

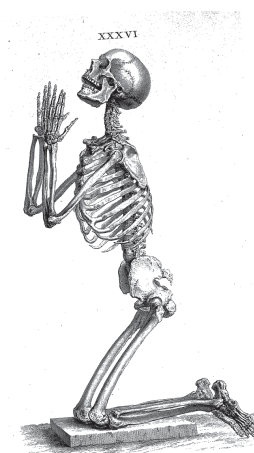
# An Anatomist's Gaze on Bones and Skin in the Early 18<sup>th</sup> Century Perceptions of the Mind and Body in Transition

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The gaze over the inside of the human body has changed gradually with the birth of modern clinical medicine. A definitive turning point took place in the early modern era when anatomy began to occupy an important position in medicine. But the practice and experience of dissection did not immediately replace the previous image of the human body with any other recognition based on an objective view. How did early modern anatomists face the dissection, comprehend the human body, and describe it?

It is well known that in the modern period, many physicians increasingly began to perform more dissections independently and started to publish anatomy books containing illustrations that displayed the authentic results of their actual observations. However, the meaning of their work is not so clear, above all in terms of understanding or identifying the relationship between the mind and body. What kind of images were produced in their books and what ideas were presented through their representations of the body?

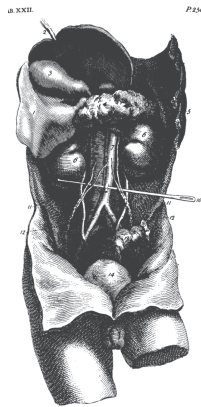
In order to think about this question, I would like to present the human body as drawn and described by William Cheselden (1688–1752)<sup>1)</sup>, and consider the images of the human body in an era of growing interest in its interior. My interest in medicine in modern Europe and Japan, along



**Figure I** Cheselden, *Osteographia or the Anatomy of the Bones*, 1733, TAB XXXVI.

with an encounter with two mysterious illustrations by William Cheselden, led me to choose this paper's subject, namely, a 'praying skeleton' and 'skin'.<sup>2)</sup>

In Cheselden's books, many bones or inner parts of animals or the human body are depicted. From a contemporary perspective, these images do not seem so singular, unless two mysterious illustrations are considered. (see **Figure I**) One illustration is that of an adult skeleton praying on its knees, which is included in *Osteographia or the Anatomy of the Bones* (1733).<sup>3)</sup> A skeleton such as this does not appear in his first book, *The Anatomy of the Human Body* (1712).<sup>4)</sup> Moreover, this 'praying skeleton' is fixed on a board unnaturally, and it seems that the face looks bright and even has a smile. The image reminds me of something harmless and delicate, similar to what we can see in Japanese contemporary comic books. It is neither ferocious nor menacing. In the artistic tradition of the Middle Ages and Early Modern Europe, did the skeleton not have an allegorical meaning related to dying or to another world in itself? Did it not represent a symbol that recalled the important precept 'Memento Mori'? If we only consider the graphics included in the *Danse Macabre*, it appears that almost all skeletons are represented as being active and free from all bondage and threatening to human beings.



**Figure II** Cheselden. *The Anatomy of the Human Body*, 1712. p. 250, TAB XXII.

Another mysterious illustration is that of an anatomical chart in *The Anatomy of the Human Body*, showing human organs, in which the skin is depicted as a solid and thick cover. (**Figure II**) According to Cheselden, this image was included to show the bladder and genitals of a man, which caused him trouble with his urinary calculus. Here, every internal organ is numbered and, on the next page, they are listed with their names. However, the 'skin' is not listed and seems to be given no attention. Then why is the skin illustrated? If it is only for the purpose of explaining the position of the bladder, is the skin not necessary to draw in particular? Somewhat shockingly, the skin is drawn like a cloth cut in quite a straight line. What kinds of meanings are there in these

two illustrations?

## 1. Cheselden's intention and methods

Before analysing Cheselden's representations, I would first like to consider the background of the illustrations included in his books.

According to Z. Cope, the compendiums of anatomy also existed also in the 17<sup>th</sup> century, but those were all unsuitable to students learning surgery.<sup>5)</sup> Consequently, Cheselden saw the need for a handy, readable, and well illustrated manual.<sup>6)</sup> The main part of his *The Anatomy of the Human Body* consists of 187 pages of text, with 23 copper plates. In this text, the syllabus of lectures in Latin<sup>7)</sup> appears from the first edition through to the 13<sup>th</sup>. The binding was leather, and the book could easily be placed in the pocket. The writing style is plain and accessible. But it does not seem to be so much a learned work as compared with the earlier authoritative literature on anatomy.

Actually, Cheselden himself wrote to the reader, '*Truth, brevity and plainness of description being all I aim at*'. Moreover, in the preface to the sixth edition (1742 [1712]) of his *Anatomy*, he mentioned as following : '*the study of Anatomy as it leads to the knowledge of nature and the art of healing, needs not many tedious descriptions nor minute dissections; what is more worth knowing is soonest learn'd, and least the subject of disputes, while dividing and describing the parts, more than the knowing of their uses requires, perplexes the learner, and makes the science dry and difficult*'.<sup>8)</sup>

However, in spite of this insistence, Cheselden emphasises the need for 'accuracy', making reference to the difference between the ancients and the moderns about the creation of the human body. In his statement, he explains, '*the moderns, by the assistance of glasses having made a more*

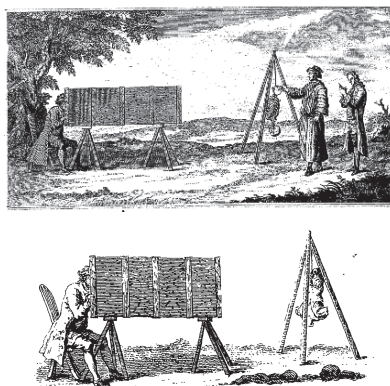
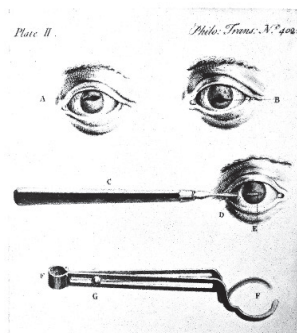


Figure III Frontispieces of Cheselden's books. 1 (upper): 1733; 2 (under) 1712.

accurate observation, conclude, that all the parts exist. In miniature, from the first formation of the foetus'.<sup>9)</sup> He is familiar with glasses (that is, microscope) and regards them as an important tool for understanding the human body. As to his discourses, the most remarkable thing is that the title page of the 1733 book contains a copper-plate print of a painter and two barber–surgeons looking into a box, drawing a dead animal which hangs upside down. (See **Figure III-1**). According to Cheselden, this print ‘represents’ a scene of a ‘person drawing in camera obscura, such a one as was used in this book’.<sup>10)</sup> The same kind of print already appears in his first book (1712). (See **Figure III-2**) Although he praises Vesalius’s anatomy book, writing that the illustrations are ‘engraved by Giovanni Calker, performed in so exquisite a taste usually taken for Titian’s<sup>11)</sup> and considered as a study for painters’, Cheselden continues that he himself ‘corrected some of the few designs already made, throwing away others which we had before approved’.<sup>12)</sup>

Cheselden also refers to his own skilled engravers, Vandergucht and Shinevoet. According to Cheselden, ‘they knew too well the difficulties of representing irregular lines, perspectives and proportion, to despise such assistance, always declaring that it was impossible to do these things so well without’.<sup>13)</sup> In brief, he believed that the camera obscura was a convenient instrument for representing irregular lines accurately. Cheselden must have been a lover of instruments. In addition to camera obscura and microscopes, he presented a ‘lancet’ as a useful instrument in a new operation on the eyes in *Philosophical Transactions*<sup>14)</sup>, the journal of the Royal Society, which accompanied his account of his procedure for making an artificial pupil (**Figure IV**). It pierced into an eye, but with no detailed illustrations about the operation.



**Figure IV** W. Cheselden. “An explication of the instruments used. in a new operation on the eyes”. *philosophical Transaction*. XXXV 451 (VII 493).

## 2. ‘Praying skeleton’ and the preceding representations

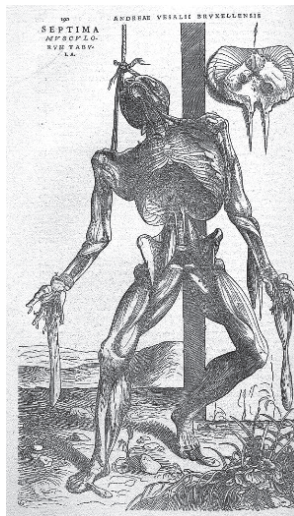
Cheselden’s ‘praying skeleton’ is passive and submissive, in contrast to the skeletons drawn



**Figure V** *Dance Macabre* by Niklaus Manuel ca. 1516–1519.

in *Danse Macabre*, but to see from the viewpoint of whether skeletons are personified or not, both of them share the same representative image. Although the skeletons in *Danse Macabre* (**Figure V**) appear as active, powerful and even ferocious beyond human control, they are all personified and are not different from Cheselden’s ‘praying skeleton’. Both are presented under the same premise. Moreover, it might be possible to say that all the skeleton representations in Europe were inspired and derived from an analogy between the human mind and behaviour, which was imagined at that time. Is this because it was believed that the human mind dwelled or was harboured inside the body, even if death altered it into a mere skeleton?<sup>15)</sup>

In comparing Cheselden’s ‘praying skeleton’ with the preceding representations of skeletons in the anatomical art of Early Modern Europe, we can find a difference between them. To show this clearly, I would like to discuss here an illustration of a skeleton by Andreas Vesalius (1514–

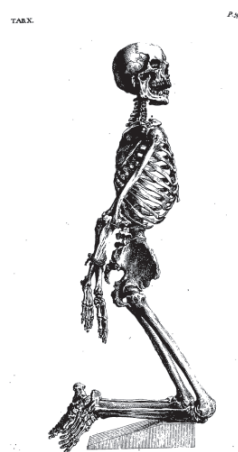


**Figure VI** Andreas Vesalius. *De humani corporis fabrica*. (1543). p. 190.

1564). **Figure VI** is a skeleton by Vesalius, which appeared in his famous book *De humani corporis Fabrica*<sup>16</sup>), one of the most influential books on the human anatomy. Vesalius, a Belgian anatomist and physician, is often referred to as the founder of modern anatomical study of the human body. Actually, Vesalius emphasised the importance of dissection and an ‘anatomical’ view of the body. His view clearly contrasted with many of the anatomical models used previously, which had heavy Galenic and Aristotelian elements, as well as elements of astrology. Although a modern anatomical compendium had been published by Mondino de Luzzi (de’Liuzzi 1270–1326) and Jacopo Berengario de Carpi (1460–1530), much of their work was clouded and vague due to their reverence for Galenic and Arabian doctrine.

Unquestionably, Vesalius’s skeleton, as shown here in **Figure VI**, represents a criminal who was sentenced to death and executed by hanging as punishment for his great sin or crime. However, it is not drawn realistically but expressed as an allegory. Why did Vesalius present an allegory like that? The answer is that the dissection was actually done on the body of a traitor condemned to death. The practice of dissection required the reason for it to be disclosed in order that the audience or the reader would be convinced that it was just and legitimate.

However, is this only reason? Did these practitioners feel any awe or fear in cutting and opening the human body? Dissecting the human body and invading it internally evoked a cutaneous and irrational fear originating from the sense of boundary not only between humans and animals, but also between the inside and outside of the body. It required some explanation about the entity being dissected. The dissected being was supposed to be an animal or an outsider from human society. An allegory, then, was a necessary representation for publishing such illustrations and an indispensable code was required for the anatomist to escape any potential criticism and



**Figure VII Criminal & punishment** *The Anatomy of the Human Body*. 1712, p. 59.

attacks on his morals that might come from not only the religious authorities but also the public. By allegorically visualising the real dissection as a scene or a spectacle of the execution of a criminal, this violation of boundaries could be subsumed within an ordinary frame to reference that pointed to the ordinary senses, recreation for the public at that time.

Returning to Cheselden's 'praying skeleton' in *Osteographia* (1733), the illustration does not seem to suggest an allegory of a criminal. The difference between Cheselden and Vesalius' respective illustrations is clear. However, in truth, in Cheselden's first book, *The Anatomy of the Human Body* (1712), there is another illustration of a skeleton depicted as an allegory of a criminal, similar to that of Vesalius. This is **Figure VII**. This skeleton has both hands tied behind his back, and a terrible and furious look appears on his face. There is no room for doubt that it is a criminal. However, this criminal skeleton is also fixed on a board. It is certain that Cheselden was deeply influenced by the artistic tradition of anatomical art established by Vesalius and his successors.

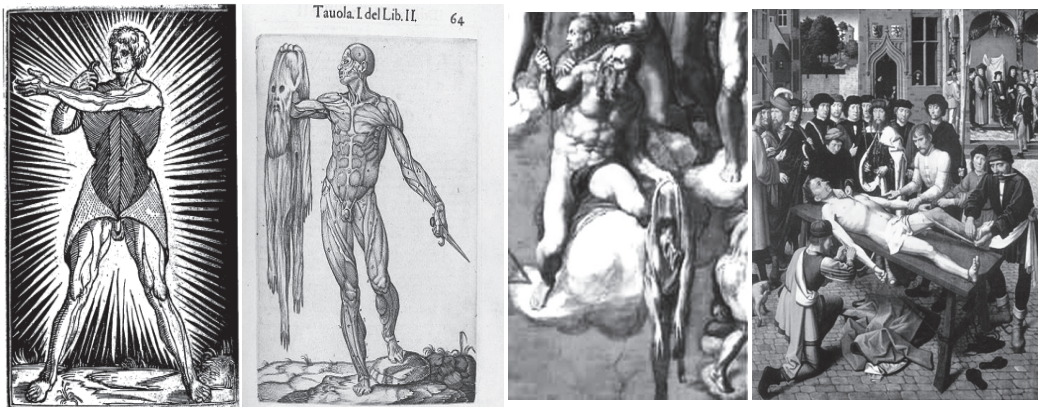
But he also soon began to move away from the past's specific allegory of a guilty criminal, bringing the skeleton's image closer to being innocent and obedient. In other words, he neutralised the skeleton's malicious and sinful image or concealed the sense of boundary being violated. The 'praying skeleton' on his knees fixed on the board symbolises, in my hypothesis, not only man's triumph over a taboo but also signifies a break with the cutaneous fear of violation, an invasion of the human body?

### 3. 'Skin' and earlier representations

The next topic concerns the 'skin'. I asked at the beginning of this paper whether the drawing of the skin in anatomical art is new or not. The answer is of course not. Actually, Vesalius had already drawn the skin occasionally in his anatomy books. Returning to **Figure V**, for example,



**Figure VIII** Andreas Vesalius. *De humani corporis fabrica*. (1543). Frontispiece.



**Figure IX -1 -2 -3 -4 from left. Skins flayed.**

1. Jacopo Berengario da Carpi, *Isagogae breves, perlucidae ac uberrimae, in anatomiam humani corporis a communi medicorum*, 1523.
2. Juan Valverde de Amusco, *Anatomia del corpo humano*, 1560.
3. Micheangelo, *Last Judgement* (1536-1537) (after wall, Cistine Chapel)
4. The Judgment of Cambyses, The shedding of the corrupt judge Sisamnes (1498) by Gerard David (1460–1523).

we can see some fragments of skin represented as something hanging down from a body, such as slime or bodily fluids. Also in the frontispiece (see **Figure VIII**) of his *Fablica*, there is a drawing of the multiple layers of skin of the abdomen when it is cut open, with many spectators gathering around Vesalius and observing the dissection.

In addition to the work of Vesalius, we can see that the skin is drawn frequently in other anatomists' books. For example, see **Figure IX-1 & -2**. In the former figure, a man opens his chest to reveal his internal organs. It is said that this image shows a dissection having redemptive potential, and it is the only image accepted by the Renaissance Church, based on the Old Testament idea of sacrifice beyond duty as a form of atonement. In other words, it recalls the image of a man flayed and crucified: Jesus Christ. In the latter figure, a man is holding up his skin in his right hand and a knife in his left hand. He is a flayer and, at the same time, a flayed man. Here, the pulling off of the skin means one is redeemed from sin. Incidentally, this scene reminds us of Bartholomew displaying his flayed skin in *The Last Judgement* by Michelangelo, drawn between 1536 and 1537 (altar wall, Sistine Chapel). See **Figure IX-3**. It appears that anatomical art and Renaissance art were deeply linked to each other. In that time, flaying a person and the image of a flayed man represented a heavy punishment, while the art form called *écorché* had flourished since the Renaissance. Actually, it is well known from *The Judgment of Cambyses, The shedding of the corrupt judge Sisamnes* (1498) by Gerard David (1460–1523). See **Figure IX-4**.

My hypothesis is that the anatomist needed an excuse to escape the cutaneous, sensational





**Figure X** Giulio Vesare Casseri (ca.1552–1616) and his student **Adriaan van den Spieghel** (1578–1625), *De humani corporis fabrica libri decem*, Venice, 1627; *De format foetu*, Padva, VI.

fear evoked by the violation of a dissection. The skin should have been, it seems, drawn as being indispensable to justify the sense of fear which came from the dissection. The drawing of the skin as something that resembled leather falling down seems, however, to have been mainly prevalent in the early and mid-16<sup>th</sup> century, although the skin continued to be drawn, such as resembling cloth, throughout modern times. I suppose that a subtle but clear change occurred, that is, a shift from an image of a piece of leather being flayed and falling down like animal skin toward an image of a piece of cloth and a cover, curved or straight. In the 17<sup>th</sup> century, the skin increasingly gained a particular place in anatomy books. For example, reference illustrations in the books made by the physicians Giulio Vesare Casseri (ca.1552–1616) and his student Adriaan van den Spieghel (1578–1625).<sup>17)</sup> See **Figure X-1, -2, and -3**. Here, the skin of the human body is drawn to resemble cloth or a covering with a straight-cut edge. Is it something like a shroud or a winding sheet?

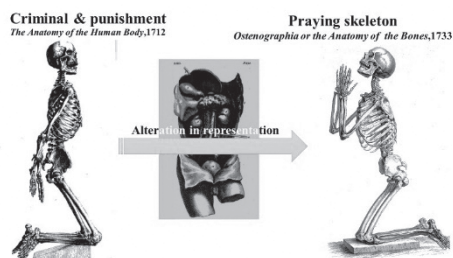
Returning to the image of the skin in Cheselden’s work, it is drawn as a covering that can be opened with a straight cut, although it seems to be a thick and strong suit for the body. His illustrations are drawn and influenced by the heritage of art representation since the Renaissance. Surprisingly, however, his anatomical chart is quite rough and careless, although he had emphasised anatomical accuracy and boasted about his copper prints made by using a camera obscura. Moreover, this interpretation also gives us an impression of an image that is somewhat poorly balanced. For example, the heart (see **Figure II**) is not included and the trunk is too long. Did he really also use the camera obscura to draw the abdomen and the organs? I doubt it. However, in any case, it is undeniable that he basically follows the artistic tradition of representing the skin. In his depiction of the skin, the meanings of punishing a criminal and the flaying or slaughtering an-

imals have completely vanished. His image is arranged in a different way than earlier anatomical art. For him, the skin in his illustrations is a boundary line for dividing the inner and the outer, as well as a cover to enclose the inner being, like clothing. But there is no longer any mind or soul within it. The skin instead represents a way of proving the actual dissection and ‘accurate’ observations.

Judging only from this perspective, it appears that Cheselden had little interest in the skin itself. However, it is certain that he paid much attention to the ‘external parts’ and ‘common integuments’. This is the theme of Chapter I (Book III in *Anatomy of the Human Body*). In this chapter, he used the words ‘cuticula’, ‘membrane’, ‘cutis’ and ‘glandulae’, and he also referred to the important role of the ‘cell’ and ‘gland’, while distinguishing the ‘thin insensible membrane’ and the ‘true skin’. In addition, he indicated that ‘[t]he cells of this membrane communicate throughout the whole body so much, that from any one part, the whole may be fill’d with air’. For him, ‘cuticle or scarf skin’ is a very fine, smooth membrane which appears scaly, and ‘a grain of sand will cover 125000 pores through which we perspire’.

However, almost all of these minute pieces of information come from Malpighi (1628–1694) or Lewenhoeck (1632–1723), who, by using a microscope, had observed the surface of the human body, discovered many things which are invisible to the naked eye, and published the results in *Philosophical Transaction*. Cheselden must have read their writings. For him, the surface of the human body is a protective membrane comprising layers of innumerable pores that permit communication between the inside and the outside. This understanding is completely different from ancient ideas explained by the four cardinal humours.

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Cheselden’s ‘praying skeleton’ appeared 21 years after *The Anatomy of the Human Body*, in which he still represented a skeleton as a criminal, but in *Osteographia*, the skeleton is depicted as harmless and even comical. Actually, it was only in 1712 that Cheselden included the ‘skin’. At that time, he was still influenced by artistic traditions that had existed since Vesalius and his suc-

cessors. But in the transition to the early 18<sup>th</sup> century, his image of the body rapidly began to change. He no longer needed the ‘skin’ as an excuse to justify the sin of the dissection of the human being. The reason, I suppose, is not because he was completely liberated from a cutaneous fear induced by the invasion of the inside of the human body but because he could justify and defend his position by using new instruments: the microscope, camera obscura, lancet and so on.

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## Notes

- 1) He was a famous anatomist in the early eighteenth century, known for of his anatomy books. He opened a private course for demonstrating a dissection in London in 1711, after being admitted to the barber-surgeons’ corporation and also to the Royal Society of Surgeon. The company was dissolved in 1745 to differentiate and distinguish barbers and surgeons. According to Zachary Cope (1881–1971), a contemporary physician and surgeon, Cheselden is ‘*a great surgeon who played a decisive part in bringing about the separation of the surgeons from the barbers and in emphasizing the need for the better scientific education of the medical student*’. Cope, Zachary, *William Cheselden*, E.& S. Livingstone LTD, Edinburgh and London, 1953, Preface, v.
- 2) When I was investigating the problems relating to the art, for exemple the techniques (e.g. Forceps) for difficult deliveries to understand the background of the 18<sup>th</sup> century’s midwives dispute, I became aware of the significance of the separation of the Barbersurgeons’ company, as well as the fact of the growing interest in the inner body in the early 18<sup>th</sup> century in London and in Paris.
- 3) *Cheselden, W., Osteographia or the Anatomy of the Bones*, 1733.
- 4) *Cheselden, W., The Anatomy of the Human Body*, London, William Bowyer, 1712.
- 5) For example, Kell’s compendium contained no illustrations. Moreover, the big illustrated tomes, such as that by Cowper, were quite inaccessible to students. William Cowper (1666–1709) is Cheselden’s teacher, who left a magnificent atlas of human myology, *The Myotomia Reformata* (1698). It is said to be a showcase for exquisitely rendered illustrations of muscles and bones, but it was clearly inspired by the drawings in Vesalius’s anatomy book.
- 6) Cope, Zachary, *Ibid.*, p. 6.
- 7) In the case of ‘An Appendix’ to the IV<sup>th</sup> Edition (1730) of *The Anatomy of the Human Body*, it has 19 pages.
- 8) *Cheselden, W., The Anatomy of the Human Body*, VI<sup>th</sup> Edition (1742), Preface, unpagued.
- 9) *Ibid.*
- 10) *Ibid.*
- 11) Vesalius’s illustrator, Jan Steven van Calcar (Giovanni da Calcar, 1499–1546) was a pupil of Tiziano Vecelli or Tiziano Vecellio (1488–1576), known as Titian in English.
- 12) *Ibid.*

- 13) *Ibid.*
- 14) Cheselden, “An explication of the instruments used, in a new operation on the eyes”, *Philosophical Transactions*, XXXV 447 (VII 491). This journal began publication in 1665. Later, the title was slightly changed: *Philosophical Transactions of the Royal Society of London*. In 1887, it split into two parts (A and B), one for mathematics, physical sciences and engineering and one for biology. These two parts are still published today.
- 15) This idea recalls the dualism between flesh and soul. In this paper, I do not discuss this aspect.
- 16) Andreas Vesalius, *De Humani Corporis Fabrica Libri*, 1543. Of course, the anatomical sketches of Leonardo da Vinci (1452–1519) are also important as well as those of Vesalius, but his drawings only became well known 250 years after his death.
- 17) They both taught or trained at the University of Padua in Italy. Padua was the most advanced center of medieval science in the world, thanks in part to the legacy of Vesalius. In addition, Padua is, as you know well, proximate to Venice, with a sophisticated community of artists, printers and publishers. This ensured Padua’s faculty access to superb facilities to realise their illustrations.