone of the subjects. Not only does this establish a strong contrast to further highlight the central subject, but the colours themselves play a significant role in delivering the key emotions that Rembrandt expressed in this work.

Vincent van Gogh commented on the cadaver, saying: "Yes, I was absolutely staggered by that too. Do you remember those flesh colours: it is de la terre (from the earth), especially the feet."⁴

This pale, ashen-grey skin described by van Gogh, or *umbra mortis*, of the cadaver starkly contrasts with the healthy, olive skin of the living.¹ Rembrandt

further developed this contrast by adding flushed cheeks to the observers, not only depicting their health, but also to symbolise the emotions that will be discussed soon.³

The contrast in lighting and vibrancy of the colours sets a clear focus zone projecting out of the background creating an illusion of depth. However, what is interesting is that even within this zone one part is much brighter than the rest. It is clear that the brightest subject is the cadaver, who is also placed directly in the centre of the painting. As it is well known that Rembrandt used contrast deliberately, it raises the question as to whether the true protagonist of this scene is Tulp or the cadaver.³

The final portion of the visual analysis is the details, namely the facial expressions and gaze of each subject. These expressions are all unique and show the character of the portrayed person; Tulp's authoritative look, the cadaver's morbid look, and the surgeons' inquisitive and excited looks are all painted with intent. This gives the viewer the impression that the subjects are more than flat, emotionless figures simply drawn on a canvas. Their expressions are dynamic and natural, adding a lively touch to the painting that juxtaposes with the dead body in the centre.³

The gaze is a crucial feature that separates *The Anatomy Lesson* from other commissioned portraits. Here, Tulp does not have the full attention of the surgeons, who appear to each look in a different direction. Some carefully study the dissection, some look up to Dr Tulp with admiration and respect, but more interestingly, some stare directly at the viewer! This projects the viewer into the dissecting room and produces an uncanny feeling. The surgeons' stern and authoritative facial expressions make the viewer feel humble and less important in the presence of Dr Tulp. The aforementioned respectful gaze of the surgeons towards Dr Tulp amplifies this effect.

To better understand what the visual elements signify, we must study the context in which the painting was made.

An interesting fact to note is that there is no preparator who would dissect the cadaver first so that the surgeon could explain without having to cut. Instead, there is an open textbook on the bottom-right. *The Anatomy Lesson* was commissioned by Dr Tulp and the Guild. Therefore, rather than depicting the dissection purely realistically, Rembrandt stylised the scene to match the surgeons' requests. For example, William Heckscher stated that Tulp wished to be portrayed as Andreas Vesalius, a famous 16th century anatomist of his time.⁵ Evidence of this is seen in the anatomy textbook, presumably *De Humani Corporis Fabrica* by Andreas Vesalius,



Figure 3: Direction of gaze of the seven Guild members (blue arrows) in Rembrandt van Rijn, *The Anatomy Lesson of Dr Nicolaes Tulp*, 1632. Oil on canvas, 169.5 x 216.5 cm. Mauritshuis, The Hague.

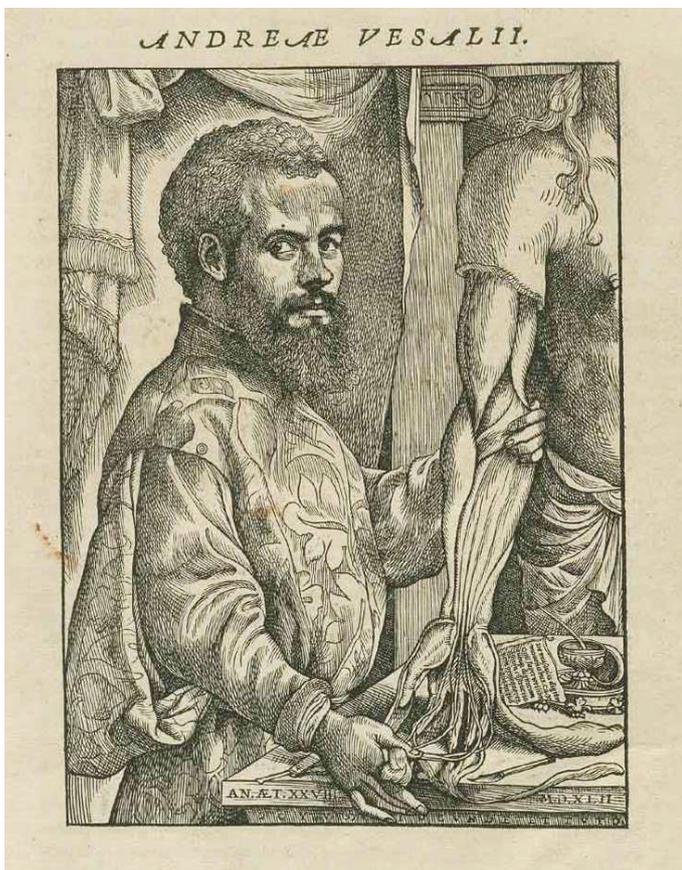


Figure 4: After Johann Stephan von Kalkar, Portrait of Andreas Vesalius, 1555. Woodcut. University Library Amsterdam.

where Tulp's pose resembles Vesalius' portrait. This may also explain why the dissection is started at the arm rather than the abdomen, as was customary. Not only is it "heater" to dissect muscles than organs, but Tulp may be imitating Vesalius' portrait where the forearm is dissected.⁵ This suggests that the emphasis is on Tulp's academic status. The fact that he is the only one wearing a hat, which indicates his respectful position, supports this.¹ Alois and Binstock also suggested that the broad space occupied by Tulp relative to the other surgeons easily allows the viewer to identify him as the leading figure.⁶ Lastly, it was noted by medical professionals that the forearm anatomy is not entirely correct.⁷ The flexor muscles of the forearm originate from the medial epicondyle of the humerus, yet Rembrandt's painting shows the muscles originating from the lateral epicondyle. Other than this error, the general muscle anatomy appears to be correct. This may have been intentional, where Rembrandt was forced to draw Vesalius' right arm dissection in Tulp's left arm dissection.

The setting contrasts starkly to the other anatomy painting by Rembrandt: *The Anatomy Lesson of Dr Joan Deyman*. Here, it can be seen how organs have been removed, while a preparator dissects the brain for the doctor. This is a more standard depiction of a dissection,⁹ thus supporting the theory that Tulp may have influenced Rembrandt's depiction of the dissection.

That said, *The Anatomy Lesson* brought a major change to the art of commissioned group-portraits.⁶ Unlike previous portraits of doctors, such as de Keyser's *The Osteology Lesson of Dr Sebastiaen Egbertsz*⁹ Rembrandt painted the members in a more dynamic fashion.⁶ This set his paintings apart from the other portraits that were no different to depictions of other guilds, such as militias, thus creating a new genre of "anatomy lessons".¹⁰ In *The Osteology Lesson*, the doctors are posing in front of a skeleton whose sole purpose is to be a prop. They appear more interested in being portrayed beautifully, rather than the anatomy. Contrary to this, the surgeons in Rembrandt's painting appear genuinely fascinated by the dissection, with Tulp focussed on his task as he calmly explains everything.

The reason why this is significant is that instead of recording the advancements in medicine (dissections and understanding anatomy) photographically, Rembrandt chose to animate and dramatise it.³ This not only had the effect of Rembrandt gaining fame and wealth through future commissions, but it also allowed him to add deeper meanings via symbolism.¹⁰

Despite the public interest in anatomy, dissections and surgical operations were quite controversial and rare. The portrayal of dissections only became prominent in the late 15th century whereas depictions of surgeries were uncommon until much later. This was because surgery was still an undeveloped field and also due to the influence of the church.¹¹ The legalisation of dissection in the Netherlands in 1555 revolutionised the study of anatomy, thus providing a milestone in the history of medicine. The two *Anatomy Lesson* paintings by Rembrandt served as a commemoration of public dissections.¹⁰

However, the true purpose of these paintings may be more complex. It is possible that Rembrandt deliberately chose dissection over surgery to explore some deeper themes through the use of a cadaver. For example, one surgeon reminds the audience of their own mortality by directing them to the cadaver with his hand.¹³ However, the cadaver is not only a symbol of mortality, but also rebirth.

After dying, the cadaver is being used as a tool for educating the surgeons, who will then go on to treat patients with this knowledge. Ergo, it can be suggested that the cadaver will live vicariously as knowledge, helping surgeons save lives. Dolores Mitchell also suggested that there may have been a connection between the cadaver's death and the surgeons' education.³

William Heckscher suggested Tulp believed that an understanding of anatomy led to an understanding of God through the reverse engineering of a "divine creation".⁵ William Schupbach agreed with Heckscher, suggesting that the message of the painting is that "knowing God is to know oneself," and vice versa.¹² Furthermore, the cadaver resembles an image of Christ due to the position, clothing, illumination, and the crowd around him; possibly a reference to the mocking crowd at the crucifixion of Christ.³ It was noted before that the cadaver receives an unusual amount of light and focus, considering that the painting was commissioned by the living members. This indicates that the cadaver is an allegory of rebirth and knowledge. As Tulp is dissecting the image of Christ, he is metaphorically dissecting both the way of God and His creation in an attempt to better understand himself. This reveals the concept of "know thyself".³



Figure 5: Rembrandt van Rijn, *The Anatomy Lesson of Dr Joan Deyman*, 1656. Oil on canvas, 100 x 134 cm. Rijksmuseum, Amsterdam.

The symbol of discovering knowledge and the fact that Rembrandt chose dissection over surgery shows that *education* and the human nature of seeking knowledge are the key themes in this painting. The idea is reinforced by the facial expressions of the surgeons described above. The expression of wild, child-like curiosity and passion is portrayed vividly, invoking the viewer to also feel the exhilaration of learning about the human body.¹ Overall, it is apparent that Rembrandt placed emphasis on the educational aspect of medicine rather than the practical applications.

Therefore, *The Anatomy Lesson* is more than just a commissioned group portrait; it is a recording of an important milestone in medicine. The painting augments this through its central themes of man's quest for knowledge and the mortality of man, while portraying Dr Tulp as a respectable pioneer; just like Vesalius, in the field of anatomy.

Two hundred and fifty years later, another artist named Thomas Eakins decided to paint Dr Samuel Gross in commemoration of his career in surgery. In 1875, Eakins decided to record the scene of Dr Gross operating on a patient with osteomyelitis.¹³

We see Gross standing solemnly having just saved a patient's life. His expression is that of an experienced professional: confident and determined. Eakins' heroic portrayal of Gross was because he wished to commemorate Gross' surgical achievements such as pioneering the conservative surgical intervention for osteomyelitis.¹⁴ This treatment allowed surgeons to save patients from amputation thus transforming the profession of surgery from a "butchering" to a healing profession. As noted previously, in Rembrandt's time surgery was considered to be a less desirable profession compared to internal medicine due to its crude and unhygienic methodology. By the 19th century, surgery was becoming increasingly safer allowing it to become a more respectable field. An example of the evolution of surgery can be seen in Eakins' *The Agnew Clinic*, painted 14 years later, where surgeons are wearing scrub gear, compared to Gross' normal attire. Ergo, *The Gross Clinic* serves the purpose of recording a milestone in medicine, just as Rembrandt depicted dissection as a milestone.

In fact, Eakins was inspired by Rembrandt in both the visual and contextual elements.

Eakins also employed light as a framing tool, or *chiaroscuro*, giving Gross a radiant glow to highlight him from the dark background. As the light source is from above (surgeries were often performed in amphitheatres during noon, so that sunlight through a hole in the roof would illuminate the operating table), a shadow is cast on Gross' face that gives further depth to his stern expression. It is quite different from Tulp's calm, lecturing expression; Gross is depicted as a man completely focussed on saving the patient.¹³ This shows the difference between the settings of Rembrandt's dissection and Eakins' surgery. Furthermore, the illumination of the hand and head is a metaphor of how the combination of dexterity and intelligence is what makes Gross such a great surgeon.¹⁴

It is important to note that the patient's thigh is illuminated too, suggesting that he or she is another key element of the scene.¹³

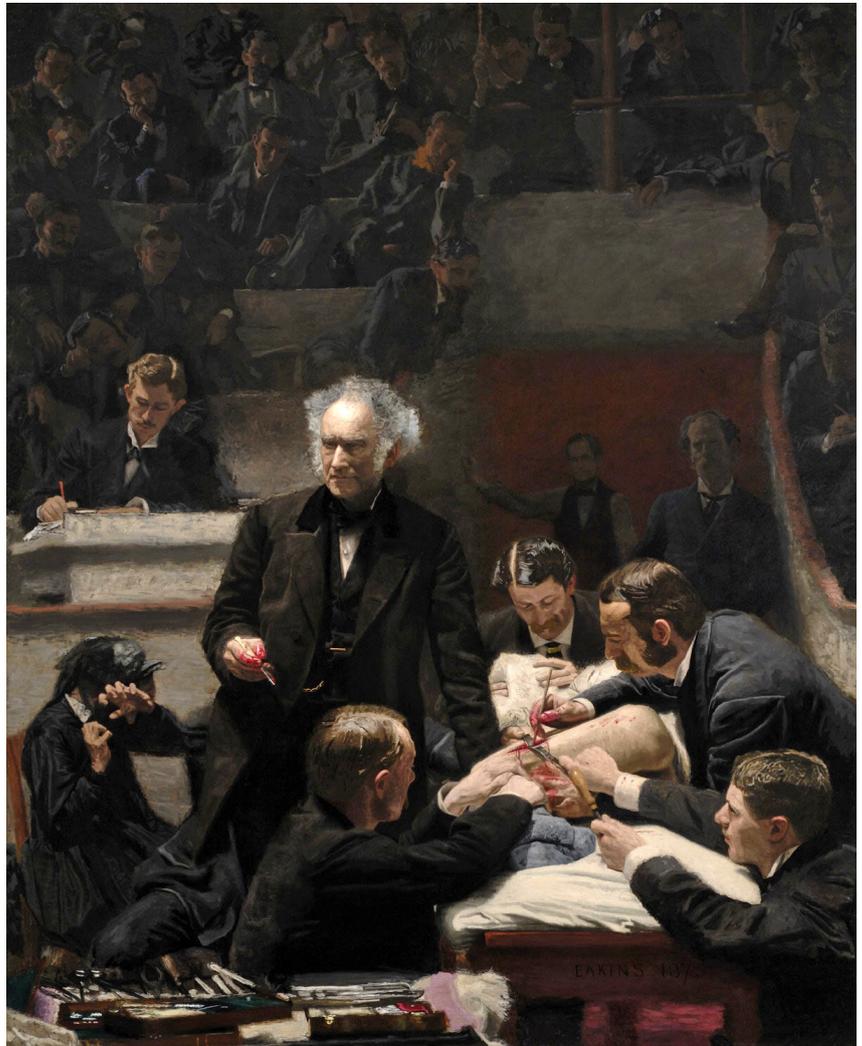


Figure 6: Thomas Eakins, *The Gross Clinic*, 1875. Oil on canvas, 240 x 200cm. Jefferson Medical College Dept. of Surgery, Philadelphia.

The effect of lighting is augmented by the vividly red blood on Gross' hand and the patient's leg. As the painting is dark and grey, these few spots of red stand out substantially, directing the audience's gaze to the scene of the surgery and Gross' scalpel; a tool that symbolises his surgical skills.

However, the blood plays a role much greater than highlighting. Although *The Gross Clinic* was submitted for the Centennial exhibition, it was rejected for being too provocative.¹³ Some critics found the blood to be too realistic, causing them to feel uneasy. This was also true for the portrayal of the agonised woman on the left, presumably the patient's mother. The media and critics argued that Eakins had "gone too far",¹⁵ criticising the "unnecessary" realism and going as far as to say that the exposure of the patient's naked thigh was indecent. It was rumoured that some members felt physically ill from the intense emotions caused by the painting, affecting their decision.¹⁴

Up until the early 20th century, most artists only portrayed surgeons in dissections. *The Gross Clinic* challenged this trend by showing the public the true face of medicine.¹⁴ Eakins felt that dissection would not convey the raw emotions and powerful imagery of surgery, as depicted by the uncompromising realism, blood, and human response.¹⁴ An obvious example is the mother. Among the figures present in Rembrandt's painting, there is not a mourner for the cadaver; only those who study the body with a *medical gaze*. This is a type of gaze with which the doctor views the patient as a sum of the constituent flesh and organs rather than a human being. The patient is broken down and dehumanised into his or her anatomy and physiology. In *The Gross Clinic*, the medical gaze is also present if one carefully studies the students' faces; however, the expressions on the

surgeons' faces appear to be concentrating on keeping the patient alive and fighting to preserve his quality of life. The mother adds a new layer of emotions, reminding the audience that this patient has a family who loves and cares for them. This intense, dramatic atmosphere was praised by reviewers (who were more accepting of Eakins' revolutionary painting), claiming that it was "intensely dramatic, and is such a vivid representation of [a surgery] scene...we know of nothing greater that has ever been executed in America".¹⁶ This is a key difference between Eakins and Rembrandt in their portrayal of doctors.

Rembrandt was influenced by Tulp to paint him in the glory of Vesalius, thus deciding to use symbols such as hats and facial expressions to signify his academic achievements and stature. He did not require the use of blood or the expression of agony to convey his message of man's quest for knowledge through dissection. On the other hand, Eakins made Gross and his surgery a symbol of modern medicine and how much the field had evolved by showing the general public an unadulterated image of the operation.¹⁴ The surgery depicted was revolutionary as it drastically improved patient outcomes. Also, the painting shows advancements in surgery such as anaesthesia.¹³ This celebrated how medicine was changing to be more respectful of human dignity and the health of the patient,¹⁴ rather than only treating the biomedical disease.

The lighting emphasis on the thigh supports this, as Eakins points out that the patient is a player in the surgery as well, just as Rembrandt used bright light to highlight the cadaver. Gross is a beacon of this change in medicine; his professionalism, represented by his calm composure, contrasts with the mother's response. It is noteworthy that Eakins' other artworks focus on pure realism such as manipulation-free photography.¹³ But here we can see a degree of dramatisation via contrast and colours. The dramatisation can thus be considered intentional, carrying the artist's message. Despite this dramatisation, his almost photographic painting also shows how realistically he wanted to portray the scene rather than suiting to others' tastes and aesthetics.¹⁷

Another distinction between the two paintings is how Eakins puts more importance on Gross than the patient. Despite having a similar circular zone of brightness, Gross has a more prominent position standing in front of the patient. This contrasts to Tulp standing to the side and behind the cadaver.

Also, Gross' patient is hidden from view to the degree that the viewer cannot identify the age or gender of this patient. This also applies to the students in the background who are shrouded by darkness.¹³ In fact, even the other surgeons are so immersed in their job that their faces are hidden. Gross is the only one not looking at the patient (other than the physician recording the details of the surgery and the mother who is too horrified to watch); instead he looks into the crowd as he catches a breath and explains what he had performed. Thus, he is still incorporating education into the practical aspect of medicine; however, it is evident from the above points that greater emphasis is placed on the surgery itself.

Both Rembrandt and Eakins used doctors in their paintings to portray the evolution of medicine and its ramifications on the general public.

In *The Anatomy Lesson of Dr Tulp*, the focus was on how dissections opened up the world of anatomy, allowing medical professionals to gain an insight into God's mortal creation and how we function. Thus, by extension: an insight into oneself. The atmosphere is calm and serene, with the colour contrast accenting the underlying tone of life versus death, especially through the differing skin tones. Being a commissioned painting, Rembrandt was somewhat limited and had to include features to suit the doctors' requests. Despite this, he managed to convey his intentions and messages

while gaining a positive reception from the public.

In *The Gross Clinic*, the raw emotions and atmosphere of the operating theatre is projected to the audience, while celebrating the progress in medicine and improvement of patient care over the times. The atmosphere is grim and dark, with brightly lit surgeons acting as beacons of hope for the patient's survival, while also symbolising the professionalism and drama in the room. As it was not commissioned, Eakins was free to explore the use of realism and an array of features to dramatise his painting. This came at the cost of negative reviews and failing to be displayed at the Centennial exhibition. Nonetheless, he was able to convey his messages to those who viewed it, empowering them with the emotional atmosphere.

Although both incorporate similar visual features such as lighting and composition, there are stark contrasts between *The Anatomy Lesson* and *The Gross Clinic* in how they are used to symbolise different things. This shows how art can be used to view the world of medicine from different angles depending on the artist's intentions. Despite the influence of commissioning and negative media response, both Rembrandt and Eakins successfully created a legacy for their respective doctors, forever embedding them in events depicting some of the greatest medical achievements of their time.

LIST OF IMAGES USED

After Johann Stephan von Kalkar:

Portrait of Andreas Vesalius, 1555.

Woodcut. University Library Amsterdam.

Rembrandt van Rijn.

The Anatomy Lesson of Dr Joan Deyman, 1656.

Oil on canvas, 100 x 134 cm. Rijksmuseum, Amsterdam.

Rembrandt van Rijn.

The Anatomy Lesson of Dr Nicolaes Tulp, 1632.

Oil on canvas, 169.5 x 216.5 cm. Mauritshuis, The Hague.

Thomas Eakins.

The Gross Clinic, 1875.

Oil on canvas, 240 x 200cm. Jefferson Medical College Dept. of Surgery, Philadelphia.

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FEATURE: ARTICLE

There is a right to life; is there a right to die?

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Sam Holford is a 4th year medical student at the University of Auckland. He completed a BSc (Hons) majoring in pharmacology and spent a year tutoring and lecturing 300 level pharmacology before starting his MB ChB degree. If he wasn't doing medicine, he probably would have given law a go.

Euthanasia (Greek meaning 'good death') is the act of ending a life to relieve pain and suffering. Passive euthanasia is legal in New Zealand in the form of the right to refuse medical treatment, while active euthanasia is illegal and punishable by imprisonment. Legal (distinct from moral and spiritual) arguments for and against legislation allowing active euthanasia fall onto the human rights affirmed by the International Covenant on Civil and Political Rights (ICCPR), the European Convention on Human Rights, and in New Zealand, the Bill of Rights Act.¹⁻³ These documents confer an express right to life, but not to die, and legal arguments for a right to die seek an interpretation that would make it unjust for the State to interfere with a citizen's choice to die.

Voluntary euthanasia occurs when a conscious and rational patient gives express and informed consent to an action, or withdrawal of treatment, that will result in the ending of life. This is distinct from its speculative and involuntary forms, which lack the same degree of consent. Passive voluntary euthanasia is the refusal of treatment that may otherwise prolong life and is legal in New Zealand and protected by section 11 of the Bill of Rights Act: the right to refuse to undergo medical treatment.³ Active voluntary euthanasia, or assisted suicide, is an action undertaken by a person other than the patient with the intent of ending life. It is an unlawful act that, independent of motivation, constitutes murder under section 167 of the Crimes Act.⁴ Section 179 states that assisting suicide is illegal, while the act of taking one's own life is not.⁴ This means that the law separates the State from an individual's choice to end their own life, actively or passively, so long as no other party takes part. This can be argued as discrimination against those that are physically unable to commit suicide as it limits their ability to exercise their rights. Human rights fundamentally confer to all people the freedom to make choices about how they live their life. It is therefore unjustified to have a blanket ban preventing a conscious and rational terminally ill patient and a consenting party from acting on the