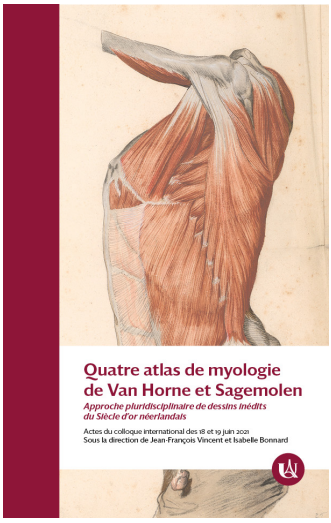

Sous la direction de Jean-François Vincent
et Isabelle Bonnard

Quatre atlas de myologie de Van Horne et Sagemolen

Université Paris Cité

The *Myologia* by Saeghemolen and Van Horne in context: Art, science and religion at Leiden University, ca. 1660

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The *Myologia* by Saeghemolen and Van Horne in context: Art, science and religion at Leiden University, ca. 1660

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Astonishing as the four recently rediscovered volumes of Saeghemolen[1] are in themselves, these are some of the many sources completing our picture of the early history of Leiden University.[2] As I will demonstrate in this contribution, the visual and tactile character of these splendid *alba* was in the longer tradition of the Leiden academy. More generally, the *alba* reflected the high degree of visual literacy amongst Dutch researchers in the seventeenth century.[3] Not only texts, but also objects, drawings, prints and even paintings were means of generating and communicating knowledge. Hands-on sessions, involving rarities, herbaria and anatomical dissections, provided the epistemological starting-point as well as the logical outcome of the pursuit of knowledge. In 1543, Vesalius had become famous for dirtying his hands in order to put Galen's words to the test. Later that century, this approach was also followed north of the Alps.

1. Also written 'Sagemolen' within this collection.

2. Vincent, Jean-François and Chloé Perrot, 'La myologie de Johannes van Horne et Marten Sagemolen : quatre volumes de dessins d'anatomie du Siècle d'or retrouvés à la Bibliothèque interuniversitaire de santé (Paris),' Paris: Bibliothèque interuniversitaire de santé, 2016. https://hal.archives-ouvertes.fr/hal-03768364; on Leiden University, see Lunsingh Scheurleer, Theodoor H. *et al.* (eds.), *Leiden University in the Seventeenth Century: An Exchange of Learning*, Leiden: Brill, 1975; Otterspeer, Willem, *Bastion of Liberty. Leiden University Today and Yesterday*, Leiden: Leiden University Press, 2008.

3. Jorink, Eric, *Reading the Book of Nature in the Dutch Golden Age, 1575-1715*, Leiden: Brill, 2010.

Right from its establishment in 1575, Leiden University had the ambition to become the most innovative academy in Europe, not only in terms of education but also in terms of research. Copying and emulating the new humanistic approach of the Italian universities of the sixteenth-century – mostly Padua and Bologna – the Leiden curators envisioned a program of philological, visual and tactile research. Amongst other things, this lead to the appointments of the famous botanist Carolus Clusius in 1592; the great philologist Joseph Scaliger in 1593, and the establishment of the Leiden *hortus botanicus* and anatomical theatre in 1594. As we will see, this approach was highly successful, making Leiden one of the hotspots of Europe in medical research – a reputation solidly maintained until the professorship of the famous Herman Boerhaave in the eighteenth century.[4] In this contribution, I will sketch some of the backgrounds of this successful policy, addressing, amongst other topics, the role of art and religion, as well as that of René Descartes who – we should remember – lived and published most of his life in the Dutch Republic. The *Discours de la méthode* (1637) was first published with Jean le Maire, in the Choorsteeg in Leiden, just 250 meters from the University's anatomical theatre (and 150 meters from Van Horne's home).

As we will see, in the Dutch Republic the worlds of art and the sciences largely overlapped.[5] Training an eye for detail through reading, studying, observing, representing and contemplating was as important for physicians as Van Horne as it was for artists as Saeghemolen. Looking closely at anatomical structures, and representing them in great detail, was a practice encouraged by the natural philosophy of Descartes, as well as by Calvinist notions of God's handiwork displayed in the marvels of His creation. We will see this reflected not only in Saghemolen's great *alba*, but also in the work of two of Van Horne's medical students enrolling in the 1660's: Nicolaus Steno and Johannes Swammerdam.

4. Verwaal, Ruben E., *Bodily Fluids, Chemistry and Medicine in the Eighteenth-Century Boerhaave School*, London: Palgrave Macmillan, 2020. https://doi.org/10.1007/978-3-030-51541-6; Ragland, Evan R., *Making Physicians. Tradition, Teaching, and Trials at Leiden University, 1575-1639*, Leiden: Brill, 2022.

5. Jorink, Eric and Bart Ramakers (eds.), 'Art and Science in the Early Modern Low Countries,' *Netherlands Yearbook for History of Art / Nederlands Kunsthistorisch Jaarboek* 62, Zwolle: WBooks, 2012; Jorink, Eric, Lehmann, Anne-Sophie and Bart Ramakers (eds.), 'Lessons in Art: Art, Education and Modes of Instruction since 1500,' *Netherlands Yearbook for History of Art / Nederlands Kunsthistorisch Jaarboek* 68, Leiden: Brill, 2019.

Leiden University as a protestant bulwark

Seen from a European perspective, Leiden University was established rather late, in 1575. This was only nine years after the protestant iconoclast movement started in Antwerp – resulting in what became known as the Dutch Revolt.[6] The increasingly more protestant Northern provinces of the Low Countries became engaged in a war with their souvereign, Philip II of Spain. Rejecting the king's authority, the rather loose confederation of provinces had somewhat to improvise in matters of statecraft, religion and education. While the educated and skilled protestant Antwerp middle-class – including many printers, painters and scholars – fled to London, the German lands and the North, the rebelling provinces, decided that they should establish an alternative for Leuven University (the only institution for higher education in the Low Countries, but in save Catholic hands). Thus, on account of Leiden's steadfast resistance against the Spanish siege of 1573, the small city was granted the monopoly to establish a university in the provinces of Holland and Zeeland. It was intended as an institution for learning as well as for educating future generations of protestant ministers, lawyers, physicians and intellectuals. The rather provincial town – known for its cloth industry – provided two confiscated catholic buildings along the central canal as sites for the new university. The small academic community was concentrated in a circle of 300 meters, and highly visible in the civic context. Lines of communication with publishing houses, guilds, artists and magistrates were very short (Figure 1 and Figure 2).

Here, it is important to stress that the Dutch Republic was a confederation of provinces, and by its very nature had no centralizing ambitions. The provinces basically only cooperated in matters of trade and foreign policy. This was, of course, very much in contrast with France. In principle, every Dutch province had the right to establish a university of its own – and hence did so (Friesland in 1586, Groningen in 1614, and Utrecht in 1636). Within the context of the provinces Holland and Zeeland it was Leiden, rather than Amsterdam, The Hague, Rotterdam or Middelburg that was granted this prerogative. This was also the result of

6. Israel, Jonathan, *The Dutch Republic: its Rise, Greatness, and Fall, 1477-1806*, Oxford: Oxford University Press, 1998; Frijhoff, Willem and Catrine Secrétan (eds.), *Dictionnaire des Pays-Bas au Siècle d'or*, Paris: CNRS Éditions, 2018.

Figure 1.

The city of Leiden, as depicted in Frederik de Witt, *Theatrum ichnographicum omnium urbium et præcipuorum oppidorum Belgicarum XVII Provinciarum peraccurate delineatarum* (Amsterdam 1698). Courtesy of the Royal Library of the Netherlands, The Hague

this intricate play of checks and balances within the broader Republican constellation. However, the result of this policy was fierce competition between the many towns in the Republic – ultimately leading to a dynamic, innovative culture.

What distinguished Leiden University from most of its competitors, both at home and abroad, was its commitment to fundamental research.[7] Whereas most European universities until well into the eighteenth century were teaching textbook-knowledge, Leiden took over the cutting-edge role Italian universities had played in the sixteenth century. Philological and exegetical research was put in the able hands of Justus Lipsius, Joseph Scaliger and (slightly later) Claude Saumaise, who all did pioneering work. The first generation of Leiden professors of medicine – Petrus Pauw, Everardus Vorstius

7. Grafton, Anthony, *Athenae Batavae: The Research Imperative at Leiden, 1575-1650*, Leiden: Primavera Pers, 2003.

Figure 2.

Detail of Figure 1: centre of Leiden along the Rapenburg Canal. A is the Academy building, with the *hortus botanicus*; B, the Faliede Begijnenkerk, including the *Theatrum Anatomicum* and the University Library; C is the home of Van Horne; D, the home of Dele Boë Sylvius. Courtesy of the Royal Library of the Netherlands, The Hague

and Johannes Heurnius – were all educated in Padua and Bologna. During classes, these Leiden scholars did instruct their students in the latest state of affairs, and also made excursions to the library, botanical garden and anatomical theatre. Education was not only about taking notes, but knowing-by-doing as well. Moreover – and this is important – professors did offer ambitious students (willing to pay a supplemental fee) *privatissima*, tutorials which deviated from the formal scholastic curriculum. During these *symposia* – mostly at the professor's private quarters – new ideas, texts and objects were discussed, and quite often chemical experiments or anatomical dissections were carried out. For example, the later discoveries of Nicolaus Steno and Johannes Swammerdam were made in this setting.[8] It is also in this context the Saeghemolen's *alba* were commissioned by Van Horne.

8. Huisman, Tim, *The Finger of God: Anatomical Practice in 17th-Century Leiden*, Leiden: Primavera Pers, 2009; Cook, Harold J., 'Time's bodies. Crafting the preparation and preservation of naturalia,' *Merchants and Marvels. Commerce, Science and Art in Early Modern Europe*, Smith, Pamela J., and Paula Findlen (eds.), New York: Routledge, 2002, pp. 223-247.

Although this tradition of private tuition existed in other universities, Leiden offered the most challenging perspectives, thereby attracting students from all over Europe. It is worth noting that René Descartes enrolled in Franeker University in 1629 and had very close connections to Leiden University in the 1630's, while his natural philosophy was first publicly defended in Utrecht in 1641 (leading to the well-known clash with Calvinist orthodoxy).[9]

This brings us to religion. The Dutch Republic was a rather heterogenous patchwork of provinces and cities, without a clear nucleus. Nor was it strictly Calvinist – much to the contrary, as many other denominations and sects were tolerated. However, although the Calvinist Church never was the official state religion, public incumbents – like regents, bailiffs, burgomasters and also professors – all had to subscribe to the Reformed articles of faith of the Belgic Confession (Antwerp, 1561). These articles formed the basis of the Calvinist creed, and every member of this denomination was supposed to know it by heart. Article 2 is worth quoting here in full:

> We know him [God] by two means. First, by the creation, preservation, and government of the universe, since that universe is before our eyes like a beautiful book in which all creatures, great and small, are as letters *to make us ponder the invisible things of God: his eternal power and his divinity*, as the apostle Paul says in Romans 1:20. All these things are enough to convict men and to leave them without excuse. Second, he makes himself known to us more openly by his holy and divine word, as much as we need in this life, for his glory and for the salvation of his own.[10]

In other words: nature was the second revelation of God. The idea that God made himself known through both the Bible *and* the book of nature had been a strong undercurrent in Christian thought, going back to Augustine.[11] However, the concept gained new currency in the wake of the Protestant stress on the Word of God, and the aversion to Roman idolatry. For Protestant scholars, *all* of Creation was a revelation of God. The cosmos

9. Much has been published on this subject. All research on Dutch Cartesians should start with consulting Thijssen-Schoute, C. L., *Nederlands Cartésianisme*, Amsterdam: Noord Hollandsche Uitgeversmaatschappij, 1954. See also Verbeek, Theo, *La Querelle d'Utrecht*, Paris: Les Impressions Nouvelles, 1988; van Ruler, Han, *The Crisis of Causality. Voetius and Descartes on God, nature and change*, Leiden: Brill, 1995; Clark, Desmond, *Descartes. A Biography*, Oxford: Oxford University Press, 2006.

10. Jorink, *Reading the Book of Nature*, *op. cit*., p. 20.

11. Blumenberg, Hans, *Die Lesbarkeit der Welt*, Frankfurt am Main, 1981; Jorink, *Reading the Book of Nature*, *op. cit*.; Augustine, *Enarratio in Psalmum XLV*, pp. 6-7.

had to be studied in as much detail as the Old and New Testaments. Just as every verse, word, syllable, or iota reflected Yahweh's creative power, so did the lowliest blade of grass, nerve or muscle.[12] Godliness and nature research were by no means mutually exclusive; until late into the eighteenth century the two complemented each other seamlessly. Protestant scholars engaged in their research with the Biblical text burned into their retinas. The quest among scientists and artists for naturalism, for illustrations *ad vivum* (from life), had in fact a highly religious dimension. One had to depict nature as careful as reciting a biblical verse. 'In minimis patet ipse Deus' was a popular variation on Pliny.

In a broader sense, studying nature did not only imply reading ancient texts *on* nature, but meticulously study all creatures, great and small, with one's *own eyes*. Nature could be seen and read and, like the Bible, was a revelation by the divine author. All Leiden professors subscribed to the Dutch Reformed articles of faith, including the doctrine of the Book of Nature.

Hence the importance Leiden University put on the visual component of education – not only for heuristic and didactic, but also for religious purposes. In 1593 a part of a confiscated church was turned into an anatomical theatre and library, while on the other side of the Rapenburg Canal (behind the by now defunct convent of the White Nuns) a botanical garden was established (a reconstruction on the same spot is still worth visiting) (Figure 3 and Figure 4). Both the *theatrum* and the *hortus* were complemented with a collection of curiosities. These rarities were intended not only as heuristic aids in medicine but also as moral lessons for professors, students and interested lay people. The library, the theatre, the garden and the collections of curiosities formed an indivisible whole, a *theatrum sapientiae*. In the course of the seventeenth century, the collections expanded considerably and formed not only a three-dimensional teaching aid but also an important attraction for tourists. Many items found their way into the present-day Leiden museums – which essentially all go back to the *hortus* and *theatrum*.

12. Jorink, Eric, 'Insects, Philosophy and the Microscope,' *Worlds of Natural History*, Curry, Helen Anne, Jardine Nicholas, Secord, James Andrew, and Emma C. Spary (eds.), Cambridge: Cambridge University Press, 2018, pp. 131-150; Bass, Marisa, *Insect Artifice: Nature and Art in the Dutch Revolt*, Princeton, NJ: Princeton University Press, 2019.

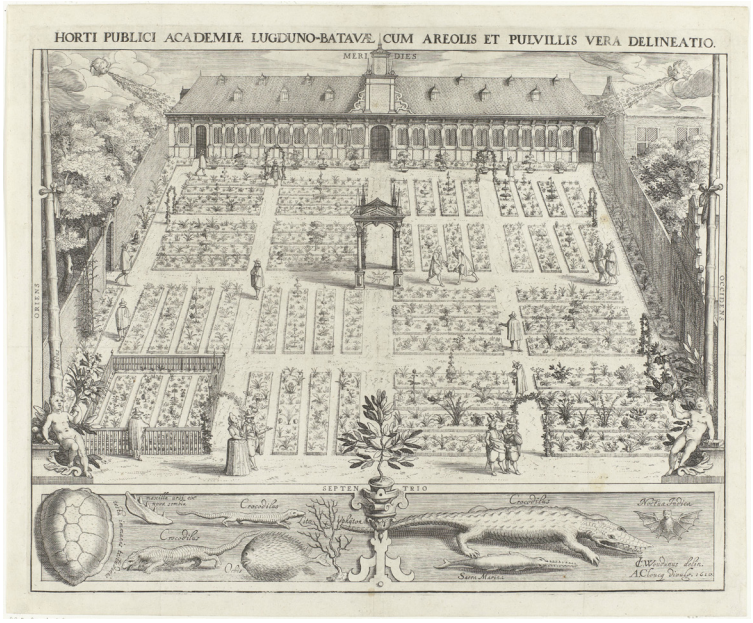

Figure 3.

Hortus Botanicus of Leiden University, engraving, Willem Isaacz van Swamenburgh, 1610, 328 mm × 404 mm. Courtesy of the Rijksmuseum, Amsterdam

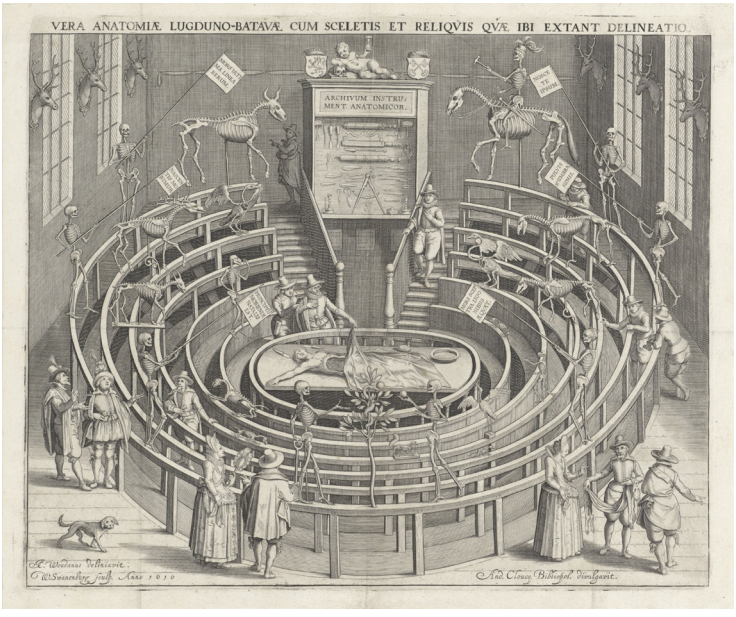

Figure 4.

Theatrum Anatomicum of Leiden University, engraving, Willem Isaacz van Swamenburgh, 1610, 328 mm × 404 mm. Courtesy of the Rijksmuseum, Amsterdam

At the botanical garden, visitors could see plants described by the ancients, and new flora brought back from the East Indies (the Dutch East India Company being established in 1602). Moreover, a natural history collection – including crocodiles, blowfish, corals and the jaw of a polar bear – was at display. In the anatomical theatre, a human corpse (the body of an executed criminal) was publicly dissected once a year. Young Rembrandt van Rijn (1606–1669), a student of Leiden University between 1620 and 1622, witnessed dissections performed there.[13] Here was also a collection featuring many skeletons and all kinds of rarities, from Egyptian mummies to stuffed anteaters, as well as 'the bladder of the widely famed Isaac Casaubon,' the great philologist who had died in 1614.[14] The function and the composition of the anatomical theatre provides a valuable context for the *alba* of Van Horne and Saeghemolen.

Van Horne's predecessor as professor of anatomy, Otto Heurnius, was an avid collector of items illustrating the science of medicine and its history. His acquisitions included a monstrous kidney stone, a *fungus lapideus*, and grotesquely malformed bones. As a token of respect to his father, Heurnius kept 'six stones found in the bladder of the late D. Joannes Heurnius'. There was a wealth of artefacts that recounted the history of biblical Egypt: a woodcut of the Crossing of the Red Sea, a Canopic jar, images of Isis 'that are full of hieroglyphs,' an adder, 'idols that were found with the mummies in the cellars beneath the ground in the land of Egypt,' and other funerary items. But the most spectacular items were two mummies and a sarcophagus, true rarities in Europe at that time. They were the *pièces de résistance* of the anatomical theatre and were transferred in 1821 to the National Museum of Antiquities in Leiden (where they are still at display). The mummies were of tremendous importance, as they both testified to ancient knowledge, as well as gave clues to the much-debated question of how to preserve cadavers. With the growing importance of anatomical dissections for educational practice, conservation became a pertinent issue. Hence Heurnius' fascination with mummies and methods of embalming. Heurnius put the sarcophagus and mummies at display, and an *Explicatie der mummie*

13. Schaeps, J. and M. van Duijn, *Rembrandt en de universiteit van Leiden*, Leiden: Leiden University Press, 2019.
14. Jorink, *Reading the Book of Nature*, *op. cit.*, pp. 278-289.

(Explanation of the mummy) was printed and hung above them.[15] The public was asked to treat the objects with great care, as they were very fragile because of their 'immense antiquity'.

Fully aware of the importance of the visual and material culture of science, Heurnius obtained financial support from the Leiden curators to write and publish a three-volume work on ancient and contemporary embalming techniques, *De mummia sive conditura cadaverum antiquorum et neotericorum*.[16] This case anticipates Van Horne's request for commissioning Saeghemolen some decades later. As we saw, the Leiden curators had an open eye (as well as financial resources) to support scientific research and public display. Besides financing the *hortus* and the *theatrum*, they had also supported professor Golius' mission to the Middle East in order to purchase Arabic manuscripts on mathematics, optics and astronomy, as well as his plan to erect the first academic observatory on the roof of the Leiden Academy building in 1632. Hence, in 1634, the curators granted Heurnius the huge subsidy of 300 guilders annually to write a work on ancient and contemporary mummification, 'to confirm the reputation and fame of this Academy […] and to add luster to the aforementioned Faculty [of Medicine]'.[17] Although Heurnius kept expanding the collection of the anatomical theatre, the ambitious plans for the three-volume book were never heard of. In 1650, 16 years later, the curators terminated the annual subsidy, as they noted that they 'as yet have not received any note' on the progress of the work.[18] When Heurnius died in 1652, his heirs could only produce a vague promise instead of a finished manuscript, despite the 4800 guilders the curators had furnished for the project.[19] At the same meeting this painful issue was discussed, Van Horne was appointed as Heurnius' full-time successor.[20] Like the Van Horne and Saeghemolen's *alba*, Heurnius' three-volume *De mummia* was never published. Perhaps the manuscript (if there was any) will pop up, somewhere, some day.

15. Breugelmans, R., 'Een document uit het voormalig *Theatrum Anatomicum* te Leiden. Heurnius' opschrift bij de "grote mummie"', *Oudheidkundige mededelingen uit het Rijksmuseum van Oudheden te Leiden*. Nieuwe reeks 63 (Leiden, 1977): 233-234.
16. Molhuysen, *Bronnen*, *op. cit.*, II, p. 191; III, p. 38, pp. 65-67.
17. *Ibid*, II, p. 191.
18. *Ibid*, III, p. 38.
19. *Ibid*, III, pp. 65-67.
20. Van Horne was already employed by Leiden University at that time, however in the less well-paid (and less prestigious) position of *professor extraordinarius*; see Huisman, *The Finger of God*, *op. cit.*, pp. 77-78.

Descartes and the Dutch

According to a myth, fabricated by Descartes himself, he settled in the Dutch Republic to work in splendid isolation on his great renewal of philosophy. Indeed, between 1628 and 1649 the French philosopher mostly stayed in the Low Countries – but not in self-imposed seclusion. As others have demonstrated, Descartes was keenly aware of the bustling cultural and intellectual atmosphere, and learned much of conversation with the natural philosopher Isaac Beeckman, the mathematician and orientalist Jacob Golius, who introduced him to the poet and statesman Constantijn Huygens (the father of Christiaan).[21] Descartes lived where the action was, doing anatomical research in Amsterdam in the same cold months of 1632 when Rembrandt painted his famous *Anatomy lesson of Dr Tulp* (Figure 5). As is well known, in the aftermath of Galileo's condemnation (1633) Descartes withdrew the manuscript of *Le Monde*. However, Constantijn Huygens urged him to publish parts of it – including an introduction and the *essay* on optics: 'Hastez-vous au miracle de rendre la veüe aux aveugles.'[22] Huygens played a mediating role in finding a publisher. Even more important, it was at Huygens' advice that Descartes included persuasive woodcuts to visualize his argument. These woodcuts were made by the gifted Leiden mathematician Frans van Schooten junior. Descartes was shrilled by Van Schooten's work – another nice illustration of the importance of epistemic images in the context of Leiden university.[23]

As is well known, the publication of the *Discours* (Leiden, 1637) provoked a furious debate, lasting for decades.[24] The orthodox wing of the Reformed Church was outraged by Descartes's materialist approach towards nature and his implicit rejection of the value of the Bible in *rebus*

21. Thijssen-Schoute, *Nederlands Cartésianisme*, *op. cit*., *passim*; Clarke, *Descartes*, *op. cit*., *passim*; van Berkel, Klaas, *Isaac Beeckman on matter and motion. Mechanical philosophy in the Making*, Baltimore: John Hopkins University Press, 2013; van Berkel, Klaas, Clement, Albert and Arjan van Dixhoorn (eds.), *Knowledge and Culture in the Early Dutch Republic. Isaac Beeckman in Context*, Amsterdam: Amsterdam University Press, 2022.

22. Huygens to Descartes, 5 December 1636; see Descartes, René, *Œuvres*, Adam, C. and P. Tannery (eds.), Paris, 1897-1913, I, p. 333.

23. See Lüthy, Christoph, 'Where logical necessity becomes visual persuasion: Descartes' clear and distinct illustrations,' *Transmitting knowledge. Words, images, and instruments in early modern Europe*, Kusukawa, S. and I. Maclean (eds.), Oxford: Oxford University Press, 2006, pp. 97-134.

24. Thijssen-Schoute, *Nederlands Cartésianisme*, *op. cit*.; Verbeek, *La Querelle d'Utrecht*, *op. cit.* ; Van Ruler, *The Crisis of Causality*, *op. cit*..

Figure 5.

Rembrandt van Rijn, *The anatomy lesson of Dr Nicolaes Tulp*, oil on canvas, 216,5 x 169,5 cm, 1632. Courtesy of the Mauritshuis, The Hague

naturalibus. The hardliners, led by the Utrecht professor Gisbertus Voetius, feared that philosophy, now the handmaiden of theology, soon would become her master.

However, moderate Reformed scholars and natural philosophers influenced by Descartes's mechanical conception of nature ignored his epistemology and metaphysics. They increasingly left the Bible out of their study of nature and instead put full emphasis on the structure, order, and beauty of God's creation. In their view, the traditional 'argument from design', already expressed by ancients such as Cicero, Seneca, Pliny, and Galen, now gained a powerful impulse from Cartesian physics, where the concept of 'laws of nature' was so important. Descartes' conception of matter – tiny *corpuscula* – also invited closer research, with the aid of the newly developed microscope.

The Cartesian model offered challenging perspectives on all branches of natural philosophy and medicine, including anatomy. Although it is still a matter of debate if Descartes *considered* the body as a machine or only *compared* it to it, it is clear that his ideas fuelled interest in anatomy and

physiology.[25] Considering the heart as a pump, the lungs as bellows, and – as some iatro-mechanists saw it – digestion as a chemical process, opened new perspectives. The idea – ascribed to Descartes – that animals were mere automata, devoid of ratio, speech and feelings, offered an invitation to dissections and vivisections.[26] Especially Leiden became the European hotspot for anatomical research, carried out in academic institutions, the municipal hospital, as well as during the *privatissima* at the professors' houses.[27]

The Saeghemolen's *tomi* have been brought in connection to Descartes' work, and rightly so. And although immediate impact is hard to prove, we are on safe ground if we state that the artist's painstakingly detailed work is based on the same epistemological and philosophical principles as that of the Frenchman. As Annie Bitbol-Hespériès wrote: 'Car ce qui est remarquable dans les dessins de Sagemolen, c'est qu'ils montrent matière et mouvement, corps humain et mouvement, autrement dit qu'ils illustrent le mécanisme cartésien, le mécanisme de la machine du corps'.[28] Especially the issue of motion – highlighted in Saghemolen's meticulous drawings of the muscles – testifies to a great interest in *moving* rather than static bodies.

25. See for example Cottingham, John, '"A brute to the brutes?" Descartes' Treatise of Animals,' *Philosophy* 53 (1978): 551-559; Bertoloni Meli, Domenico, 'Machines of the Body in the Seventeenth Century,' *Early Modern Medicine and Natural Philosophy,* Distelzweig, P., Goldberg, B., and E. Ragland (eds.), Berlin: Springer, 2016, pp. 91-116; Franco, Abel, 'Descartes' dog. A clock with passions?,' *Philosophia* 46 (2018): 101-130. https://doi.org/10.1007/s11406-017-9884-2; Clericuzio, Antonio, 'Descartes, Stensen and the Quest for Visible Mechanisms,' *Nuncius* 35 (2020): 429-440. https://doi.org/10.1163/18253911-03502007

26. Guerrini, Anita, *Experimenting with Humans and Animals. From Galen to Animal Rights*, Baltimore: Johns Hopkins University Press, 2003; Bertoloni Meli, Domenico, 'Early Modern Experimentation on Live Animals,' *Journal of the History of Biology* 46 (2013): 199–226. https://doi.org/10.1007/s10739-012-9327-7; Jorink, Eric, Woodall, Joanna and Edward Wouk (eds.), 'Humans and Other Animals in the Art of the Low Countries,' *Netherlands Yearbook for History of Art/Nederlands Kunsthistorisch Jaarboek* 71, Leiden: Brill, 2021.

27. Lindeboom, Gerrit A., 'Dog and Frog: Physiological Experiment at Leiden during the seventeeth century,' *Leiden University in the Seventeenth Century: An Exchange of Learning*, Lunsingh Scheurleer, Theodoor H. *et al.* (eds.), Leiden: Brill, 1975, pp. 279-294; Huisman, *The Finger of God*, *op. cit.*, *passim.*

28. Bitbol-Hespériès, Annie, 'Le moment cartésien de la leçon d'anatomie: la myologie du dessinateur Sagemolen pour l'anatomiste van Horne, Leyde, 1654–1660,' *Archives de Philosophie* 95 (2022): 156–164.

Moreover, it is clear that the overall visual and detailed approach was in line with the Dutch pictorial tradition – the 'Art of describing' as Svetlana Alpers famously called it – and with a more particular Leiden tradition.[29] Leiden – the city of cloth-industry, philology and anatomy – would foster both *fijnschilders* as Frans van Mieris and Gerard Dou, and microscopists such as Swammerdam. Eye for details was key in this context.[30]

As Huisman and other have described, Van Horne had already in 1652 submitted a request to the curators for financial support 'for the benefit of certain anatomical drawings he has ordered, and which will contribute to the perfection of the study of anatomy, the honour of the academy, and the benefit of students of medicine'.[31] Indeed, after inspection of some sketches on behalf of the curators, the support was granted. It is worth noting that the explicit aim was also to facilitate education. Others have analysed how Saeghemolen's work progressed between ca. 1654 and 1660. While it remains an open question if the work was ever intended to be published (as an alternative for the by now century-old *De fabrica* of Vesalius perhaps?), it is clear that the work was intended to be used primarily as an educational tool.[32] Judging from the available sources, Van Horne kept (and showed) the *alba* at his home, and not in the classes given at the Academy building or in the anatomical theatre. In other words, the work was available to students following the *privatissima* the professor gave in his private lodgings. This space could be considered as a private extension of the nearby public *theatrum anatomicum*, and contained a huge library, many anatomical preparations (including a 'mummified arm'), a squid caught at nearby Katwijk, and a chameleon. There was also a wire skeleton model, Saghemolen's *alba*, and a dissecting table were Van Horne could anatomize cadavers.[33] A curious English visitor noted:

> We visited Dr Van Horne, the professor of anatomy, who entertain'd us with great kindness and civility, and shew'd us a skeleton curiously whitened, and set exactly together by his own hand; a very thick skull of a

29. Alpers, S., *The art of describing. Dutch art in the seventeenth century*, Chicago: The University of Chicago Press, 1983.
30. Yeager-Crasselt, Lara, Brisman, Shira and Eric Jorink, *An Inner World. An exhibition of the Leiden Collection, Arthur Ross Gallery Pennsylvania*, Philadelphia: Pennsylvania University Press, 2021.
31. Molhuysen, *Bronnen*, *op. cit*., III, p. 65; Huisman, *The Finger of God*, *op. cit*., p. 78.
32. Unlike the case of Heurnius, there are no references to publication plans in the sources.
33. See Huisman, *The Finger of God*, *op. cit*., p. 82.

> footman; many skeletons of embryo's… Two books with figures of the several members of a man, expressing in colours the true figures of the muscles, & c. which were drawn by his own direction.[34]

It is to Van Horne's private dwellings that we will now turn.

Van Horne and Dele Boë Sylvius

The (rather small) Leiden Faculty of medicine had only four professors, who could welcome each year around 50 new students, coming from all over Europe. Some stayed here just for a few weeks on their *peregrinatio acedemiae*, others followed the entire curriculum, finishing with a successful defence of their *disputatio pro gradu*. In the period under consideration here, the two most important professors were Johannes van Horne, an able anatomist, and Franciscus Dele Boë Sylvius, who already in 1636 had proven Harvey's theory of the circulation of blood to be correct. Van Horne had been appointed in 1652 as the successor of Otto Heurnius; Dele Boë Sylvius obtained his chair only in 1658. Although no outspoken Cartesians themselves, the two professors attracted many young students who were enchanted by the Frenchman's mechanistic philosophy.[35] Both professors supervised a huge amount, research-based disputations, which made their influence felt throughout Europe.[36] Both lived right in front of each other, with only the stately Rapenburg Canal – the preferred neighborhood of regents, wealthy merchants, and university professors – separating them.

Like Van Horne, Sylvius had a strong interest in the arts and the culture of collecting, both for aesthetic pleasure and educational value. The inventory of his house has been preserved, and it shows the presence of chemical furnaces and a room dedicated to dissection, as well as a library, rarities and instruments, a workshop for carving ivory and wood, and a splendid

34. Skippon, Philip, 'An account of a Journey of a journey through part of the Low Countries,' *A collection of voyages and travels*, vol. 6, London, 1732, pp. 400-401.

35. Huisman, *The Finger of God*, *op. cit.*, p. 78; Ragland, Evan R., 'Chymistry and Taste in the Seventeenth Century. Franciscus dele Boë Sylvius as a chymical physician between Galenism and Cartesianism,' *Ambix* 59 (2012): 1-21. https://doi.org/10.1179/174582312X13296104891472

36. Harskamp, Jaap, *Dissertatio medica inauguralis […]: Leyden medical dissertations in the British Library, 1593-1746: Catalogue of a Sloane-inspired collection*, London: The Wellcome Institute for the History of Medicine, 1998.

collection of art.[37] Besides many engravings and etchings, Sylvius owned roughly 180 paintings, one of the largest collections in town. Sylvius took great delight in the Leiden *fijnschilders*, particularly Van Mieris. The professor often visited the painter in his workshop, gave Van Mieris commissions, and was the first to be allowed to purchase his latest works.

Although no outspoken friends (the flamboyant Sylvius was an educational genius and an absolute academic star, whereas Van Horne had the tendency to start and subsequently abandon ambitious projects) the work of the two was fairly complementary. Van Horne was a practical, rather down-to-earth anatomist; Dele Boë Sylvius a philosophical mind inclined to iatrochemistry and alchemy. Whether influenced by Descartes or not, they both had a strong interest in movement, muscles, the circulation of bodily fluids and the problem of procreation. Both were instrumental in recognizing, educating and supervising brilliant anatomical students – who all had benefit from the educational tools at their proposal, including the *Myologia* by Saeghemolen. Whereas the number of anatomical dissections on human bodies paled in comparison to Paris in these years – the latter so vividly described by Anita Guerinni – the impact of these researches was great.[38]

Two Leiden students

In this final section, I will briefly discuss two of the best-known pupils of Van Horne and Dele Boë Sylvius: Nicolaus Steno and Johannes Swammerdam. The two would become life-long friends, not only sharing scientific ideas and images (Steno published some of the ones Swammerdam had drawn for him), but also religious concerns.[39] Both

37. Lunsingh Scheurleer, T. H., Willemijn Fock, C., and A. J. van Dissel (eds.), *Het Rapenburg: Geschiedenis van een Leidse gracht,* 6 vols., Leiden: Rijksuniversiteit Leiden, 1986–92, vol. 3, p. 270; Smith, Pamela H., 'Science and Taste: Painting, Passions, and the New Philosophy in Seventeenth-Century Leiden,' *Isis* 90 (1999): 421–461. https://doi.org/10.1086/384411

38. Guerrini, A., *The courtiers' anatomists: animals and humans in Louis XIV's Paris*, Chicago: The University of Chicago Press, 2015.

39. See Miniati, Stefano, *Nicholas Steno's Challenge for Truth. Reconciling Science and Faith*, Milano: Franco Angeli, 2009; Kardel, Troels and Paul Macquet (eds.), *Nicolaus Steno: Biography and Original Papers by a 17th-century Scientist*, 2nd edition, Berlin and Heidelberg: Springer Verlag, 2018; Jorink, Eric, '"Outside God, there is nothing". Swammerdam, Spinoza, and the Janus-Face of the Early Dutch Enlightenment,' *The Early Enlightenment in the Dutch Republic*, van Bunge, Wiep (ed.), Leiden: Brill, 2003, pp. 81-108; Jorink, Eric,

were highly skilled anatomists and draftsmen. Both were experimented with new techniques in dissecting and embalming as well as with visual strategies. Both were deeply influenced by Cartesian concepts (Steno later started to doubt these; while Swammerdam deeply adhered to them) and their work was in line with the educational and visual tradition of the Leiden medical Faculty.

As I already mentioned, medical faculties were mostly institutions for education elsewhere in Europa. At Leiden, (literally) cutting-edge research was undertaken, sometimes even performed at the students' lodgings: we have testimony of Swammerdam vivisecting dogs in his room! An annual highlight in Leiden was the public lesson in the *Theatrum anatomicum*, which was open to students, professors, city-magistrates, and civilians (if willing to pay a fee). During these solemn events – which could last for a week – the body of an executed criminal was dissected.[40] In the cold winter of 1662, Van Horne anatomised a 'hermaphrodite'. Steno and Swammerdam were present and the latter is reported to have made drawings.[41] By that time, Steno and his roommate Olaus Borrichius had already seen the anatomical atlases by Saeghemolen and Van Horne with their 'vivae imagines'.[42] Rather than being a revelation for them, these atlases were presumably seen as an encouragement to follow the direction they already had taken. Discovering and representing microstructures was their main interest. Especially for Steno and Swammerdam, this had overtly religious connotations.

As is well known, the much-studied Danish anatomist Nicolaus Steno had settled in the Dutch Republic to benefit from its scientific culture in early 1660. Already being an adept to Descartes' natural philosophy, Steno first studied some months at the Amsterdam *Athenaeum Illustre* under Gerardus Blasius – discovering the parotic duct that shortly thereafter were named after him by Van Horne. Subsequently, Steno studied at Leiden, from July 1660 to early 1664. Soon, Johannes Swammerdam joined him – the two becoming life-long friends.

'"Modus politicus vivendi": Nicolaus Steno and the Dutch (Swammerdam, Spinoza and Other Friends), 1660–1664,' *Steno and the Philosophers*, Andrault, Raphaële and Mogens Lærke (eds.), Leiden, Brill, 2018, pp. 13-46.

40. Huisman, *The Finger of God*, *op. cit.*, *passim*.

41. Borch, Ole, *Olai Borrichii Itinerarium 1660–1665*, Schepelern, H. (ed.), Copenhagen and London: Reitzel and Brill, 1983, vol. II, p. 215.

42. *Ibid*, II, p. 39. On Steno and Borch in this context, see Jorink, Eric, '"Modus politicus vivendi"', *op. cit.*.

Swammerdam was the son of an Amsterdam pharmacist, famous for his collection of natural curiosities, and already involved in research on insects. At that time, Swammerdam was already an able draftsman. Steno and Swammerdam often operated together, dissecting mice, rabbits and dogs in their lodgings, taking notes and drawing images. No original images have survived from this period, but we know that they were made. Especially Steno was very active in the field of visual culture. In 1661 he defended two public disputations under Van Horne in 1661, concerning the discovery of what was now called the *ductus stenoni*.[43] The disputations included beautiful – and very expensive – engravings. This was an absolute novelty, as it was the first time in the until then exclusively *textual* tradition of academic disputations that *visual* arguments were brought in. Steno did it not stop there. In the first paragraphs of his first 1661-thesis, he elaborated at length on the importance of images in academic discourse. He stressed the difficulty in observing and correctly depicting anatomical structures – difficulties that Saeghemolen had also struggled with:

> Thus, even if from all eternity many people have acted with a maximum of work and indefatigable application to represent the absolute image of the anatomy of the animals in all its details, why do we wonder that nevertheless even now it is apprehended partly and imperfectly only? […] The skilful texture of the individual parts, the cunning connection of the attached parts are so much enveloped to the onlookers, they show such an abundant crop of things to be investigated that, even if the work of many combines into one, even after a long series of years, one can, however, hardly expect a trustworthy knowledge of them.[44]

Evoking classical wisdom, Steno referred to the ancient idea that 'all those who have common sense must admit and will not deny, that *the structure of animals is the work of a wise and life-giving craftsman*' and that 'nothing to be so mean that it does not teach the wisdom of the Creator demonstrates it, just as in times past the most simple line of art, ridicule for the ignorant, showed the dexterity of Apelles'.[45] Referring to the most able of the Greek painters, who had stunned his contemporary Protogenes by painting exceedingly fine lines, Steno set an example Swammerdam would pick up later.

43. Steno, Nicolaus, *Disputatio anatomica de glandulis oris, & nuper observatis inde prodeuntibus vasis prima*, Leiden: Elsevier, 1661; Steno, *Dispuatio anatomica de glandulis oris, & nuper observatis inde prodeuntibus vasis secunda*, Leiden: Elsevier, 1661.
44. Here quoted after the translation in Kardel and Macquet, *Steno*, *op. cit*., p. 427.
45. *Ibid*, p. 428.

Whereas Steno would mostly focus on glands and muscles, Swammerdam was more challenged by other aspects of Descartes' legacy. I already noted the immediate impact of the Frenchman's ideas on Leiden anatomists. However, Descartes' philosophy left one big question unanswered: if the body was a machine, where do baby-machines come from?[46] Throughout his life, Descartes had struggled with this issue. His notes on this subject – which clearly made the question pertinent – were only published posthumously in *De homine* (1662) and *Traité de la formation du foetus* (1664).[47] Around 1660, Swammerdam had picked up Descartes' challenge. He simply would not believe that – as the Ancients had written and contemporary students of nature including William Harvey echoed – insects were devoid of an internal anatomy and were the result of random generation.[48] This would leave the door open to contingency and chance and, as such, deny God's omnipotence. According to Swammerdam, the scholastic hierarchy of the 'great chain of being' was blasphemous, as there was no ontological and anatomical distinction between the 'higher' and 'lower' creatures. The anatomy of an insect was as complicated as that of a lion or elephant – but even more worth studying because of its minute scale. Guided by this certitude, as well as with self-developed new techniques of preparation, a magnifying glass and a single-lens microscope, Swammerdam set out to make his point. In images and language similar to Steno's, Swammerdam described the enormous difficulties he had in dissecting, observing and drawing the minute structures of insects: 'the spectacle is always clearer in one than in another, but everything depends upon the eye and the hand with which it is seen and dissected'.[49] Swammerdam created as accurate a

46. See Jorink, Eric, 'Cartesian Sex. Dutch anatomists on genitals, lust and intercourse,' *Libertinage et philosophie à l'époque classique (XVI^e^-XVIII^e^ siècle)*, Lærke, Mogens *et al.* (eds.), vol. 19 : *Les libertins néerlandais/Dutch libertines*, Paris: Classiques Garnier, 2022.

47. Zittel, Claus, '"Conflicting pictures. Illustrating Descartes" *Traité de l'homme*,' *Silent Messengers. The world of goods and the circulation of knowledge in the early modern Netherlands*, Dupré, Sven and Christoph Lüthy (eds.), Berlin: LIT Verlag, 2011, pp. 217–260; Chan, Eleanor, 'Beautiful Surfaces: Style and Substance in Florentius Schuyl's Illustrations for Descartes' *Treatise on man*,' *Nuncius* 31 (2016): 251-287. https://doi.org/10.1163/18253911-03102001; Antoine-Mahut, Delphine and Stephen Gaukroger (eds.), *Descartes'* Treatise on Man *and its Reception,* Berlin: Springer, 2016.

48. On the broader context of this discussion see: Aucante, Vincent, *La philosophie médicale de Descartes*, Paris: PUF 2006; Cobb, Matthew, *The Egg and Sperm Race. The Seventeenth-Century Scientists Who Unravelled the Secrets of Sex, Life and Growth*, London: The Free Press, 2006.

49. Jorink, E., 'Beyond the Lines of Apelles. Johannes Swammerdam, Dutch Scientific Culture, and the Representation of Insect Anatomy,' *Art and Science in the Early Modern Low*

picture as possible of every body part or organ he observed. He understood better than anyone what an inordinately difficult task this was, comparing it, for example, to drawing the sun with a piece of charcoal.

Everything Swammerdam saw through the microscope he interpreted in terms borrowed from art, reminding us of the Dutch culture of collecting and painting. Hidden things such as the anatomy of the mayfly or the louse turned out to be 'genuine showpieces', 'confronted with which all the lines of Apelles and all the sophistries of human intelligence must be regarded as Folly'. He compared the inside of a gall with a 'still life' and described the wings of a butterfly as 'brilliant and dazzling mother of pearl that has been polished'. Above all, he was astonished by the beauty of butterflies:

> which put even peacock feathers in the shade: So are its wings studded, in an orderly manner, as if with Pearls and diamonds, which seem to catch yet more of a gleam from untold Sapphires, Turquoises and Rubies; the mother-of-pearl shells and the silver places on its wings, with their sparkling reflection of rays, outstrip the tints of rainbows.[50]

At the end of 1664, Steno and Swammerdam settled in Paris and attended meetings of scientific societies, most notably those of Melchisédec Thévenot, the Abbé Bourdelot, and the somewhat defunct circle of Henri Habert de Montmor. Here, they shared their observations with the *fine fleur* of European thinkers, including father Constantijn Huygens and his now famous son Christiaan, Pierre-Daniel Huet, Nicolas Malebranche, Jacques Rouhault, Louis de la Forge and Isaac Vossius.[51] It was in this setting that Steno performed the famous anatomy of the brain.

Countries, Jorink, E. and B. Ramakers (eds.), Zwolle: WBooks, 2011, pp. 149-183: p. 166.

50. *Ibid*, p. 169.

51. A full study of these interfering circles and *côteries* remains to be written. Of relevance here are Brown, Harcourt, *Scientific Institutions in Seventeenth-Century France (1620–1680)*, Baltimore: Williams and Wilkins, 1934; Lux, David S. and Harold J. Cook, 'Closed circles or open networks? Communicating at a distance during the Scientific Revolution,' *History of Science* 36 (1998): 179-211. https://doi.org/10.1177%2F007327539803600203; Jorink, Eric, 'In the Twilight Zone. Isaac Vossius and the Scientific Communities in France, England and the Dutch Republic,' *Isaac Vossius (1618-1689) between Science and Scholarship*, Jorink, Eric and Dirk van Miert (eds.), Leiden: Brill, 2012, pp. 119-156. Rich sources are Borch, *op. cit*., vol. IV; Tolmer, Léon, 'Une page d'histoire des sciences 1661–1669. Vingt-deux lettres inédites d'André de Graindorge à P. D. Huet,' *Mémoires de l'Académie des sciences, arts et belles-lettres de Caen*, vol. 10, 1941, pp. 245-330; and the correspondences of Christiaan Huygens and Henri Oldenburg of these years.

After nearly a year together in France – also spent at Thévenot's retreat in Issy – Steno and Swammerdam parted ways. Steno travelled to Italy. On 11 April 1666, the Dane settled in Florence, becoming friends with the court-physician Francesco Redi and publishing his impressive works on geology and muscles, so excellently studied by Nuno Castel-Branco and Troels Kardel.[52] Redi also stimulated Steno's fascination for Catholicism, leading to the latter's spectacular conversion to the church of Rome a year later.[53]

Swammerdam was already back in Amsterdam in 1665, finishing his work for his MD (a staunchly Cartesian work on respiration) which he defended in February 1668. Swammerdam also continued his research – together with Van Horne – on the reproduction of humans and animals. On 21 January 1667, at Van Horne's house, the two dissected the genital system of a virgin who had drowned herself. They discovered many small, spherical entities in the ovaries and assumed that these were the female 'eggs'. This was a major discovery, later ascribed to Reinier de Graaf (hence they are still called 'follicles of De Graaf').[54] The controversy surrounding the priority of this discovery does not need to concern us here. What is important is that Swammerdam had made drawings of the observations at Van Horne's home in 1667, and that his professor – like Saeghmolen's *alba* – did not feel any urge to publish these. It was only after Van Horne's death (and De Graaf's claim to fame) that Swammerdam published the drawings – including very detailed ones of the female vulva, clitoris and vagina.[55]

The axiom that life is orderly and uniform was the foundation of Swammerdam's *Historia insectorum generalis* (1669, published in Dutch), in which he showed in words and images the step-by-step growth of insects

52. Castel-Branco, Nuno and Troels Kardel, 'Drawing Muscles with Diagrams: how a novel dissection cut inspired Nicolaus Steno's mathematical myology (1667)', *Notes and Records of the Royal Society* (2022): 1-21. https://doi.org/10.1098/rsnr.2022.0005; Dominici, Stefano and Gary D. Rosenberg (eds.), special issue 'Nicolaus Steno and Earth Science in Early Modern Italy,' *Substantia. An International Journal on the History of Chemistry* 5 (2021): 1-114.

53. Much has been written on this subject, see for example the contributions in Andrault, Raphaële and Mogens Lærke (eds.), *Steno and the Philosophers*, Leiden: Brill, 2018.

54. Much has been – and continues to be – written on the priority-dispute between De Graaf and Swammerdam on the discovery of the female 'eggs'. The follicles are named after De Graaf, but recent research has confirmed that De Graaf never claimed the priority of the observation, but simply was the first to put it in a book, deliberately leaving out references to the 1667 work done by Swammerdam and Van Horne. See Cobb, *Egg and Sperm Race*, *op. cit*., pp. 123-127; Jorink, 'Cartesian Sex,' *op. cit*.

55. Jorink, 'Cartesian Sex,' *op. cit*.

from an egg, via transformation and metamorphosis, to the *imago*, the adult insect.[56] Swammerdam explicitly quoted 'the great Cartesius' to state that 'all of God's works are based on the same foundation'.[57] Just like humans, insects and other lower species such as frogs and snails had life cycles. The belief in spontaneous generation was not only untenable but also atheistic, as it presupposed contingency and therefore denied God's providence.

During the last decade of his short but fascinating life, Swammerdam elaborated on the blueprint of insect-life put forward in the *Historia*. Becoming increasingly skilled in dissecting, observing and drawing microscopical observations, he charted previously unknown territory. In 1678, after dissecting a louse – an incredible feat – Swammerdam sent a letter and a self-made drawings to Thévenot in Paris:

> I hereby present to your honor the Almighty Finger of GOD in the Anatomy of a Louse, in which You will find miracles heaped upon miracles ... The lines of Apelles are admired by all the world, but here you will discover in one part of one line the complete structure of all the most ingenious Animals in the entire universe together, as contained in one concise concept. What people, my lord, are capable of understanding this? Yet what artist can there be other than GOD who could in any way investigate and depict it?[58]

The languages echoes Steno's earlier remarks, and point to their common endeavours in the early 1660's. And like the recently found Saghemolen's *alba*, Swammerdam's original drawings testify to great artistic skill (Figure 6 and Figure 7). Sadly enough for Swammerdam, he died a few days after he finished the manuscript of what he called his 'great work' – the all-encompassing study of the world of insects and other 'low' creatures. He bequeathed the manuscript and drawings to his French Maecenas Thévenot. However, Thévenot ignored Swammerdam's explicit wish to publish the entire manuscript, and the work remained missing in Paris.

56. Swammerdam, Johannes, *Historia insectorum generalis*, Utrecht: Van Dreunen, 1669; Cobb, *Egg and Sperm Race*, *op. cit.*, pp. 142-145.
57. Swammerdam, *Historia insectorum generalis*, *op. cit.*, 'Naa-reeden,' pp. 6 and 9.
58. Jorink, E., 'Beyond the Lines of Apelles,' *op. cit.*, p. 149.

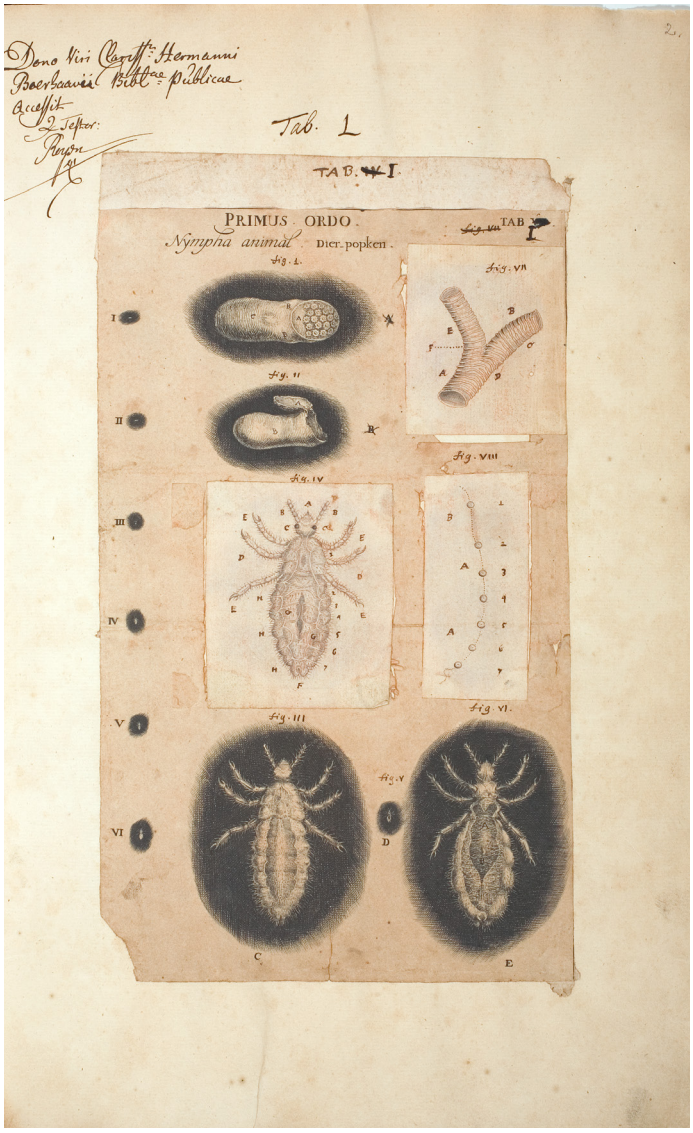

Figure 6.

The louse, as depicted by Johannes Swammerdam ca. 1672. Swammerdam took the original etchings of his *Historia Generalis Insectorum* (1669) and copied and pasted new, hand-drawn images to it. This composite image was published in 1737 in the *Biblia natura*. Ms BPL 126 C fo 1. Courtesy of the Leiden University Library

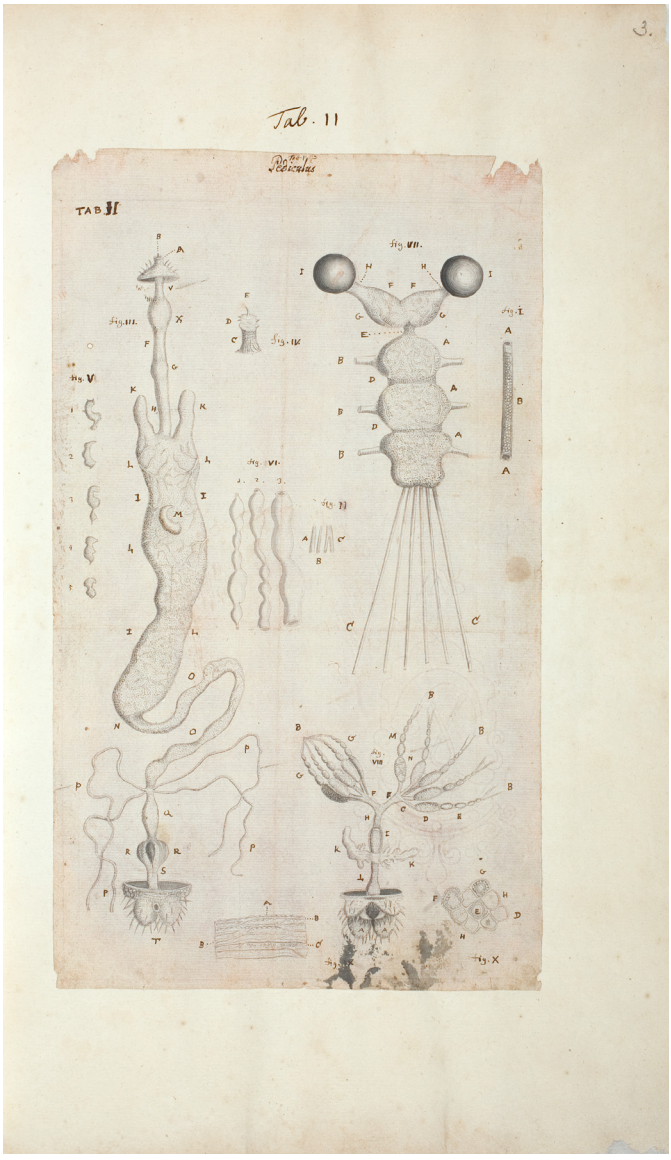

Figure 7.

The entrails of a louse, as depicted by Johannes Swammerdam in 1678, and sent to Melchisédec Thévenot. To the left the gastro-intestinal duct; to the lower right the female reproductive system. This image was published in 1737 in the *Biblia natura*. Ms BPL 126 C fo 2. Courtesy of the Leiden University Library

Conclusion

As I hope to have demonstrated, Saeghemolen's *alba* testify to a longer tradition at Leiden university to support medical education with images, objects and hand-on sessions. We knew their existence from earlier references, and now that four of the presumably six volumes have been found in Paris, we can only start to make a closer study of the astonishing drawings that defy the boundaries between 'art' and 'science'. The scholarly community can be grateful for the discovery, digitalization and encouragement for further research of the BIU Santé's staff.

As we saw, the magnificent *alba* not only testify to the 'art of describing' at the medical Faculty of Leiden University, but also resonate with the Dutch culture of art and science more generally. Eye for detail, close observation and minute representation were deeply embedded. This critical gaze was not only due to artistic theory or scientific requirements, but also had deeply religious connotations. As Swammerdam put it: creation should be studied with one's own eyes, since the scholarly tradition was compromised and inaccurate. Nature was a 'pretty picture' that – however – 'has become dirtied and contaminated' by 'our fancies' and 'corrupt traditions'.[59] A comparison to Biblical criticism in the spirit of Erasmus instantly comes to mind. The closer to the original text, the closer to God. As Swammerdam advised:

> Only I recommend that someone who wants to know the truth should go and look for it in nature itself. For it exceeds all the writings and treatises that can be written about it, and it teaches in a moment of time more than many books can teach in many years. Nature is like a permanently open book in which its wonders can be understood much more easily and readily than in the tales of the weak-minded.[60]

It is one of the ironies of history that both Saeghemolen's *alba* and the original drawings by Swammerdam – that have so much in common – were both found in Paris (the Saeghemolen's images, as is well known, in 2016 and the Swammerdam's manuscripts in 1730). Interestingly enough, both passed through the hands of Herman Boerhaave. As has been established earlier, Saeghemolen's *alba* were bought by the Leiden

59. See Jorink, *Reading the Book of Nature*, *op. cit.*, p. 233.
60. *Ibid*, p. 234.

professor sometime after Van Horne's death. When Van Horne's pupil Swammerdam died in 1680, his manuscripts were bequeathed to Melchisédec Thévenot who – however – never published them. Decades later, picking up rumors that the wonderful manuscript was 'somewhere' in France, Boerhaave managed to have them traced and bought. Doing an amazing job, he published in 1737-1738 the posthumous 'great work' by Swammerdam, most suitably entitled *Biblia Naturae*. The original drawings are still at Leiden University Library, and invite comparison to Saeghemolen's *alba*, now in Paris.